

# Economics

Dyrehaugen Web Notebook

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# 1

## Economics



Modern economics is sick. Economics has increasingly become an intellectual game played for its own sake and not for its practical consequences.

Economics is always a creature of time and place and theory and our relation to given theory must account for this.

The capitalist economy is a non-equilibrium system. It tends not to equilibrium, but to crises.

Today's mainstream economics, I would argue, has lost not only a key feature of the Enlightenment—making order by producing classification systems (taxonomies)—but also the key feature of the Renaissance that preceded the Enlightenment: the immense creativity and innovations, in all aspects of human life, unleashed during that period. Economics lost what Nietzsche refers to as ‘capital of will and spirit’ (Geist- und Willens-Kapital). Our qualitative understanding ('verstehen' in German philosophy) was crowded out by

a more mechanical form of understanding (see Drechsler 2004 for a discussion). In this way, the process of economic development became reduced to a process of adding capital to labour in a quasi-mechanical fashion, much like adding water to soluble coffee. By neglecting the differences between economic activities, economics was not able to break the core of the vicious circles that keep poor countries poor, the mutually reinforcing lack of purchasing power and lack of employment (see Kattel, Kregel and Reinert 2009). Reinert (2011) The terrible simplifiers (pdf)

Economics is too important to leave to the economists

The equations of mainstream economics are derived from the pre-analytical vision that the economy is self-contained and self-regulating by means of price competition.

Economics, as a discipline, lives in a contrived world of its own, one connected only tangentially to what occurs in real economic systems. (Hall and Klitgaard)

**ECONOMICS AT A CROSSROADS:** The standard convention that ‘goods are desirable’ does no longer apply. How do we go from here?

**Economics is the study of the conversion of energy to fight entropy.**

Economics is a reductionist carve-out of commodifiable pieces of the larger complex systems of society and ecology.

Energy is money. Nearly everything else is credit.

Economics is the most powerful religion ever. It shapes the lives of even those who don’t believe in it or its gods.

So what is modern economics about? It seems to be, mainly, about *itself*.

The ‘science’ of maximizing and minimizing stuff you can’t measure.

Perhaps the best definition of economics is that it is ‘secular theology’. Economics adopts the veneer of science, but, like theology, is based on untestable definitions. The most pervasive dualism is the equivalence between income and productivity. Fix (2022) Dualism

The cult of math modeling. Palley (2021) Life among the Econos - 50 years on (pdf)

Never underestimate economists’ ability to convince themselves that the world works in a way that’s convenient for their equations!

The failure of economics to cultivate the sustained acceptance of externalities is increasingly becoming the most pertinent fact about the whole discipline. Not only did economics – the ‘science of markets’ – not encourage acceptance of

externalities, but it also made strenuous effort to downplay or even trivialize them. Austin (2021) (pdf)

Economy, understood as the material production that all societies must undertake to reproduce themselves, needs to be abstracted from nature for its particular study if the concrete interactions between any socioeconomic organization and nature is to be understood. Soriano

Humans typically assume that the world is ruled by uncertainty and apply according decision making rules. Experimental economists, by contrast, only consider well-defined, resolvable problems and usually don't understand that their problems do not correspond to real life problems.

If wants are unlimited, as economists assume they are, then the world is scarce by definition – a scarcity that can be confronted only by more work and growth. Growth promises everyone more tomorrow; but at the same time, there is never 'enough for everyone to have a decent share'

Any sufficiently advanced religion is indistinguishable from economics. Ian Wright

So entrenched has *economic thinking* become within modern culture that we are not aware it is the root cause of climate change and nature crises.

Empirics is wonderful when we're in a stable and steady regime; theory is what you need when you have big shocks and possible regime changes

By 'exogenous', economists really mean a cause that they don't care to think about.

In economic calculation it is easy to make too much of opportunity costs. They are, after all, hypothetical.

### Ceteris Paribus

Economics cuts and reduces to formulate tractable problems that admit of elegant solutions, but the process inevitably renders economics a deeply decontextualized body of knowledge.

The discipline concerns itself only with the monetizable subdomain of broader societal and ecological relations.

## 1.1 Political Economy

### *Fix*

From its outset, the field of political economy was not designed, in any meaningful sense, to understand resource flows. Instead, it was designed to explain class relations. The goal of early political economists was to justify the income of different classes (workers, landowners and capitalists). They chose to do so

by rooting this income in the ‘production of wealth’. What followed from this original sin was centuries of conflating income with ‘production’. This conflation is what allowed Robert Solow to proclaim that the world could “get along without natural resources”.

Fix (2020) Can the World Get Along Without Natural Resources?

## 1.2 Macroeconomics

If there’s one thing you should know about macroeconomics, it’s this: Convincing evidence is really really hard to come by, so people end up relying a lot on theory and making a lot of assumptions.

In macroeconomics it’s very hard to get the kind of clean, convincing evidence that we have for policies; macroeconomic stuff affects everything and is affected by everything, so it’s incredibly hard to disentangle cause and effect.

## 1.3 Outdated Marginalism

With its fixation on equilibrium thinking and an exclusive focus on market factors that can be precisely measured, the neoclassical orthodoxy in economics is fundamentally unequipped to deal with today’s biggest problems. Change within the discipline is underway, but it cannot come fast enough.

Nowhere are the limitations of neoclassical economic thinking – the DNA of economics as it is currently taught and practiced – more apparent than in the face of the climate crisis. While there are fresh ideas and models emerging, the old orthodoxy remains deeply entrenched. Change cannot come fast enough.

The economics discipline has failed to understand the climate crisis – let alone provide effective policy solutions for it – because most economists tend to divide problems into small, manageable pieces. Rational people, they are wont to say, think at the margin. What matters is not the average or totality of one’s actions but rather the very next step, weighed against the immediate alternatives. Such thinking is indeed rational for small discrete problems. Compartmentalization is necessary for managing competing demands on one’s time and attention. But marginal thinking is inadequate for an all-consuming problem touching every aspect of society. Economists also tend to equate rationality with precision. The discipline’s power over public discourse and policymaking lies in its implicit claim that those who cannot compute precise benefits and costs are somehow irrational. This allows economists – and their models – to ignore pervasive climate risks and uncertainties, including the possibility of climatic tipping points and societal responses to them. And when one considers economists’ fixation with equilibrium models, the mismatch between the climate challenge and the

discipline's current tools becomes too glaring to ignore.

Brookes and Wagner (2021) Economics Needs a Climate Revolution

## 1.4 Market Primacy

*Austin*

The key driver of the ecological crisis is our hunger for ‘economic growth’ that continues to overwhelm our fast-developing – fast-recovering? – sense of the need to protect the global environment. Of course, efforts are being made to tackle the problem, but so entrenched has economic thinking become within modern culture that we are not yet reconciled to the fact that *the form of economic thinking may be the root cause*.

Hence the dominant strategy we have adopted to address the sustainability crisis is that of ‘*voluntary market-based*’ approaches, under different banners: ‘sustainable development’, ‘sustainable capitalism’, ‘green growth’, ‘win-win’, and an ESG (environmental, social and governance) movement more generally. Alas, it is increasingly apparent that this overall strategy amounts merely to a grafting of environmental concern onto an economic system that remains stubbornly ‘business as usual’ in its deeper workings. Perversely, our concern for the environment has been transmuted into a potential new source of products and business lines: ‘eco’ as a new marketing seam to be mined, ‘green’ as a splendid new runway for growth!

In other words, it is becoming a classic case of the ‘solution’ exacerbating the problem. The human mind has become aware of a problem it recognizes as serious, but its increasingly frantic efforts to address the problem seem unable to escape an imprisoning logic.

That ‘logic’ is the entrenched norm of market primacy, to which Western cultures had iterated to by the late 1970s, for reasons that entirely predate our awareness of the Anthropocene and the Great Acceleration. The market primacy of our current ‘neoliberal’ social order emerged from political arguments seeking to safeguard individual rights and from decades of complementary economic theorizing that appeared to build a case for the superiority – almost infallibility – of market outcomes.

*Recognize our sustainability problems as ultimately a matter of collective cognition*

Austin (2021) The Matrix of the Emissary - Market Primacy and The Sustainability Crisis  
is

### 1.4.1 Shocks -All Problems are Exogenous

*Roberts*

The premise of mainstream economics is that market economies (theoretically) move smoothly along until hit by ‘shocks’ that push it off course. The job of economists is to get market economies back on course with some suitable policy adjustments and perhaps look for ways to defend the market economy from future ‘shocks’. There is no acceptance that there could be inherent fault-lines within the market economy itself – all problems are exogenous.

Roberts (2023) ASSA 2023 part one: the mainstream – fiction and reality

# 2

## The Economy

There is no such thing as “the economy” as conceived separately from politics (ie: the state).

### 2.1 Institutions

#### 2.1.1 Bretton Woods

*Coppola*

The Bretton Woods system enshrined the dominance of Western countries, and, in particular, the US. To this day, the two Bretton Woods institutions, the International Monetary Fund (IMF) and the World Bank, are always run by, respectively, a European and an American, and their funding predominantly comes from the US. The US has regarded it as its prerogative to decide which countries these institutions should support, and what form that support should take. Too often, “support” has meant imposing Western ideals of economic management, to the detriment of local people and customs.

After the Bretton Woods system collapsed in 1971, there was a period of economic and political chaos, out of which eventually emerged the international dollar standard backed by the financial reserves of powerful oil-producing nations. Under the “petrodollar” standard, developing countries that paid for imports with borrowed dollars suffered repeated debt crises. The IMF – originally created to prevent destabilisation of the Bretton Woods currency system by trade imbalances – became the vehicle for enforcing the transfer of resources from developing countries to their Western creditors.

The collapse of the Bretton Woods currency system is arguably attributable to the US’s burgeoning fiscal deficit during the Vietnam war, which made it impossible for the dollar to hold its peg to gold.

### 2.1.2 Post Bretton Woods

The elimination of capital and exchange controls after the collapse of Bretton Woods has enabled the rich to place their wealth out of reach of tax authorities and caused damaging flows of hot money that have particularly, though not exclusively, destabilised developing countries. Monetary policy and “growth-friendly” fiscal policies have widened inequality, creating exorbitant wealth for a few at the expense of social safety nets and public investment.

Coppola (2023) Paradigm Shift

# 3

## Duality

Perhaps the best definition of economics is that it is ‘secular theology’. Economics adopts the veneer of science, but, like theology, is based on untestable definitions.

The most pervasive dualism is the equivalence between income and productivity. We have a logical problem with the productivity-income duality. Either it is correct but unnecessary, or it is both unnecessary and incorrect. Either way, the duality is unsound.

Of course, there is nothing wrong with having a hypothesis that is logically unsound. It just means that when you notice the problem, you should abandon the hypothesis. But that’s not what happened in economics. Instead, the income-productivity duality became the basis for the entire system of national accounts.

To address this logical problem, economists have invented more theology. Prices, they claim, are themselves a duality. Prices are both a monetary quantity and a measure of utility. The problem is that economists never measure utility. They infer it from prices.

And so the whole operation becomes circular — a theological definition, and nothing more. Joan Robinson nicely summarized the situation:

Utility is a metaphysical concept of impregnable circularity; utility is the quality in commodities that makes individuals want to buy them, and the fact that individuals want to buy commodities shows that they have utility.

In other words, economists propose a definition, and use this definition to justify it. That’s theology.

*Assumptions*

When people like Milton Friedman spout theological nonsense, they'll try to convince you that assumptions don't matter. Friedman notoriously claimed that if a theory gives 'correct predictions', that's good enough. Don't believe him. Assumptions are the most basic part of science. If they are wrong, the whole theory is garbage.

Fix (2022) Dualism

# 4

## Economic Rent

### 4.1 Digital Rent

*Birch*

Big Tech ecosystems are important techno-economic sites of new and emerging forms of *digital rentiership*.

Big Tech is characterized by the emergence of new and specifically digital forms of rentiership, defined as the construction and extraction of value through the techno-economic extension of ownership and/or control over assets, often resulting from some artificial or natural scarcity, quality, or productivity

We outline four emerging forms of digital rentiership in Big Tech ecosystems reflecting the similarities and diversities in Big Tech firms themselves:

- (1) ‘enclave rents’ created through the control of ecosystems;
- (2) ‘expected monopoly rents’ created through the performative fulfilment of future narratives;
- (3) ‘engagement rents’ constituted via rankings and metrics that differentiate users by their engagement with digital services and products; and
- (4) ‘reflexivity rents’ obtained by exploiting ecosystem rules and norms.

Birch (2021) Big Tech: Four Emerging Forms of Digital Rentiership



# 5

## Scarcity

the economy may collapse from the reduced consumption.

### 5.1 Forced ‘scarcity’ (sabotage)

*Fix*

Stagflation as sabotage

Created by political economists Jonathan Nitzan and Shimshon Bichler, the theory of capital as power is decidedly non-mainstream. (It’s about as far from neoclassical economics as you can get.) Whereas mainstream economists look at capitalist society and see ‘productivity’ everywhere, Nitzan and Bichler see business ‘sabotage’.

It’s an idea that at first seems incendiary. But once you think about the behavior of real-world corporations, the notion of business sabotage seems on point. Everywhere we look, we find big corporations behaving badly.

Sci-fi writer Cory Doctorow calls this behavior ‘enshittification’. Looking at social media companies, he notes that what people want from their social-media apps is simple. People want to connect with their friends. And they want a feed that shows them what their friends are up to. That’s it.

The problem is that this simple desire is at odds with making a profit. You see, to make a profit, social media companies need to slam sponsored content down your throat — i.e. fill your feed with ads and clickbait. Because that’s the opposite of what people want, Doctorow notes that social-media apps follow a predictable trend. First, they lure people onto the platform by giving them what they want (a feed filled with their friends’ content). Then, once enough people are locked in, the company flips the money switch and enshittifies its platform with paid junk.

What's this enshittification got to do with inflation? Everything!

Take Twitter as an example. After Elon Musk bought Twitter, he moved frantically to cut costs and raise prices. Almost immediately, Musk turned on the inflation dial by charging for blue checkmarks.<sup>1</sup> Prior to this move, blue checkmarks had been Twitter's way of authenticating 'accounts of public interest'. Sure, the authentication was somewhat arbitrary ... but at least it was free.

Today, the same blue checkmark will cost you \$8 a month. And it's no longer a marker solely of prestige. No, the blue checkmark is now a pay-to-play system that gives you "priority ranking in search, mentions and replies". In other words, if you want your followers to see your content (something you previously got for free), you've got to hand Mr. Musk \$8 a month. That's business sabotage, plain and simple. It's inflation through enforced scarcity.

The 'enforced' part is key. Yes, we live in a world in which resources are finite, and hence 'scarce'. But regardless of a resources' innate abundance, maintaining high prices requires restriction.

Diamonds are a good example. Sure, they are rare. But as my colleague D.T. Cochrane observed in his seminal PhD thesis, diamonds are not rare enough to suit the diamond business. That's why De Beers (a diamond cartel) spent years buying up diamonds to purposefully keep them off the market. Like all savvy businesses, De Beers knew that enforced scarcity (aka sabotage) was the key to high prices.

Looking at capitalist society, Nitzan and Bichler argue that this enforced scarcity tends to come in waves, largely because it is unstable. For instance, if I bolster prices by restricting access to my property, the risk is that my competitor will undercut me. Conversely, if I undercut my competitor, the risk is that they will respond by cutting their prices in turn, resulting in a price-race to the bottom.

Neoclassical economists look at these dynamics and conclude that they will lead to market equilibrium. But that's because economists suppose that businesses won't coordinate. In the real world, though, businesses coordinate all the time. It's called herd behavior. If everyone else is cutting prices and selling more stuff, I'd better do the same. And if the herd decides to restrict supply and hike prices, I'd best join in. The result will be an oscillation between periods of economic boom with low inflation, and periods of economic bust with high inflation.

As it turns out, this is exactly what happens in the real world. Across countries, economic growth (as measured by energy consumption) tends to be high when inflation is low (and vice versa).

## **WAR**

War is a good example. For mainstream economists, war is simply not part of their theory. But for Nitzan and Bichler, war is the most extreme form of sabotage, frequently associated with price gouging and profiteering. In particular,

the (differential) profitability of oil companies seems to be tightly related to war in the Middle East.

Fix (2023) The Cause of Stagflation

## 5.2 There is no Scarcity

*Hickel*

When we look at the world in terms of real resources and energy (i.e., the stuff of provisioning), it becomes clear that there is no scarcity at all. The problem isn't that there's not enough, the problem, again, is that it is maldistributed. A huge chunk of global commodity production is totally irrelevant to human needs and well-being. Consider all the resources and energy that are mobilized for the sake of fast fashion, throwaway gadgets, single-use stadiums, SUVs, bottled water, cruise ships and the military-industrial complex. Consider the scale of needless consumption that is stimulated by manipulative advertising schemes, or enforced by planned obsolescence. Consider the quantity of private cars that people have been forced to buy because the fossil fuel industry and automobile manufactures have lobbied so aggressively against public transportation. Consider that the beef industry alone uses nearly 60% of the world's agricultural land, to produce only 2% of global calories.

There is no scarcity. Rather, the world's resources and energy are appropriated (disproportionately from the global South) in order to service the interests of capital and affluent consumers (disproportionately in the global North). We can state it more clearly: our economic system is not designed to meet human needs; it is designed to facilitate capital accumulation. And in order to do so, it imposes brutal scarcity on the majority of people, and cheapens human and nonhuman life. It is irrational to believe that simply "growing" such an economy, in aggregate, will somehow magically achieve the social outcomes we want.

Hickel

## 5.3 How There's More to Economics Than the Science of Scarcity

*Gruen*

One way economists describe their discipline to themselves has proven beguilingly seductive since it was codified by Lionel Robbins 90 years ago — that economics is the science of scarcity and that it is, therefore, paradigmatically about trade-offs.

This approach has become a kind of counterfeit metaphysics — a means by which practice becomes increasingly thoughtless and alienated from economic reality whilst practitioners affect rigor and insightfulness.

### Trade-offs As a Paradigm

The reason for the tradeoff relationship between equality and efficiency is the empty one that *equality is not efficiency*.

This structuring of entire bodies of thought around the empty observation that one thing is not another thing is replicated endlessly.

Humans' extraordinary and unique capacity for shared intentionality is the foundation of our astounding productivity. The most fundamental means by which this is done is via what I have called generative orders — language and culture being preeminent examples, though markets and money are others. Within these generative orders, our cognition of the world, our intentions, and our mutual expectations of each other are entangled. This foundation enables us to build other special-purpose institutions.

My point has simply been to show one theoretical framing of the relationship between efficiency and equality that proceeds from careful, critical observation of and abstraction from reality. If this is well-judged, our understanding of reality improves as do our prospects of improving it. The textbook approach couldn't be more different. Turns out that it is metaphysical fairy-floss. The “efficiency-equality” trade-off exists as a particular case of the general one that if you wish to achieve one thing, doing something else could get in your way.

Gruen (2022) How There's More to Economics Than the Science of Scarcity

## 5.4 The Case against Civilization

### *Lanchester*

John Maynard Keynes's famous 1930 essay “The Economic Possibilities for Our Grandchildren.” Keynes speculated that if the world continued to get richer we would naturally end up enjoying a high standard of living while doing much less work. He thought that “the economic problem” of having enough to live on would be solved, and “the struggle for subsistence” would be over:

When the accumulation of wealth is no longer of high social importance, there will be great changes in the code of morals. We shall be able to rid ourselves of many of the pseudo-moral principles which have hag-ridden us for two hundred years, by which we have exalted some of the most distasteful of human qualities into the position of the highest virtues. We shall be able to afford to dare to assess the money-motive at its true value. The love of money as a possession—as distinguished from the love of money as a means to the enjoyments and realities of life—will be recognized for what it is, a somewhat disgusting morbidity, one of those semi-criminal, semi-pathological propensities which one hands over with a shudder to the specialists in mental disease.

The world has indeed got richer, but any such shift in morals and values is hard to detect. Money and the value system around its acquisition are fully intact. Greed is still good.

The study of hunter-gatherers, who live for the day and do not accumulate surpluses, shows that humanity can live more or less as Keynes suggests. It's just that we're choosing not to. A key to that lost or forsaken ability, Suzman suggests, lies in the ferocious egalitarianism of hunter-gatherers. For example, the most valuable thing a hunter can do is come back with meat. Unlike gathered plants, whose proceeds are "not subject to any strict conventions on sharing," hunted meat is very carefully distributed according to protocol, and the people who eat the meat that is given to them go to great trouble to be rude about it. This ritual is called "insulting the meat," and it is designed to make sure the hunter doesn't get above himself and start thinking that he's better than anyone else. "When a young man kills much meat," a Bushman told the anthropologist Richard B. Lee, "he comes to think of himself as a chief or a big man, and he thinks of the rest of us as his servants or inferiors. . . . We can't accept this." The insults are designed to "cool his heart and make him gentle." For these hunter-gatherers, Suzman writes, "the sum of individual self-interest and the jealousy that policed it was a fiercely egalitarian society where profitable exchange, hierarchy, and significant material inequality were not tolerated."

This egalitarian impulse, Suzman suggests, is central to the hunter-gatherer's ability to live a life that is, on its own terms, affluent, but without abundance, without excess, and without competitive acquisition. The secret ingredient seems to be the positive harnessing of the general human impulse to envy. As he says, "If this kind of egalitarianism is a precondition for us to embrace a post-labor world, then I suspect it may prove a very hard nut to crack." There's a lot that we could learn from the oldest extant branch of humanity, but that doesn't mean we're going to put the knowledge into effect. A socially positive use of envy—now, that would be a technology almost as useful as fire.

Lanchester (2017) The Case against Civilization



# 6

## Crowding Out

### 6.1 Crowding In

*Dayen*

The remarkable changes in manufacturing construction over the past year, since the passage of two key Biden administration industrial-policy laws, is rapidly putting to rest a concept that has been embedded into the old understanding of the economy.

The concept is called “crowd-out,” and it asserts that increases in government involvement in a business sector lead to reductions in private spending in that sector. For decades in Washington, this was not just an economic theory but something of an iron law. The Penn Wharton Budget Model, which is heavily influential in Washington, maintains that any government investment will reduce private capital investment. The model continually rated Biden administration policies that directed public spending as reducing GDP and private productive capital.

Even government economic modelers regard government investment as wasteful by definition. As the Prospect noted in its special issue on economic modeling, the Congressional Budget Office explicitly assumes that public-sector investments are half as productive as investments in the private sector. If a private-sector investment returns 10 percent on an annual basis, public spending of the exact same amount is supposed to return 5 percent.

This was never a particularly robust theory. It’s rooted in biases about government waste and private-sector efficiency, and it neglects the perfectly reasonable concept that private businesses, seeing the interest from public-sector investment in a particular sector, will crowd into it, if only to earn some of the spoils of all that public money.

We are nearly a year into the passage of the Inflation Reduction Act, and we have enough evidence to render this theory, which created disadvantages for policymakers trying to direct public investment, as essentially wrong.

As the Treasury Department has pointed out, total manufacturing plant construction has doubled, and real spending on computer, electronics, and electrical manufacturing, which through CHIPS and the IRA is one of the most targeted areas for public investment, has almost quadrupled in a year, adjusted for the increase in construction costs.

Manufacturing construction spending, as Council of Economic Advisers member Heather Boushey recently pointed out, is at a six-decade high.

Under the crowd-out theory, policies like the IRA and CHIPS are supposed to shrivel up private investment, because there is a fixed pool of capital and any government use of it leaves less for others. But yesterday, White House spokesperson Andrew Bates stated that \$500 billion in private-sector investment has been created by the slate of industrial-policy bills, with most of that showing up today in plant fabrication. Analyst Jack Conness puts the number lower, at \$227 billion, but that's still quite substantial for such a short time frame.

The Treasury report notes that real overall nonresidential construction (which doesn't just include manufacturing) has gone up by 15 percent from November 2021 to April 2023. "Real public spending, which increased by 7 percent, did not crowd out real private spending, which increased by nearly 20 percent," the report states. Treasury saw the same dynamic in infrastructure construction, where public spending is up over 20 percent but real private spending has still kept up, up around 14 percent. As Treasury puts it: "Again, the legislation increased public spending but has not crowded out private spending."

This is happening at a time when interest rates are increasing due to the Federal Reserve's inflation-fighting, and at a time when working from home is depressing commercial real estate. Under classical analysis, that should be enough to depress private investment.

The Biden administration bought into crowding in from the beginning. They're being proven prescient. The public investments are leveraging private money in a host of contexts. Public dollars are attracting private dollars, not displacing them.

Not everyone agrees with this analysis if you extend it out across the entire economy. Jason Furman, former Obama administration official and economics professor at Harvard, notes that overall private fixed investment is down for three straight quarters and below trend from before the pandemic by 2 percent. He doesn't see that as an argument against the policies. "I support the policies. But I did not expect them to net add to GDP or jobs, at least on a one- or two-year horizon, and I don't believe there is much or any evidence they have," Furman said. "I cannot think of a better example of crowd-out in action than the current macroeconomic experience." Of course, that is a macroeconomic outlook,

and looking at the aggregate commingles with the shooting up of interest rates.

Dayen (2023) Death of an Economic Theory



# 7

## Rationing

### *Climate Change Economics*

Curbing consumption can be done either through rationing or draconian taxation. Both are feasible technically although their political acceptability may not be the same.

If one were to use rationing, one could introduce physical targets: there will be only  $x$  liters of gas per car annually and no family will be allowed to have more than two cars; or  $y$  kilograms of meat per person per month; or  $z$  kilowatts of electricity per household per month (or rolling blackouts). Clearly, there may be a black market for gas or meat, but the overall limits will be observed simply because they are given by the total availability of coupons. Some people might think that rationing is extraordinary, and I agree with them. But it has been done in a number of countries under wartime, and at times even during peacetime conditions, and it has worked. If indeed we face an emergency of such “terminal” proportions as the advocates of climate change claim, I do not see any reason why we should not resort to extreme measures.

Milanovic



# 8

## Taxing

### *Climate Change Economics*

But another approach (draconian taxation) is possible too. Instead of limiting physical quantities of goods and services that fulfill criteria (a) and (b) we would impose extremely heavy taxes on them. There is always a tax rate that would drive consumption of a good down to the level that we have in mind. It is here that I think we can use—again if we believe that the climate emergency is so dire—the lessons of covid.

Economic dislocations would be huge. It is not only the question of the entire upper middle class and the rich in advanced countries (and, as we have seen, elsewhere) losing significant parts of their real income as prices of most “staple” commodities (for them) increase by two, three or ten times; the dislocation will affect large sectors of the economy.

The effects will trickle down: unemployment will increase, incomes will plummet, the West will record the largest real income decline since the Great Depression.

However if such policies were steadfastly pursued for a decade or two, not only would emissions plummet too (as they have done in 2020), but our behavior and ultimately the economy would adjust. People will find jobs in different activities that will remain untaxed and thus relatively cheaper and whose demand will go up. Revenues collected from taxing “bad” activities may be used to subsidize “good” activities or retrain people who have lost their jobs.

This is not magical thinking. These are policies that, with intergovernmental cooperation, knowledge of economics, data on global inequality, and the experience of covid, could be implemented.

Milanovic

## 8.1 Tax Shifting

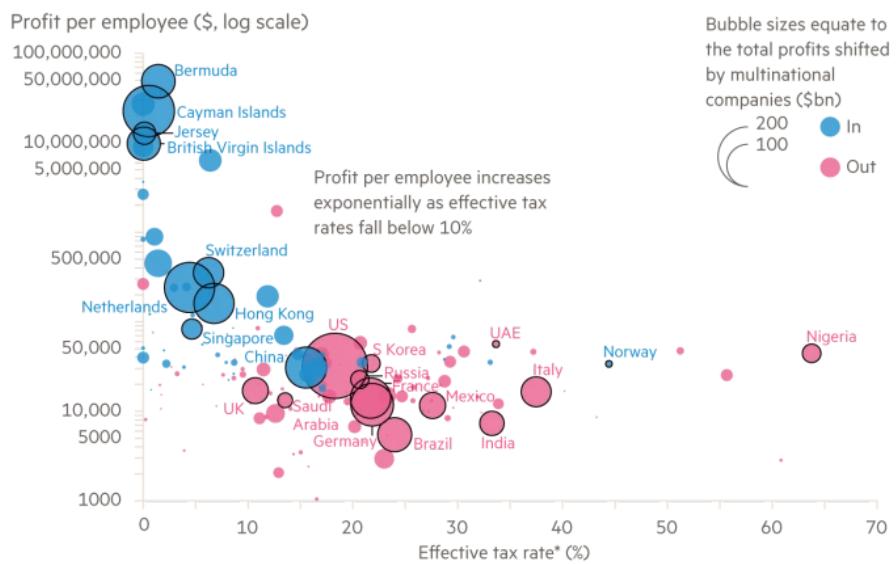
*FT*

US president Joe Biden's plan to reform global corporate taxation will do little to help the countries most in need of more tax revenues, say developing economies which are lobbying for greater power over multinationals.

Washington's ambitious proposal would tax 100 of the world's largest companies on profits made in countries where they have little or no physical presence but derive substantial revenues and would introduce a global minimum tax rate, in a bid to end what it dubbed a "race to the bottom" where businesses channel profits through low-tax jurisdictions.

But companies would pay most of their taxes in the country where they are headquartered, even if their profits — and in many cases the labour and raw materials used — are sourced from developing countries, senior diplomats and lobby groups told the Financial Times.

### Higher profits booked in lower tax jurisdictions



US data refers to 2017; all other data is for 2016 \*For profit-making multinational companies only

Graphic by: Chelsea Bruce-Lockhart based on work by Garcia-Bernardo, J. and Janský, P. (2021) Profit Shifting of Multinational Corporations Worldwide, ICTD Working Paper 119, Brighton, Institute of Development Studies  
© FT

They are also concerned that many developing countries are not participating in the negotiations over the proposal at the OECD and fear the eventual agreement is unlikely to reflect their interests.

*FT*

## 8.2 Georgism - Land Value Tax

*Doucet*

Georgism is a school of political economy that is really upset about, among other things, the Rent Being Too Damn High. It seeks to liberate labor and capital alike from those who gatekeep access to scarce “non-produced assets,” such as land and natural resources, while still affirming the virtues of hard work and free enterprise. George uses the term “Land” to mean not just regular land, but everything that is external to human beings and the things they produce—nature itself, really.

Georgism’s chief insight is to move economic thinking from a two-factor model (Labor and Capital) to a three-factor model (Land, Labor, and Capital). Its chief (but not only) policy prescription is the Land Value Tax (LVT), which taxes real estate at as close to 100% of its “land rent” as possible (the amount of rent due to the land alone apart from “improvements” such as buildings). In actual practice, most Georgists seem to think 85% is a reasonable figure to target.

Lars Doucet (2022) Does Georgism Work? Part 1: Is Land Really A Big Deal?

Noah Smith (2022) How to sell Georgism to the middle class



# 9

# Nudging

## 9.1 Randomness

### *Memo*

There is strong evidence from the lab that people have misperceptions about what randomness looks like. When a person is asked to generate a series that approximates the flipping of a coin, they will alternate between heads and tails too often, and balance the frequencies of heads and tails over too short a sequence. When people are asked to judge which of two different sequences of coin flips are more likely, they tend to pick sequences with more alternation, despite their probability being the same.

What happens we look for a failure to perceive randomness in the outside world? Out of the lab?

When people watch basketball, they often see a hot hand. They will describe players as “hot” and “in form”. Their belief is that the person who has just hit a shot or a series of shots is more likely to hit their next one.

But is this belief in the “hot hand” a rational belief? Or is the hot hand an illusion, whereby, just like they do with coins, they are seeing streaks in what is actually randomness?

In a famous examination of this question, Thomas Gilovich, Robert Vallone and Amos Tversky took shot data from a variety of sources, including the Philadelphia 76ers and Boston Celtics, and examined it for evidence of a hot hand.

What did they find? The hot hand was an illusion. As Daniel Kahneman wrote in Thinking, Fast and Slow when describing this research:

The hot hand is entirely in the eye of the beholders, who are consistently too quick to perceive order and causality in randomness. The

hot hand is a massive and widespread cognitive illusion.

Possibly even more interesting was the reaction to the findings from those in the sporting world. Despite the analysis, many sports figures denied that it could be true. Red Auerbach, who coached the Boston Celtics to nine NBA championships, said “Who is this guy? So he makes a study. I couldn’t care less.”

This provides another insight, about which Gilovich wrote:

The story of our research on the hot hand is only partly about the misperception of random events. It is also about how tenaciously people cling to their beliefs even in the face of hostile evidence.

So, this isn’t just about the misperception of the hot hand, but also about the failure of people to see their error when presented with evidence about it.

Let’s delve into how Gilovich, Vallone and Tversky showed the absence of a hot hand.

Imagine a person who took ten shots in a basketball game. A ball is a hit, an X is a miss.

What would count as evidence of a hot hand? What we can do is look at shots following a previous hit. For instance, in this sequence of shots there are 6 occasions where we have a shot following a previous hit. Five of those shots, such as the seventh here, are followed by another hit.

We can then compare their normal shooting percentage with the proportion of shots they hit if the shot immediately before was a hit. If their hit rate after a hit is higher than their normal shot probability, then we might say they get a hot hand.

This is effectively how Gilovich, Vallone and Tversky examined the hot hand in coming to their conclusion that it doesn’t exist. They also looked at whether there was a hit or miss after longer streaks of hits or misses, but this captures the basic methodology. It seems sensible.

But let me take a detour that involves flipping a coin.

Suppose you flip a coin three times. Here are the eight possible sequences of heads and tails. Each sequence has an equal probability of occurring. What if I asked you: if you were to flip a coin three times, and there is a heads followed by another flip in that sequence, what is the expected probability that another heads will follow that heads?

Here is the proportion of heads following a previous flip of heads for each sequence. In the first row of the table, the first flip is a head. That first flip is followed by another head. After the second flip, a head, we also have a head. There is no flip after the third head. 100% of the heads in that sequence followed by another flip are followed by a head.

In the second row of the table, 50% of the heads are followed by a head. In the last two rows, there are no heads followed by another flip.

Now, back to our question: if you were to flip a coin three times, and there is a heads followed by another flip in that sequence, what is the expected probability that another heads will follow that heads? It turns out it is 42%, which I can get by averaging those proportions.

8 possible combinations of heads and tails across three flips

Flips	$p(Ht+1 Ht)$
HHH	100%
HHT	50%
HTH	0%
HTT	0%
THH	100%
THT	0%
TTH	—
TTT	—
Exp.val	42%

That doesn't seem right. If we count across all the sequences, we see that there are 8 flips of heads that are followed by another flip. Of the subsequent flips, 4 are heads and 4 are tails, spot on the 50% you expect.

What is going on in that second column? By looking at these short sequences, we are introducing a bias. The cases of heads following heads tend to cluster together, such as in the first sequence which has two cases of a heads following a heads. Yet the sequence THT, which has only one shot occurring after a heads, is equally likely to occur. The reason a tails appears more likely to follow a heads is because of this bias whereby the streaks tend to cluster together. The expected value I get when taking a series of three flips is 42%, when in fact the actual probability of a heads following a heads is 50%. As the sequence of flips gets longer, the size of the bias is reduced, although it is increased if we examine longer streaks, such as the probability of a heads after three previous heads.

Why have I bothered with this counterintuitive story about coin flipping?

Because this bias is present in the methodology of the papers that purportedly demonstrated that there was no hot hand in basketball. Because of this bias, the proportion of hits following a hit or sequence of hits is biased downwards. Like our calculation using coins, the expected proportion of hits following a hit in a sequence is lower than the actual probability of hitting a shot.

Conversely the hot hand pushes the probability of hitting a shot after a previous hit up. Together, the downward bias and the hot hand roughly cancelled each

other out, leading to the conclusion by researchers that each shot is independent of the last.

The result is, that when you correct for the bias, you can see that there actually is a hot hand in basketball.

When Miller and Sanjurjo crunched the numbers for one of the studies in the Gilovich and friends paper, they found that the probability of hitting a shot following a sequence of three previous hits is 13 percentage points higher than after a sequence of three misses. There truly is a hot hand. If Red Auerbach had coached as though there were no hot hand, what would his record have looked like?

I should say, this point does not debunk the earlier point about people misperceiving randomness. The lab evidence is strong. People tend to see the hot hand when people flip coins. It is possible that people overestimate the strength of the hot hand in the wild, although that is hard to show. But the hot hand exists.

Let's turn back to one of the quotes I showed earlier.

The story of our research on the hot hand is only partly about the misperception of random events. It is also about how tenaciously people cling to their beliefs even in the face of hostile evidence.

The researchers expanded the original hot hand research from a story about people misperceiving randomness, to one of them continuing to do so even when presented with evidence that they were making an error.

But, as we can now see, their belief in the hot hand was not an error. The punters in the stands were right. Their accumulated experience had given them the answer. The researchers were wrong. Rather than the researchers asking whether they themselves were making an error when people refused to believe their research, they double downed and identified a second failure of human reasoning. The blunt dismissal of people's beliefs led behavioural scientists to hold an untrue belief for over thirty years

This is a persistent characteristic of much applied behavioural science. It was an error I made many times when I first came to the discipline. We spend too little time questioning our understanding of the decisions or observations other people make. If we believe they are in error, we should first question whether the error is ours.

Jason Collins on Nudgestock 2020

# 10

## Discounting

### *Ecological Fallacy*

Solow (1974) like many other defenders of standard economics, resorts to an old paper of Harold Hotelling (1931) to convince us that neoclassical economists have not ignored the problem of intergenerational allocation. But he overlooks the important point that Hotelling's analysis referred to some known amount of resources owned by an individual who discount future royalties. Of course, Hotelling was completely correct about the last point. Any individual must certainly discount the future for the indisputable reason that, being mortal, he stands a chance of dying any day. But a nation, let alone the whole of mankind, cannot behave on the idea that it might die tomorrow. They behave as if they were immortal and, hence, value future welfare situations without discounting.

Georgescu-Roegen (1986) The Entropy Law and the Economic Process in Retrospect (pdf)



# 11

## Risking

### 11.1 Uncertainty

*Abstract*

Uncertainty is critical to questions about climate change policy. Recently developed recursive integrated assessment models have become the primary tool for studying and quantifying the policy implications of uncertainty. The first wave of recursive models has made valuable, pioneering efforts at analyzing disparate sources of uncertainty. We decompose the channels through which uncertainty affects policy and quantify them in a recursive extension of a benchmark integrated assessment model. We argue that frontier numerical methods will enable the next generation of recursive models to better capture the information structure of climate change and to thereby ask new types of questions about climate change policy

Lemoine (2016) Uncertainty Recursive IAM

Cubic damage triple the risk premium

Traeger (ref.Gernot Wagner)

### 11.2 Pooling Risk

- A) We each put \$100 a month in our individual piggy banks to cover potential medical costs one day.
- B) We all chip in \$100 a month, for anyone who needs medical care this month.

Same costs for everyone, totally different risks, totally different societies.

Pooling risk reduces/eliminates volatility. Of course it also introduces adverse selection and moral hazard.

(Peters/Pienar (Twitter))

# 12

## Assumptions

The assumptions are a tall order, and sometimes one will hold but not the other. But that's the world we live in.



# 13

## Cooperation

### *Handley Abstract*

A fundamental puzzle of human evolution is how we evolved to cooperate with genetically unrelated strangers in transient interactions. Group-level selection on culturally differentiated populations is one proposed explanation. We evaluate a central untested prediction of Cultural Group Selection theory, by assessing whether readiness to cooperate between individuals from different groups corresponds to the degree of cultural similarity between those groups. We documented the normative beliefs and cooperative dispositions of 759 individuals spanning nine clans nested within four pastoral ethnic groups of Kenya—the Turkana, Samburu, Rendille and Borana. We find that cooperation between groups is predicted by how culturally similar they are, suggesting that norms of cooperation in these societies have evolved under the influence of group-level selection on cultural variation. Such selection acting over human evolutionary history may explain why we cooperate readily with unrelated and unfamiliar individuals, and why humans' unprecedented cooperative flexibility is nevertheless culturally parochial.

We conclude that group-level selection on cultural variation has likely left a mark on the human cooperative psychology and continues to influence which social norms and institutions prevail in human societies.

Handley (2020) Human large-scale cooperation as a product of competition between cultural groups (pdf)



# 14

## Green Growth - Decoupling

Decoupling: *the end of the correlation between increased economic production and decreased environmental quality.*

The needed decoupling does not occur! Not GLOBAL, not FAST-ENOUGH, not LONG-ENOUGH

Vaden (abstract)

The idea of decoupling “environmental bads” from “economic goods” has been proposed as a path towards sustainability by organizations such as the OECD and UN. Scientific consensus reports on environmental impacts (e.g., greenhouse gas emissions) and resource use give an indication of the kind of decoupling needed for ecological sustainability: global, absolute, fast-enough and long-enough. This goal gives grounds for a categorisation of the different kinds of decoupling, with regard to their relevance. We conducted a survey of recent (1990–2019) research on decoupling on Web of Science and reviewed the results in the research according to the categorisation. The reviewed 179 articles contain evidence of absolute impact decoupling, especially between CO<sub>2</sub> (and SOX) emissions and evidence on geographically limited (national level) cases of absolute decoupling of land and blue water use from GDP, but not of economy-wide resource decoupling, neither on national nor international scales. Evidence of the needed absolute global fast-enough decoupling is missing.

Vaden 2020 Decoupling for sustainability (pdf)

### 14.1 Rebound (Jevons Paradox)

*Lange*

Literature on the rebound phenomenon has grown significantly over the last decade. However, the field is characterized by diverse and ambiguous definitions and by substantial discrepancies in empirical estimates and policy proposals. As a result, cumulative knowledge production is difficult. To address these issues, this article develops a novel typology. Based on a critical review of existing classifications, the typology introduces an important differentiation between the rebound mechanisms, which generate changes in energy consumption, and the rebound effects, which describe the size of such changes. Both rebound mechanisms and rebound effects can be analytically related to four economic levels – micro, meso, macro and global – and two time frames – short run and long run. The typology is populated with eighteen rebound mechanisms from the literature. This contribution is the first that transparently describes its criteria and methodology for developing a rebound typology and that gives clear definitions of all terms involved. The resulting rebound typology aims to establish common conceptual ground for future research on the rebound phenomenon and for developing rebound mitigation policies.

Lange (2021) Jevons Unravelled (pdf)

## 14.2 Artefact?

*Fix*

I investigate the hypothesis that the evidence for decoupling is a methodological artifact that arises from the use of monetary value to measure output. As demonstrated below, when the price of energy is used to deflate nominal GDP (rather than the GDP deflator), evidence for decoupling almost entirely disappears. I hypothesize that monetary value, rather than represent the quantity of output, functions as a feedback device for controlling the flow of resources. Further investigation suggests that this feedback is not random; rather, it is fundamentally related to the biophysical labor productivity of the mining sector.

I should be clear that my argument is not that statistical agencies have somehow made a ‘mistake’ in their calculation of output. To the contrary, I hypothesize that the notion of ‘output’ (and therefore, ‘decoupling’) is a conceptual artifact that results from the misapplication of linear thinking to a non-linear system.

If we think in biophysical terms, the economy is a complex, non-equilibrium system that uses biophysical flows to sustain itself. The only linear output of such a system is its waste.

The economy has no output; rather, it has a resource *throughput*.

Our mistake comes when we label certain internal processes as ‘output’: this gives the illusion of linearity where none actually exists. All of the outputs of the myriad of internal processes within the economy are destined to become inputs to other processes. Thus the internal workings of the economy are inherently circular, meaning the notion of a linear output is difficult to justify.

The notion of ‘output’ (at the level of the entire economy) is a conceptual artifact that arises from the focus on monetary value. That is, we conflate a *sale* (a monetized exchange) with the creation of an *output*. By aggregating sales (and calling this output), we create the illusion that the economy is a linear process.

If we drop the assumption that a sale represents an output, the illusion of linearity disappears: all internal processes become circular and the very notion of output (and hence, decoupling) becomes untenable. At the level of the entire economy, the only linear flow is the stream of biophysical throughput, which ends in the output of waste.

Rather than treat monetary value as an output, I offer the alternative hypothesis that monetary value functions as a feedback device for controlling the flow of biophysical throughput. We can frame this paradigm shift by asking the following question: how does the economy ‘know’ to consume more resources? In the animal kingdom, the stimulus to consume resources comes from sensory feedback: animals ‘know’ to consume resources because they ‘feel’ hungry. What is the corollary of this sensory feedback in the economic system? My hypothesis is that monetary value functions as such a feedback mechanism, stimulating or stifling the flow of resources.

**Prices constitute a feedback system that regulates the flow of resources through the economy.**

By thinking in this way, however, we place a heavy emphasis on the price of energy (the price of electricity in this case). Thus, we must ask – where does the price of energy come from? It is rather disconcerting to think that random market fluctuations might cause a change in the price of energy that somehow leads to a change in the entire economy’s ability to consume useful work. This would lead us straight back to the neoclassical view that the market is the ultimate arbiter of the economy. The task of biophysical economics should be to show that energy prices are, in fact, not random at all. Instead, they are a reflection of a broader biophysical reality.

The nominal price of fossil fuel is a simple function of two variables: nominal GDP and the biophysical productivity of the mining sector.

The evidence for decoupling almost completely disappears when nominal GDP is deflated by the price of electricity, rather than by the GDP deflator. This implies that evidence for decoupling is a methodological artifact – a result of the decision to measure output in terms of monetary value. The evidence presented here supports the alternative hypothesis that monetary value functions as a feedback device for controlling biophysical throughput.

When moving from neoclassical theory to the real world, our ability to measure decoupling is undermined by serious (and I would argue, insurmountable) epistemological difficulties. The conventional measure of decoupling – the energy intensity of GDP – fails all three conditions for an effective efficiency metric.

Thus, any evidence for decoupling that is provided by this metric should be met with appropriate scepticism. As such, I argue that the neoclassical notion of decoupling is untestable.

Fix (2015) Biophysical Growth Theory (pdf)

### 14.3 The Green Growth Delusion

*Ketcham*

“Green Growth” is the idea that the organizing principle of our civilization — endless growth of economies and populations — can be decarbonized swiftly in a way that will involve no material disruption.

In the annals of industrial civilization, the Green New Deal counts as one of the more ambitious projects. Its scale is vast, promising to reform every aspect of how we power our machines, light our homes and fuel our cars. At this late hour of ecological and climate crisis, the Green New Deal is also *an act of desperation*.

The consensus on the need for scaling up renewable energy is rarely disturbed by a disquieting possibility: What if techno-industrial society as currently conceived — based on ever-increasing GDP, global trade and travel, and complex global production and distribution chains designed to satisfy the rich world’s unquenchable appetite for bigger, faster, more of everything — what if that *simply cannot function without energy-dense fossil fuels?*

Ketcham (2023) The Green Growth Delusion

# 15

## Ergodicity

Almost everyone responded to my question about the rationality of expected utility by talking about rationality and utility. But it's the "expected" part that is the problem. Why would I only care about the mean? (Russel Roberts (Tweet))

EE doesn't necessarily reject EUT; it offers one interpretation of EUT which is particularly useful and makes strong prediction. You can think of EE as an axiomatization of 19th-century EUT, an alternative axiomatization to von Neumann's.

### 15.1 Almost surely

Over the very long-term, an individual will tend to get around half heads and half tails. As the number of flips goes to infinite, the proportion of heads or tails "almost surely" converges to 0.5.

This means that each person will tend to get a 50% increase half the time (or 1.5 times the initial wealth), and a 40% decrease half the time (60% of the initial wealth). A bit of maths and the time average growth in wealth for an individual is  $(1.5 \times 0.6)0.5 \sim 0.95$ , or approximately a 5% decline in wealth each period. Every individual's wealth will tend to decay at that rate.

To get an intuition for this, a long run of equal numbers of heads and tails is equivalent to flipping a head and a tail every two periods. Suppose that is exactly what you did – flipped a heads and then flipped a tail. Your wealth would increase to \$150 in the first round (\$100 $\times 1.5$ ), and then decline to \$90 in the second (\$150 $\times 0.6$ ). You get the same result if you change the order. Effectively, you are losing 10% (or getting only  $1.5 \times 0.6 = 0.9$ ) of your money every two periods.

A system where the time average converges to the ensemble average (our population mean) is known as an ergodic system. The system of gambles above is non-ergodic as the time average and the ensemble average diverge. And given we cannot individually experience the ensemble average, we should not be misled by it. The focus on ensemble averages, as is typically done in economics, can be misleading if the system is non-ergodic.

While the population as an aggregate experiences outcomes reflecting the positive expected value of the bet, the typical person does not. The increase in wealth across the aggregate population is only due to the extreme wealth of a few lucky people.

## 15.2 Kelly Criterion

The only way for someone to maintain their wealth would be to bet a smaller portion of their wealth, or to diversify their wealth across multiple bets.

The Kelly criterion gives the bet size that would maximise the geometric growth rate in wealth.

$$f = \frac{bp - q}{b} = \frac{p(b + 1) - 1}{b}$$

f is the fraction of the current bankroll to wager

b is the net odds received on the wager (i.e. you receive \$b back on top of the \$1 wagered for the bet)

p is the probability of winning

q is the probability of losing (1-p)

The Kelly criterion is effectively maximising the expected log utility of the bet through setting the size of the bet. The Kelly criterion will result in someone wanting to take a share of any bet with positive expected value.

An alternative more general formula for the Kelly criterion that can be used for investment decisions is:

$$f = \frac{p}{a} - \frac{q}{b}$$

f is the fraction of the current bankroll to invest

b is the value by which your investment increases (i.e. you receive \$b back on top of each \$1 you invested)

a is the value by which your investment decreases if you lose (the first formula above assumes a=1)

p is the probability of winning

q is the probability of losing ( $1-p$ )

(More on Evolving Preferences)

A Primer (Jason Collins)

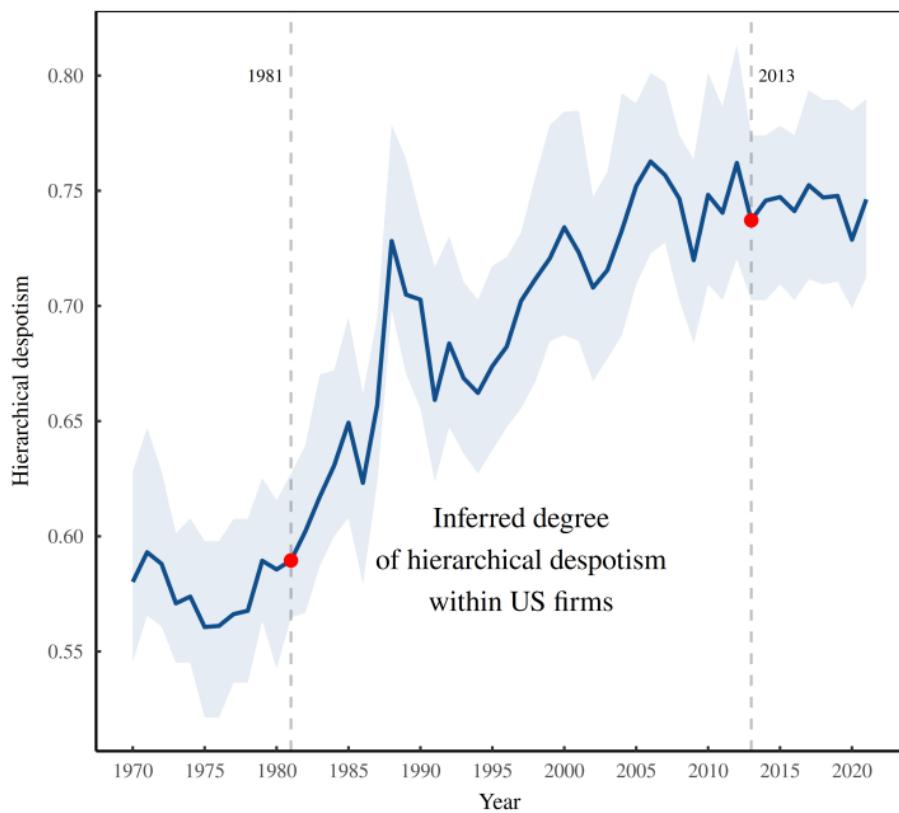


# 16

## Firm and Hierarchy

*Blair Fix*

The recent rise in US income inequality is being driven by a redistribution of income within firms. In short, I believe that corporate hierarchies have become more despotic. Corporate elites have taken income that once went to the bottom of the hierarchy and redirected it to the top.



Blair Fix (2022) Firming Up Hierarchy

# 17

## Economic Planning

*Krahé*

Planning—the setting of economic priorities via non-market means—must be distinguished from a command economy. A command economy, in contrast to planning, is one particular way of injecting plans into the division of labor, namely with command and control measures.<sup>16</sup> As France, Sweden, Japan and other mixed economies demonstrated in the wake of WWII, there are many other ways to introduce plans into an economy: from direct public investment, via taxes and subsidies, to banking regulation, credit guidance, and foreign exchange allocation, to name but a few.<sup>17</sup> The advantage of planning is its ability to focus resources, create and channel energies, and reduce uncertainty. Pierre Massé, former General Commissioner of Planning in France, called it *l'anti-hasard*.

When the Monnet Plan was introduced in France in 1946, its goal was to reach the nation's pre-war production level by 1948, and then surpass it by 50 percent by 1950. Under the slogan "modernization or decadence," it prioritized investment over consumption, allocated scarce US dollar reserves to their most important uses, and channeled resources into sectors identified as crucial for restarting and growing France's economy. "Bottlenecks were broken during the early days,"<sup>19</sup> and while not all targets were reached, the plan provided "discipline, direction, vision, confidence, and hope."<sup>20</sup>

The Monnet Plan navigated a situation not entirely unlike our own. In the postwar moment, both domestic funds and foreign exchange were scarce. Since dollars and francs were not freely exchangeable at the time, they had to be budgeted for separately, acting as a double budget constraint. Today, we again face a double budget constraint: economic and ecological.

The Monnet Plan navigated this tightly binding double constraint through prioritization. Instead of attempting to plan for all sectors, the Plan focused on

six strategic industries: electricity, steel, coal mining, transport, cement, and agricultural machinery.<sup>21</sup> The lesson for today is obvious. Focus on the five sectors driving climate change, land use, and biodiversity loss today: energy, transport, industry,<sup>22</sup> housing, and agriculture.

The process of sectoral planning was led by a core staff in the Commissariat général du Plan, numbering around 100. This core staff cooperated with a number of so-called modernization commissions, composed of representatives from the state, employers, and trade unions, which tackled either specific sectors or cross-cutting themes like finance or labor.

Krahé (2002) The Whole Field - Markets, planning, and coordinating the green transformation

# 18

## Welfare

The welfare state is the result of a defeat of worker demands for control over production and planning.



# 19

## Austrian

MMT and Austrian economics are mirror images. MMT wants soft money to redistribute wealth to middle class. Austrians want hard money to maintain value of middle class savings. Dominant capitals, in control of state, ignore both and switch between soft and hard to maintain power. (Ian Wright)

### 19.1 Where Austrians got it wrong

On Colin Drumm [https://twitter.com/drumm\\_colin/status/1468779685916012546](https://twitter.com/drumm_colin/status/1468779685916012546)

Thread Reader <https://threadreaderapp.com/thread/1441459276506021890.html>

Ethan Buchman 24 Sep, 24 tweets, 5 min read

Allow me to attempt a more nuanced story of where the Austrians actually did go “wrong” and how they wound up so vilified. I’m still learning the history and formulating my thoughts, but here’s a humble attempt:

1/ A good deal of original Austrian thought was incorporated into the mainstream. Though it had Austrian origins, it became no longer “Austrian” in spirit. The ideas were so good, they had to be appropriated.

2/ This included, of course, marginal utility theory itself (from Menger) as well as ideas like opportunity cost. And Bohm-Bawerk’s capital theory of interest rates (inter-temporal coordination) was taken up by Wicksell who in turn had a heavy influence on Keynes

3/ Mises and Hayek were also heavily influenced by Wicksell, expounding what would become known as the Austrian Business Cycle Theory (ABCT), the foundation for their opposition to govt monopoly on money

4/ Roughly speaking, this is where the Austrians went astray - in obsessing over money as a neutral, non-political veil over real exchange and production, they were largely in denial of actual history, important parts of theory, and even the real world itself!

5/ Neglect of history is partially due to the earlier war with the German Historical School, the so-called Methodenstreit. The Austrians were hell bent on a Praxeology/“Methodological Individualism” which afforded little role for historical circumstance in economic analysis

6/ This is probably the largest error they made. I’m sure the Methodenstreit was a good time, but the inability to incorporate the historical/anthropological record greatly weakened their ability to theorize. They began from an assumption that prior man was similar to modern man

7/ But this is manifestly not true. Cognition and social structures change markedly over time, and this has significant impact on economic reality and coordination. Two very interesting related points here:

8/ First, Weber, who was actually a member of the Historical School, had a major impact on defining Methodological Individualism, and had a huge influence on Mises!

9/ Second, Schumpeter, who would perhaps be the greatest economist produced out of the Austrian tradition (him and Mises were students together of Bohm-Bawerk) actually defected towards the Historical School. Arguably this enabled him to break free from ...

10/ Austrian constraints and develop a more complete theory and history of economics. Notably, his student Hyman Minsky, would get all the credit post 2008 for theories about the inherent instability of credit money, to the chagrin of Austrians everywhere.

11/ But Minsky’s Financial Instability Hypothesis wasn’t the ABCT. It was grounded in analysis of the actual web of liabilities produced by a financial system. While the Austrians wrote it all off as “bad”, Minsky sat down to analyze it and provide some constructive policy!

12/ Part of the failure of the Austrian imagination was to provide some meaningful alternative to abolishing fractional reserve banking in favour of pure commodity money. There are some inklings of the power of trade credit clearing in Mises’ TOMC, but it seemed to stop there

13/ Of course Hayek would eventually propose denationalized fiat, and a later tradition of Austrian inspired economists like ? and ? would bring this home through a theory and history of free banking - a stable fractional reserve based system

14/ Not to say Austrians were “wrong”, but there was an inherent sort of “arrested development” in their ideas. To continue the history, despite their bril-

liance, the Austrians took a beating in the 30s when Hayek tragically “lost” the debate to Keynes:

15/ After the second war, they turned their attention more to politics. Hayek of course founded an information theoretic approach to econ (prices as decentralized network of computation) which would have enormous influence. But increasingly “Austrian” would be less associated

16/ with the brilliant economic work of earlier years (so much of which was appropriated in the mainstream) and increasingly associated with a kind of “reactionary” and seemingly “far right” political philosophy

17/ In my own estimation this is at least a mischaracterization of Hayek’s agenda, though I can’t help but agree that his work suffered from a kind of arrested development. And the founding of the Mont Pelerin Society did not help much.

18/ The Austrian tradition had something of a boom in the 80s when it was vehemently taken up by Reagan and Thatcher, but in a way that was highly discretionary/selective. The existence of their large governments and their alliance with the banker class betrayed the essence of

19/ the Austrian teachings! It’s no wonder this would give rise to an abominable neoliberalism which I can only imagine caused more than a few of the Austrian greats to roll in their grave. Personally, I can’t help but feel there was a certain naiveté

20/ in their political philosophy, perhaps a result of their dismissal of the historical school and denial of the role of State, which ultimately led to their philosophy becoming a weapon of what were perhaps some of the most destructive “peacetime” regimes the West has seen

21/ Of course the Rothbardians would take the political philosophy much farther, and would lead to something of a “split” within the Austrians, seeing Hayek as somehow lesser for affording a greater role for the state and realizing that money need not be based on real commodities

22/ But obviously Hayek was on the right track, distracted though he may have been by the political climate. Arguably, his line of thought matured quite substantially in both the Free Banking school and in the Bloomington School of the Ostroms.

23/ And this is where many of us (in crypto, say) are picking up today. Recognizing the foundational brilliance of the Austrians but seeking to not make the same neoliberal mistakes by instead following the Austrians to their conclusion in the work of the Ostroms: local commons!

## 19.2 Austrian Fascism

*Tooke*

In 1930 when President Hoover began his last-ditch effort to rebuild the international order, starting with the London conference on naval arms control, fascist Italy, after Ramsay MacDonald's Labour government in Britain, was Washington's favored partner in Europe. When Mussolini's foreign minister, the charismatic ex-squadista Dino Grandi, met Hoover in 1931, the president is said to have assured his Italian guest that the vocal minority of antifascists in America should be ignored: "They do not exist for us Americans, and neither should they exist for you."

Mussolini's regime, in other words, was not per se an alien force, an "other" that was rejected from the existing international order. On the contrary it was understood, especially, in the 1920s as a force of order, offering a new set of solutions to the problem of capitalist governance and one which forward-thinking liberals and conservatives associated themselves.

And this opens a further disconcerting historical vista. In his elegant study Globalists Quinn Slobodian showed how the Austrian school of neoliberalism emerged after 1918 from the collapse of the Habsburg Empire. It promised to find a way of encasing the economy so that it would be immune to the unleashed politics of national democracy. It would have huge ramifications decades later because of the influence of the Austrian school on Mont Pelerin and the worldwide market revolution. What Mattei shows us, is that a view of economics as having key role in disciplining both state and society went far beyond the confines of the Austrian tradition. It was a basic element in the vision of (new) liberalism from World War I onwards and its influence extended well beyond the diminished crisis-ridden rump of the Habsburg Empire. What motivated it and formed the bridge to the fascists was its desire to restore control - if necessary by repressive means - over government finances, inflation, the workplace and the labour market. The risk otherwise was not Stalinist communism - that was still a far off threat - but a descent into anarchy of the type they saw being played out in civil war Russia.

[Tooze (2022) The centenary of Mussolini's "March on Rome" and the dilemmas of the liberal expert class. ](<https://adamtooze.substack.com/p/chartbook-166-19222022-the-centenary>)

### **Archipelago Capitalism**

Quinn Slobodian's illuminating discussion in Globalists of the relationship between neoliberal economics and the crisis of Empire. He traces the emergence of the original Austrian branch of neoliberalism and the founding of the Mont Pelerin society to the collapse of the Habsburg Empire in the aftermath of World War I. As he argues, Austrian economists of the 1920s saw the democratic nation-state as a threat to the free flow of resources that had been previously secured by Imperial power. A new political economy was required to encase the economy and insulate it from democratic national sovereignty.

As I show in the Foreign Policy piece, it is a logic that can be extended in interesting ways to the way in which offshore finance has found a home in the

remnants of the British empire in the Caribbean.

In *The Code of Capital* Katherina Pistor showed us how the English common law functions as one of the key systems worldwide for the encoding of capital. Much of the Caribbean and the wider region including, of course, the United States has inherited the English common law from the original moment of settler colonialism when the region was joined in an interconnected system of plantation slavery and long-range commerce.

The world of nation state economic policy, “(t)he New Deal, the European welfare state, decolonization, development and modernization projects in the Third World, and the Bretton Woods system” all of which were centered on nation-state-based and government-driven projects. The offshore world by contrast offered enclaves, special economic zones, havens, relaxed regulations and minimal oversight, flags of convenience, anonymous financial and banking institutions.

Toozé (2023) Archipelago Capitalism

### 19.3 Roundaboutness

*Thornton*

Economists understand very little about how technological progress occurs. — Alan Greenspan

Before we leave the topic of the problems and blessings of roundaboutness of production and the structure of production, it will be very useful to see a natural, concrete example of it in action. It then will become easier to understand the unnatural cases involving malinvestments and the skyscraper curse.

Making production processes more roundabout results in greater production in terms of the quantity produced and a lower cost on a per-unit basis. Entrepreneurs would not want to make production processes more roundabout unless they thought they would create more profits as a result. More roundabout production takes more time, more steps, and a more extensive division of labor. It also uses new technology.

Entrepreneurs do make mistakes, of course, but the only systematic errors they make are when they are fooled into rearranging production because of artificially low interest rates and easy credit conditions. When the central bank lowers its target interest rates it also makes credit conditions easier in that banks will make a larger volume of loans, which means they weaken their lending standards in order to facilitate the larger volume of loans.

A good example of a very direct production process, in contrast to a more roundabout one, is a farmer who goes to the barn, milks a cow, and then returns to the house and feeds the milk to his family.

An example of a more roundabout, although still very direct, production process

comes from my childhood. We lived on the edge of a small town. Just beyond our house were fields and barns. Dairy cattle would feed on the grass in the fields. Later they would return to the barns to be milked. The milk would then be transported a short distance — a couple miles — in a small tanker truck to one of three small dairies in my hometown. There the milk would be processed and packaged. Early the next morning a dairy man in a white suit would arrive at our house and place several quart-sized glass bottles of milk in an insulated dairy box outside of our back door and pick up any used bottles we had placed there. If we wanted an ice cream sundae, we had to go to the dairy during retail hours.

By the time I graduated from high school the entire system had changed. The small dairy farms had been largely replaced with larger farms. The small four-wheel tanker trucks had been replaced by large eighteen-wheel tankers. An eighteen-wheel tanker truck brought the raw milk from the farms to the dairy factory about thirty miles from our house, and a different eighteen-wheel refrigerated truck brought cartons of milk and ice cream as well as boxes of butter to the supermarket. All three of the small hometown dairies eventually went out of business. They were replaced by much larger, factory-sized dairies many miles from our home. Instead of having the milk bottles delivered directly to our house, we now purchased dairy products at the local supermarket, an institution that was also a relatively new phenomenon.

The dairy factory system is a much more roundabout production process. It takes more time. The milk travels a round-trip journey of more than sixty miles instead of the less-than-four-mile journey in the old days. There is a greater amount of capital as well as advanced technology involved and there is also far less labor per unit of milk. The overall cost of milk is lower, and with competition between large dairy wholesalers and supermarkets, so is the price.

In order to attain a more roundabout production process there are several requirements. It requires entrepreneurs with a vision of the most profitable action among all possible actions. It requires investment in more capital goods and new technology. Of course, all of this rearranging of production is going to take a great deal of time and even more time for it to be profitable.

Therefore, the entrepreneurs need to have access to savings. They need to have either their own savings or someone else's savings on a long-term basis in order to proceed. Hence there must be more overall savings in an economy in order to achieve more roundabout production and all the benefits it entails. Savers must have lower time preferences and be willing to delay some consumption in the present. Savers will be rewarded with interest income, with which they will be able to make a larger amount of purchases in the future and at lower prices because of the increase in production of goods. The whole process is regulated by the rate of interest, the price system, and the system of profit and loss.

This process is sometimes referred to as creating economies of scale. But notice that while there are economies of scale in this example, everything about the pro-

duction process changed. The most successful approach was not preordained or known in times past. The entire recipe or technology of production has changed. All the capital goods — including the milking machines, the trucks, and the machinery inside the dairies — are different. Notice further that the change in the dairy industry is going to induce changes in other industries, including technology and investment in the mechanical milking machines industry. All of this requires a careful synchronization process, which is obviously beyond the scope of central planning. The process is driven by the rate of interest. So we will now see what happens when the interest rate is misleading and results in an economic bust and, in severe cases, the skyscraper curse.

Thornton (2017) Why Understanding “Roundaboutness” Is so Important



# 20

## Behavioural Economics

*Ole Peters*

The symbol of behavioral economics is a fly etched into a urinal to reduce spillage.

Apparently, no scientific study of the effect exists.

It's becoming hard to avoid the impression that behavioral economics, broadly speaking, is a collection of made-up cocktail-party stories.



The behavioral economics concept on "nudging" people's behavior and actions is often illustrated with this urinal with a housefly image embossed in the enamel; the image "nudges" users into improving their aim, which lowers cleaning costs.

### **People are bad at making rational decisions.**

One of the hottest topics in finance and economics for the past two decades has been Behavioral Economics, a field that originated in the research of Daniel Kahneman and Amos Tversky. Tversky died in 1996, and Kahneman was awarded The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel in 2002. The Nobel committee cited their joint work on “prospect theory as an alternative, that better accounts for observed behavior” of humans making decisions “when future consequences are uncertain” (aren’t they always?).

Classical financial modeling assumes that people make decisions in a cold-blooded utilitarian way that is therefore susceptible to mathematics and statistics. Kahneman and Tversky (K&T) cataloged a collection of irrational warm-blooded peculiarities in the way people choose between alternative bets on their own potential profits and losses when playing games of chance.

Not everyone agrees with K&T. Real life is not always a game of chance; while the probability of throwing heads and tails is known exactly, the probability of human behavior is not. Animate individuals are driven by motives that can defy statistics. Our legal system recognizes this, and finds defendants guilty or innocent not on the basis of statistical evidence but on the basis of judgement and believability.

### **Prospect Theory**

K&T developed what they call prospect theory. In prospect theory, as opposed to classical economic theory, K&T replaced homo economicus’s rational notions of losses and gains and their probabilities by the empirically determined “irrational” values used by everyday fearful and greedy hot-blooded homo affectus.

Classical economic theory was elegant but flawed, and prospect theory was a beautiful idea/ideal that aimed to fix it by taking account of actual human preferences in determining economic value.

Unfortunately, that isn’t what happened. First, the ambitions of prospect theory as a science of human behavior foundered in a maelstrom of increasing mathematical complexity. Second, academics use the cover of behavioral economics to write papers on all sorts of irrelevant apparent irrationalities. Third, the part of behavioral economics that did flourish enormously is the notion that people are probabilistically challenged, and that it requires governments and agencies, helped by academics, to nudge people into doing what is “good” for them.

Consider Richard Thaler, a Chicago academic who has been an influential and early researcher in behavioral finance and is also the co-author of *Nudge*, a book he says is about “enlisting the science of choice to make life easier for people and by gently nudging them in directions that will make their lives better.”

It’s remarkable that behavioral economics has evolved from a field of study into a tool for manipulating people. This is not government of the people by the

people for the people. I think I'd rather be forced than nudged. At least then the battle lines are clearer.

Derman (2020) Misbehavioural (pdf)

## 20.1 Biased Behaviour

*Fix*

According to behavioral economics, most human decisions are mired in ‘bias’. It muddles our actions from the mundane to the monumental. Human behavior, it seems, is hopelessly subpar.<sup>1</sup>

Or is it?

You see, the way that behavioral economists define ‘bias’ is rather peculiar. It involves 4 steps:

1. Start with the model of the rational, utility-maximizing individual — a model known to be false;
2. Re-falsify this model by showing that it doesn’t explain human behavior;
3. Keep the model and label the deviant behavior a ‘bias’;
4. Let the list of ‘biases’ grow.

Jason Collins (an economist himself) thinks this bias-finding enterprise is weird. In his essay ‘Please, Not Another Bias!’, Collins likens the proliferation of ‘biases’ to the accumulation of epicycles in medieval astronomy. Convinced that the Earth was the center of the universe, pre-Copernican astronomers explained the (seemingly) complex motion of the planets by adding ‘epicycles’ to their orbits — endless circles within circles. Similarly, when economists observe behavior that doesn’t fit their model, they add a ‘bias’ to their list.

The accumulation of ‘biases’, Collins argues, is a sign that science is headed down the wrong track. What scientists should do instead is actually explain human behavior. To do that, Collins proposes, you need to start with human evolution.

The ‘goal’ of evolution is not to produce rational behavior. Evolution produces *behavior that works* — behavior that allows organisms to survive. If rationality does evolve, it is a tool to this end. On that front, conscious reasoning appears to be the exception in the animal kingdom. Most animals survive using instinct.

An organism’s ‘bias’ should be judged in relation to its evolutionary environment. Otherwise you make silly conclusions — such as that fish have a ‘bias’ for living in water, or humans have a ‘bias’ for breathing air.

When behavioral economists conclude that our probability intuition is ‘biased’, they assume that its purpose is to understand the god’s eye view of innate probability — the behavior that emerges after a large number of observations.

But that's not the case. Our intuition, I argue, is designed to predict probability as we observe it ... in small samples.

Fix (2021) Is Human Probability Intuition Actually ‘Biased’?



## 21

# Corporations

*Austin*

Having given greed freer rein, we have gradually super-sized the impulse via the creation of corporations – ‘corporate persons’. These larger-than-life figures roam the cultural landscape leaving us at Lilliputian scale to thread a careful path among them. Not only are they 1,000-fold – or 10,000- or 100,000-fold – larger than individual persons – the original ‘person’ concept – but they are legally bound to pursue self-interest in a way that we would never think of legally binding real individuals, and which no non-sociopath would ever accept. Indeed, we have effectively created gargantuan sociopaths and given them full protection of the law and increasing capacity to shape those laws. 78 Challenging these entities of our own creation is becoming difficult: exercise some moral leadership from within and you risk being denigrated as a ‘whistle-blower’. We have both super-sized and super-empowered self-interest, out of a fundamental belief that the market system can adequately harness the consequences.

Austin (2021) Market-led Sustainability is a ‘Fix that Fails’... (pdf)



## 22

# Experimental Economics

*Investopedia*

Experimental economics is used to help understand how and why markets function the way they do. These market experiments, involving real people making real choices, are a way of testing whether theoretical economic models actually describe market behavior, and provide insights into the power of markets and how participants respond to incentives—usually cash.

The field was pioneered by Vernon Smith.

Experimental economics is mainly concerned with testing in a laboratory setting with appropriate controls to remove the effects of external influences. Participants in an experimental economics study are assigned the roles of buyers and sellers and rewarded with the trading profits they earn during the experiment.

The promise of a reward acts as a natural incentive for participants to make rational decisions in their self-interest. During the experiment, researchers constantly modify rules and incentives in order to record participant behavior in changed circumstances.

Smith's early experiments focused on theoretical equilibrium prices and how they compared to real-world equilibrium prices. He found that even though humans suffer from cognitive biases, traditional economics can still make accurate predictions about the behavior of groups of people. Groups with biased behavior and limited information still reach the equilibrium price by becoming smarter through their spontaneous interaction.

The applications of experimental economics can be seen in various policy decisions. For example, the design of carbon trading emissions schemes has benefited from experiments conducted by economists in different regions of the world in a laboratory setting.

Investopedia: Experimental Economics

*Nobel*

Nobel (2002) Kahneman and Smith (pdf)

## 23

# Economic Growth

As the fossil-fuel era wanes, economic growth will become a relic of the past.

Just like a bike that finds its balance with speed, the economy needs to grow in order to remain stable, growth acting as a promise that pacifies social conflicts and creates consent for certain kinds of politics. Since economic growth is both an idea, a social process, and a material process, an agenda for social change cannot only focus on changing GDP as an indicator, which would be akin to changing the dashboard of a car running full speed towards a cliff. Escaping from the growth paradigm requires to deconstruct growth as an idea, to problematise the role it plays in broader power dynamics, and to carefully understand its relation with nature. Quite a project indeed: going against growth means reinventing most of what we know about modern economies.

Parrique (2023) The future is Degrowth

### 23.1 Grwoth as a positive feedback cycle

*Ayres*

The generic positive feedback cycle, in economics, operates as follows: cheaper resource inputs, due to discoveries, economies of scale and experience (or learning-by-doing) enable tangible goods and intangible services to be produced and delivered at ever lower cost.

This is another way of saying that resource flows are productive, which is our point of departure. Lower cost, in competitive markets, translates into lower prices for all products and services. Thanks to non-zero price elasticity, lower prices encourage higher demand. Since demand for final goods and services nec-

essarily corresponds to the sum of factor payments, most of which go back to labor as wages and salaries, it follows that wages of labor tend to increase as output rises. This, in turn, stimulates the further substitution of natural resources, especially fossil fuels, and mechanical power produced from resource inputs, for human (and animal) labor. This continuing substitution drives further increases in scale, experience, learning and still lower costs.

Declining resource prices can have a direct impact on growth, via the positive feedback loop.

In contrast to earlier treatments that introduced (commercial) energy(exergy), or energy(exergy) and materials separately, as factors of production, we consider physical work (or ‘exergy services’) as the appropriate independent variable for the production function.

Ayres (2005) Accounting for Growth: The Role of Physical Work (pdf)

## 23.2 Undevelopment

*Smith*

Watching the experiences of the UK, Japan, and Italy raises the uncomfortable possibility that there's such a thing as an “undeveloping country”. Standard economic growth theory suggests that once a country gets rich there's no going back — getting poorer would require willful disinvestment or the forgetting of technology. But the world is more complicated than those simple models, and countries in the past have certainly seen their living standards go into long-term periods of secular decline. So it's worth worrying whether the end stage of a some countries' economic lives is not a permanent spot at the apex of development, but a long slow slide back into middle-income status.

Smith (2022) Are the UK, Japan, and Italy “undeveloping countries”?

## 23.3 Degrowth

*Phillips*

Rather than viewing the market's irrational production as the source of environmental challenges, the degrowth position views the source to be economic growth.

Phillips (2022) The degrowth delusion

*Hickel*

The global economy is structured around growth — the idea that firms, industries and nations must increase production every year, regardless of whether it is needed. This dynamic is driving climate change and ecological breakdown.

High-income economies, and the corporations and wealthy classes that dominate them, are mainly responsible for this problem and consume energy and materials at unsustainable rates<sup>1</sup>.

Yet many industrialized countries are now struggling to grow their economies, given economic convulsions caused by the COVID-19 pandemic, Russia's invasion of Ukraine, resource scarcities and stagnating productivity improvements. Governments face a difficult situation. Their attempts to stimulate growth clash with objectives to improve human well-being and reduce environmental damage.

Researchers in ecological economics call for a different approach — degrowth. Wealthy economies should abandon growth of gross domestic product (GDP) as a goal, scale down destructive and unnecessary forms of production to reduce energy and material use, and focus economic activity around securing human needs and well-being. This approach, which has gained traction in recent years, can enable rapid decarbonization and stop ecological breakdown while improving social outcomes. It frees up energy and materials for low- and middle-income countries in which growth might still be needed for development. Degrowth is a purposeful strategy to stabilize economies and achieve social and ecological goals, unlike recession, which is chaotic and socially destabilizing and occurs when growth-dependent economies fail to grow.

Reports this year by the Intergovernmental Panel on Climate Change (IPCC) and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) suggest that degrowth policies should be considered in the fight against climate breakdown and biodiversity loss, respectively. Policies to support such a strategy include the following.

**Reduce less-necessary production.** This means scaling down destructive sectors such as fossil fuels, mass-produced meat and dairy, fast fashion, advertising, cars and aviation, including private jets. At the same time, there is a need to end the planned obsolescence of products, lengthen their lifespans and reduce the purchasing power of the rich.

**Improve public services.** It is necessary to ensure universal access to high-quality health care, education, housing, transportation, Internet, renewable energy and nutritious food. Universal public services can deliver strong social outcomes without high levels of resource use.

**Introduce a green jobs guarantee.** This would train and mobilize labour around urgent social and ecological objectives, such as installing renewables, insulating buildings, regenerating ecosystems and improving social care. A programme of this type would end unemployment and ensure a just transition out of jobs for workers in declining industries or 'sunset sectors', such as those contingent on fossil fuels. It could be paired with a universal income policy.

**Reduce working time.** This could be achieved by lowering the retirement age, encouraging part-time working or adopting a four-day working week. These measures would lower carbon emissions and free people to engage in care and

other welfare-improving activities. They would also stabilize employment as less-necessary production declines.

**Enable sustainable development.** This requires cancelling unfair and unpayable debts of low- and middle-income countries, curbing unequal exchange in international trade and creating conditions for productive capacity to be re-oriented towards achieving social objectives.

Some countries, regions and cities have already introduced elements of these policies. Many European nations guarantee free health care and education; Vienna and Singapore are renowned for high-quality public housing; and nearly 100 cities worldwide offer free public transport. Job guarantee schemes have been used by many nations in the past, and experiments with basic incomes and shorter working hours are under way in Finland, Sweden and New Zealand.

But implementing a more comprehensive strategy of degrowth — in a safe and just way — faces **five key research challenges**, as we outline here.

- Remove dependencies on growth
- Fund public services
- Manage working-time reductions
- Reshape provisioning systems
- Political feasibility and opposition

Government action is crucial. This is a challenge, because those in power have ideologies rooted in mainstream neoclassical economics, and tend to have limited exposure to researchers who explore economics from other angles. Political space will be needed to debate and understand alternatives, and to develop policy responses.

Strong social movements are necessary. Forms of decision-making that are decentralized, small-scale and direct, such as citizens' assemblies, would help to highlight public views about more equitable economies

Addressing the question of how to prosper without growth will require a massive mobilization of researchers in all disciplines.

Hickel (2022) Degrowth can work — here's how science can help

## 23.4 Growth without Economic Growth

Key messages

1. The ongoing 'Great Acceleration' [1] in loss of biodiversity, climate change, pollution and loss of natural capital is tightly coupled to economic activities and economic growth.
2. Full decoupling of economic growth and resource consumption may not be possible.

3. Doughnut economics, post-growth and degrowth are alternatives to mainstream conceptions of economic growth that offer valuable insights.
4. The European Green Deal and other political initiatives for a sustainable future require not only technological change but also changes in consumption and social practices.
5. Growth is culturally, politically and institutionally ingrained. Change requires us to address these barriers democratically. The various communities that live simply offer inspiration for social innovation.

EEA

## 23.5 Ditching Economic Growth

*Russel*

Growth may be central to mainstream economics but nature has paid the price through pollution, waste and climate change. Some economists say it's time for a completely different approach.

It was only in the mid-20th century, in the wake of the shattering impact of World Wars and when capitalism and communism were competing for global dominance, that we began to measure the success of an economy in terms of gross national product, or GDP.

The faster GDP was rising, the better an economy could be said to be performing. But something happens as all that economic activity expands. The amount of energy and resources we use also increase.

Ever since the industrial revolution, fossil fuels have set us on a course of furiously expanding production, which has also meant more waste and more pollution. Historically, greenhouse gas emissions have risen alongside GDP. As economies have grown richer, nature has paid the price.

And as the climate crisis has become ever-harder to ignore, more people are questioning whether infinite economic growth is possible on a planet of finite resources.

Zero-emissions with twice the GDP

"The Intergovernmental Panel on Climate Change in their Fifth Assessment, have 116 mitigation scenarios with a chance of staying below the 2 degree Celsius threshold. All of those scenarios assume 2-3% GDP growth rates," says Jon Erickson, an ecological economist at the Gund Institute for Environment in Vermont, adding that this implies doubling the global economy by somewhere around 2050 .

These scenarios rely not just on switching to renewables, but also on the large-scale extraction of massive volumes of carbon from the atmosphere using as-yet unproven technology, which Erickson describes as "wildly unrealistic."

"None of those models and the IPCC community even bother simulating a scenario where the global economy contracts, stabilizes and maybe even degrows," Erickson says. "Yet that's probably the one realistic scenario that would significantly affect greenhouse gas emissions."

It is easy to see why the idea that we must keep growing is hard to give up. When economic activity declines and we go into recession, people lose their jobs and are plunged into poverty.

Yet those arguing for "degrowth" — a managed contraction of economic activity— say it doesn't have to be this way.

ime for a different approach?

Federico Demaria, an economist at the Autonomous University of Barcelona, who has authored several books on degrowth, says that neoclassical economics — which has dominated economic discourse over recent decades, has "never looked at the question of how an economy could be managed without growth. It only looked at questions like, why do economies grow? If it's not growing, how can we make it grow? Or, how can we make it grow even faster?"

These have become pertinent questions even — or especially — for wealthy, industrialized economies, where growth has slowed over recent decades. "What the mainstream economists are doing is just trying to relaunch growth," Demaria says.

A different approach, which aims to rein in growth without inflicting the pain that recession has traditionally entailed, comes from the field of ecological economics.

#### *Embedding economics in ecology*

Neoclassical economic models picture economies as closed systems, with no inputs of materials or energy and no outputs of pollution and waste. But ecological economists insist there is no real separation between economy and ecology. After all, if we destroy the planet that feeds us, economic activity will collapse pretty quickly too.

In an effort to fix this oversight, Demaria is among those devising new economic models that include factors like emissions and resources use. They are also working in things like social equality, debt, deficits and monetary systems, which have social impacts, and play into cycles of boom and bust.

Degrowthers argue that we do have to tighten our belts — and it doesn't have to be painful. If we could reverse the central logic of economic systems that prioritize growth over human and ecological wellbeing, they don't believe we would miss the furious activity that's keeping a minority of the human population in must-have products and ever-more material wealth.

Russel (2020) Climate crisis: Is it time to ditch economic growth?

## 23.6 Growth Waves

*Schwartz*

The fifth Schumpeterian growth wave, which was built on information and communication technologies (ICT) as well as traditional and first-generation bio-engineered pharmaceuticals, has exhausted much of its growth impulse.

A potential sixth wave built on artificial intelligence (AI), machine learning (ML), and second-generation biotech (CRISPR) as general-purpose technologies.

Joseph Schumpeter's analysis of dynamic change in capitalist economies—what he termed “creative destruction”—sheds light on the economic risks facing the core firms in these seven economies[Big dominant firm in small country]. Schumpeter argued that the central puzzle in economics was explaining the sources of dynamic growth. In an economy that actually embodied the starting assumptions of mainstream economics—small, competitive firms with no barriers to entry and no pricing power—profits would fall to the cost of capital plus some managerial wage for owner-operators. In essence, profits would only cover depreciation. Consequently, extensive and intensive growth would slow to the rate of population growth plus some gains from the normal productivity creep that incremental innovation produced for firms—in short, the kind of economic slump that prompted the secular stagnation debate of the 2010s. This circular economy, as Schumpeter called it, would never produce the periodic eruptions of rapid technological change and growth that he observed in the two centuries after the industrial revolution. As he put it, in these circumstances, you could add as many stagecoaches as you wanted to the economy but never get to a railroad.

Dynamic growth required radical innovation in five key, interconnected areas: new modes of transportation, new energy sources, new consumer goods, new general purpose production technologies, and, though he underemphasized this, new legal organization or governance structures for firms. Writing on the eve of the Second World War, Schumpeter identified four such revolutions that had so far taken place. The first initiated the industrial revolution, centering on canals, water mills, textiles, and other household nondurables, with small owner-operated factories collecting handicraft producers under one roof. The second, in the mid-1800s, focused on steam power, railroads, and iron goods, as well as larger but still owner-operated factories using custom made machinery. The third, towards the end of the 1800s, emerged from electricity, steel steamships, urban trams, bicycles and chemicals, and saw the rise of large corporations which began to separate ownership and management. The fourth wave centered on internal combustion engines for land and air transport, petroleum, mass consumption of consumer durables like vehicles, continuous flow-assembly line production, and vertically integrated and often multidivisional firms with full separation of ownership and management. This wave began in the United States, most famously with Ford's Model T, and spread to Europe and Japan. The transition periods between each of these growth spurts all saw increased

domestic or international conflict and decreased investment in ageing growth sectors. Thus the transition from wave three to wave four saw the beginning of industrial unions and coincided with rising interimperial conflict that eventually produced World War I.

The fifth wave began in the US in the 1960s with the development of the semiconductor chip, and soon spread globally. It is based on connectivity via electronics (ICT), negative energy consumption via digitalization, pharmaceuticals and first-generation biotechnologies, software and semiconductors, global supply chains, and *de jure* vertically disintegrated firms with *de facto* control by lead firms. This era's iconic product, the smartphone, embodies the whole range of electronics products developed from the 1940s onward in a compact and relatively cheap form.

There are many reasons to think this fifth wave is nearing exhaustion.

Smartphone sales levelled off in 2018 and then declined somewhat, signalling replacement sales rather than growth. Despite the annual iPhone launch hype, most of the improvements to smartphones in recent years are largely marginal. Roughly 80 percent of the world's population has 4G access—if they can pay for it. The entire global electronics industry is linked to personal computers and smartphones, which account for roughly half of global chip sales.

Similarly, new pharmaceutical discovery levelled off in the 2000s, with most new drugs being copies or modifications of older drugs.<sup>2</sup>

#### *Mark I and Mark II Innovation*

Creating the huge reticulation networks that made new energy and transport sources useful required equally huge investments. One mile of railroad was pointless, 100 miles was revolutionary. Schumpeter, in his earlier works, argued that only entrepreneurs hyping potential monopoly profits could induce bankers to finance these huge investments. He called this the Mark I model, in which small start-up firms run by visionaries upend existing incumbents. Many of the current software giants fit this pattern, but it also characterized the earliest days of Ford. Later, Schumpeter noted that high-profit corporations could channel their monopoly profits to dedicated internal research labs and generate the same kind of revolutionary innovation—his Mark II innovation model. Here, think of ATT's Bell Labs, which invented the transistor.

Software aside, we largely live in a world that combines both Mark I and Mark II innovation in a complex web that mostly favors larger firms. Typically, states promote radical innovation, often by funding basic research in university labs and their small firms spin-offs—classic Mark I innovation. But larger firms then typically provide those small firms with more funding to develop a commercializable product that their own Mark II R&D teams will perfect. While these smaller firms often get the publication glory, the larger firms usually get the bulk of patents and thus profits.

Schumpeter's two pathways to radical innovation are more intermingled today

than in the past, when vertically integrated firms were rather sealed off from both universities and small firms. These days, much Mark I innovation is often captured by the larger firms through acqui-hires, acquisition, or copycat innovation and litigation.

Success in generating high-value exports and their associated profits permits these societies to exchange a small volume of high-value exports for a much larger volume of lower-value imports.

The overlap of high profitability and profit share, export share and R&D share, is not accidental. It indicates past competitiveness and near monopoly or dominant positions in world markets. Profits fund the R&D that enables dominance and thus continued above average shares of global profits; those profits fund high levels of per capita income—among others, all those researcher jobs. And they fund, in some cases, extensive welfare states or at least state-education funding that generates the human capital those researchers possess, and which is the basis for past and potentially future dominance in high-tech sectors.

#### *The franchise economy*

The shift from the fourth (mass production) to the fifth (ICT) Schumpeterian wave involved changes in corporate strategy and structure that had significant knock-on effects. Chief among them, it boosted income inequality and increased the degree to which firms' profitability depended on the legal regime around intellectual property (IPRs—patent, copyright, brand, and trademark). In the Fordist era, corporate strategy aimed at monopoly or oligopoly profits through control over large masses of physical capital arranged into continuous flow, assembly line systems. Profitability rested on running those systems at something close to their full capacity. This pushed firms to vertically integrate and negotiate peace with their typically unionized labor forces, which in turn reduced income inequality and funded internal research labs.

But as more and more firms adopted this vertically integrated, unionized structure, profits began to decline. Workers revolted against the monotony and pace of assembly line production, and decolonization enabled raw-materials producers to push up prices, disrupting energy and metals markets. Put simply, once everyone adopted a Fordist product and production structure, the world ran out of cheap oil and docile semi-skilled assembly-line workers.

Firms reacted to this militance by changing their corporate structure. They shrank their labor forces and opted to subcontract or offshore their low-wage, low-skill workforce. Similarly, they expelled physical assets—machines—used for producing undifferentiated goods into spin-off firms.

At the same time, they began seeking more durable monopolies based on IPRs produced by a labor force high in human capital and supported by an army of subcontractors. This shift, which both coincided with and enabled the emergence of the fifth Schumpeterian wave, produced what I call a franchise structure.

In the franchise economy, lead firms with lots of human capital, few actual employees, and substantial intellectual property portfolios outsource much of production to two other generic types of subordinated firms. Second layer firms are typically more capital-intensive firms with some barrier to entry for their production processes. Third layer firms are labor intensive firms producing undifferentiated goods and services. The lead firm orchestrates almost everything in its value chain without bearing any of the risk of holding that physical capital or dealing with masses of workers.

While the shift to a franchise structure was good for firms with robust IPR portfolios and, by extension, for the high human-capital intensity of the workforce. It was less good for workers and firms producing undifferentiated goods and services. Downsizing meant shifting relatively well-paying jobs to low-wage countries, hollowing out the middle of the income distribution.

The sixth Schumpeterian wave, should it indeed appear, poses serious risks for the largest, export-focused firms of our seven economies. Presently, a narrow set of IPR-based firms in the Mark II model does the forward-looking investment in R&D that enables the transformation and scaling up of Mark I innovation required to catch that wave. It also generates both the jobs and the revenues needed to sustain a politically acceptable level of imports, employment, and growth in general. The potential inability of the big, highly profitable firms that anchor local research ecosystems to transition from their current production model to the novel production models emerging will have serious consequences.

This risk extends beyond the “innovator’s dilemma.” Domestically, the loss of core manufacturing jobs in the second layer of the franchise economy has provoked populist backlashes. In both Israel and Sweden, this has empowered parties hostile to state-led industrial policy favoring highly paid knowledge workers.

Growing geopolitical tension between the United States and China has prompted efforts to reshore or “near-shore” the ICT sector, particularly semiconductor production. All told, this probably tilts the global playing field towards firms from the larger and more geopolitically powerful countries.

For the pawns of the global economy—smaller economies without national champions like Nokia or Samsung, and without oil-fund assets as in Norway—these challenges are even more pronounced. They enter this race with greater headwinds, weighed down by external debt, relatively untrained workers, and, in the worst cases, an over-reliance on unprocessed raw materials exports.

Schwartz (2023) The Nokia Risk

#### *Schmelzer*

Economic growth as a policy goal, as well as the broader societal obsession with growth as we know it today, are relatively new developments that can be traced to attempts in the middle of the twentieth century to stabilize and plan capitalist economies through state intervention, to measure capitalist economies

against state socialist ones, and to appease the increasingly militant working class. It was only through the new idea that ‘the economy’ could be measured through GDP that it became possible to justify the belief that growth is natural, necessary, good, and unlimited.

We need to analyse economic growth as three interlinked processes that have evolved dynamically over time. First, growth is a relatively recent idea, the hegemony of which is the core ideology of capitalism, justifying the belief that growth is natural, necessary, and good, and that growth, as the increase of output and the development of productive forces, is linked to progress and emancipation. Second, growth is a social process that has long preceded the current hegemony of growth in contemporary society: a specific set of social relations resulting from and driving capitalist accumulation that stabilizes modern societies dynamically and at the same time makes them dependent on expansive dynamics of growth, intensification, and acceleration. Third, growth is a material process – the ever-expanding use of land, resources, and energy and the related build-up of physical stocks – which fundamentally transforms the planet and increasingly threatens to undermine the foundations of growth itself.

Schmelzer (2023) The Future is Degrowth



## 24

# Institutional

### 24.1 Veblen

Like his fellow economists, Veblen was excited by the prospect that, after Darwin, the study of human society could be placed on a scientific footing. Unlike most of his colleagues, he did not think the economic system was working. In one way or another, they maintained that an economy metes out its own rewards in proportion to the productivity of those who constitute the economy. For Veblen, it was not the fittest—that is, the most productive—who were surviving and prospering. On the contrary, the winners were a “leisure class” of unproductive parasites devoted to what he called “conspicuous consumption.” In the process, they were damaging rather than serving the interests of society as a whole. This was, to speak in rational terms, inefficient and irrational.

*Capitalism = Plunder*

Veblen’s early translation of the Icelandic epic [*Laxdøla-saga*] did foretell the visionary economics that would carry him to fame. In the introduction, added thirty-five years later, he wrote that “the Viking age was an enterprise in piracy and slave-trade” and that the Vikings thus anticipated modern “business enterprise,” which is driven “by its quest for profits” and reliant on “getting something for nothing by force and fraud.” Behind the gently waggish satire of terms like “leisure class” and “conspicuous consumption” lies a proposition that is much sterner, and more scientific. In Veblen’s view, modern capitalism, which congratulates itself on its high level of civilization, is in essence a highly organized system of barbaric plunder.

He was also lucky to take classes from a young professor named John Bates Clark (1847–1938)—“one of the most important economic theorists America has ever produced,” in Camic’s opinion. Though Clark exposed Veblen to the classical economics descended from Adam Smith and embodied by John Stuart

Mill, he added his own “strong objections.” Like the so-called “historical” school of economics, which he had encountered during two years of study in Germany, Clark insisted that economic man was not a mere creature of self-interest, but rather a social being. Morality exerted an objectively measurable influence on economic life, and economics had to be cognizant of it. At that stage of his career, Clark identified as a “Christian socialist.” Veblen himself already had a reputation as an atheist.

Veblen’s doctorate in 1884, which he received after transferring to Yale, was one of the first dozen granted in philosophy at any American university. What followed, as noted above, was years of unemployment.

In all his many writings, Veblen distinguished between the industrial, which is about making useful things and providing useful services, and the pecuniary, which is about trying to get something for nothing. It is the pecuniary, he argued, that has become the dominant mode of the modern American economy and that recalls his predatory Viking ancestors.

But his scorn for pecuniary plunderers was also an inheritance. Where he grew up, the value of honest labor and the denunciation of “idleness, waste, extravagant display, and ill-gotten acquisitions” were drilled into the local children in church and in elementary school, and Camic explains why they would be. The family farm, “which both owns the means of production and provides the labor power to set them in motion,” if not exactly outside the capitalist system, was external enough to generate sharp critique of that system, especially as banks, railroads, and middlemen gradually extended their influence.

Robbins (2021) A Theory of Thorstein veblen

# 25

## Keynesian Economics

Name of Tendency	Years Relevant (Roughly)	A Few Major Thinkers	Keynesianism Is...	What's The Deal	What's Been Kept
John Maynard Keynes	1900-Present	Himself	nothing I would concern myself with.	He wrote the dang books	Depends who you ask... Inspired Sraffa to flip off Wittgenstein, thereby instigating the Philosophical Investigations; Sraffa in postkeynesian economics
Cambridge Circus	1930-1931	Richard Kahn, Joan Robinson, Piero Sraffa, (Hon. Frank Ramsey)	a philosophical programme yoked to an economic model.	Moved JMK from the Treatise on Money to the General Theory	Large-scale macroeconomic models for policymaking (Fair Model, Klein-Goldberger, probably others), "Pump-priming"
Old Keynesians	1936-1960	Nicholas Kaldor, Evsey Domar, Roy Harrod, Axel Leijonhufvud, Ken Galbraith	when the government intervenes to get the economy moving again when there's a recession.	Tried to develop determinate, policy-useable models out of the intuitions of the GT	Most of this got cleaned up and rebooted to become the New Keynesian literature, but non-Koch Department econ 101 is pretty much this.
Bastard Keynesians (or, "The Neoclassical Synthesis")	1940-1980	Paul Samuelson, Kenneth Arrow, Bob Solow, John Hicks, Alvin Hansen	the invention of the field of macroeconomics.	Wanted to keep the policy prescriptions of Keynes' work, but wanted the analysis to be grounded in neoclassical models of labor markets + production	Frame for periodizing an era of postwar economic development. Pretty similar to the "trente glorieuses," but in an American context where it's about cars and suburbs
The "Keynesian Regime of Accumulation"	1945-1975 (era), still written about	Geography Departments, "Keynesianism" used weirdly interchangeably with "The Fordist Mode of Production," Social Structures of Accumulation literature	when there is a détente between capital and labor predicated on labor getting paid enough to not complain.	Folks needed a reason why communism didn't come to western europe after May 1968	You know, I'm not really sure, been too long since I've read David Harvey
Keynes (As Seen By '68ers)	1968-Present	Italian Autonomism, Eurocommunism, Western Marxism, Some Frankfurt Schoolers, Giorgio Agamben, Paul Mattick, Bob Brenner, most left-wing humanities graduate students at some point.	a ploy by the Bourgeoisie to buy off the working classes long enough to prevent the onrush of revolution, which means we must address our analyses to the Lumpenproletariat.	frame of ranting about the CIA operatives in Italy	As far as I can tell, this is still going strong
"We're All Keynesians Now"	1970-1974	Milton Friedman, Richard Nixon, Probably some rando your dad knows from work,	when the government spends money.	Kind of the apex point of degradation of the term "Keynesian"	I think that this is still what the right wing thinks that Keynesianism is, but it's hard to tell.
Post-Keynesians	1975-Present	Alfred Eichner, Jan Kregel, Hyman Minsky, Marc Lavoie, Anna Carabelli, Susan Strange, Victoria Chick, Paul Davidson (sadly), Geoff Harcourt	a more or less complete guide to thinking about the economy, as long as you keep up with the times.	Trying to keep the legacy of Keynes' actual work - most especially methodologically - from being lost in all the various Keynesianisms..	HII
Neo-Keynesians	1977-1995	Some Italian folks (Bellofiore, Pasinetti, Graziani), Some Brazilian folks (most of the Sraffian Supermultiplier discourse), Scattered individuals, 80s-90s Kaleckians	a reasonably workable theory of the short run that needs Marx/Ricardo/Sraffa to be explanatory about long-period dynamics.	I have never really gotten a straight answer out of anyone about what this term actually means. My understanding is that it is a kind of weird placeholder for marx-keynes syntheses that incorporate the effects of short-run dynamics on the long run	I'm pretty sure this is still a live research programme? At least Ricardo Bellofiore is still doing it!
New Keynesians	1980-Present	Paul Krugman, Greg Mankiw, Larry Summers, Janet Yellen, George Akerlof, David Romer, Paul Romer, Christina Romer, Olivier Blanchard, Michael Woodford, Ricardo Reis, Joseph Stiglitz	a theory of the interest rate that dates back to a strange, unreadable book that we have successfully implemented a mathematical version of.	This is basically every center to center-left economist of the last forty years.	Still going, but lord willing and the creek don't rise, we will shake off the Taylor Rule, the Phillips Curve, and all the rest.
Modern Monetary Theory	1994-Present	Stephanie Kelton, Randy Wray, Mat Forstater, Scott Fullwiler, Nathan Tankus, Rohan Grey	the basis for explaining a money-monetary operations and some using capitalist economy.	Demand-side approach to public finance and macroeconomic policy taken to a logical extreme, combined with some incontrovertible facts about	Have you heard any reasonable people worried about the deficit recently?

twitter thread to fig

*Mason*

A central divide between Keynesian and orthodox macroeconomic theory is the view of the interest rate. Mainstream textbooks teach that the interest rate is the price of saving, balancing consumption today against consumption in the future — a tradeoff that would exist even in a nonmonetary economy. Keynes' great insight was that the interest rate in a monetary economy has nothing to do with saving but is the price of liquidity, and is fundamentally under the control of the central bank. He looked forward to a day when this rate fall to zero, eliminating the income of the “functionless rentier”.

**Kenesian Climate Economics**

As applied to climate policy, this view has several implications. First, market interest rates tell us nothing about any tradeoff between current living standards and action to protect the future climate. Second, there is no reason to think that interest rates must, should or will rise in the future; debt-financed climate investment need not be limited on that basis. Third, while investment in general is not very sensitive to interest rates, an environment of low rates does favor longer-term investment. Fourth, low interest rates are the most reliable way to reduce the debt burdens of the public (and private) sector, which is important to the extent that high debt ratios constrain current spending.

Mason (2021) Climate Policy from a Keynesian Perspective

## 26

# Macroeconomics

*Caballero*

The root cause of the poor state of affairs in the field of macroeconomics lies in a fundamental tension in academic macroeconomics between the enormous complexity of its subject and the micro-theory-like precision to which we aspire.

This tension is not new. The old institutional school concluded that the task was impossible and hence not worth formalizing in mathematical terms (for example, Samuels, 1987, and references therein). Narrative was the chosen tool, as no mathematical model could capture the richness of the world that is to be explained. However, this approach did not solve the conundrum; it merely postponed it. The modern core of macroeconomics swung the pendulum to the other extreme, and has specialized in quantitative mathematical formalizations of a precise but largely irrelevant world.

One primary driving force behind modern macroeconomics (both core and periphery) was an attempt to circumvent the Lucas critique—the argument that market participants take the policy regime into account and so estimates of economic parameters for one policy regime may well not be valid if the policy regime changes. If we now replace some first-order conditions by empirical relationships and their distributions, doesn’t this critique return to haunt us? The answer must be “yes,” at least to some extent. But if we do not have true knowledge about the relationship and its source, then assuming the wrong specific first-order condition can also be a source of misguided policy prescription. Both the ad-hoc model and the particular structural model make unwarranted specific assumptions about agents’ adaptation to the new policy environment. The Lucas critique is clearly valid, but for many (most?) policy questions we haven’t yet found the solution—we only have the pretense of a solution.

Ultimately, for policy prescriptions, it is important to assign different weights to those that follow from blocks over which we have true knowledge, and those

that follow from very limited knowledge. Some of this has already been done in the asset pricing literature: for example, Ang, Dong, and Piazzesi (2007) use arbitrage theory to constrain an otherwise nonstructural econometric study of the yield curve and Taylor's rule. Perhaps a similar route can be followed in macroeconomics to gauge the order of magnitude of some key effects and mechanisms, which can then be combined with periphery insights to generate back-of-the-envelope-type calculations. For now, we shouldn't pretend that we know more than this, although this is no reason to give up hope. We have made enormous progress over the last few decades in the formalization of macroeconomics. We just got a little carried away with the beautiful structures that emerged from this process.

The periphery of macroeconomics has much to offer in terms of specific insights and mechanisms, but to fulfill the ambition of the core we need to change the paradigm to go from these insights on the parts to the behavior of the whole. It is not about embedding these into some version of the canonical real business cycle model. It is, among other things, about capturing complex interactions and the confusion that they can generate.

Caballero (2010) Macroeconomics after the Crisis: Time to Deal with the Pretense-of-Knowledge Syndrome

*Durlauf*

Durlauf (2004) Durlauf 2004 Complexity and Empirical Economics

# 27

## Marxist

*Trigg Abstract*

There is general agreement amongst scholars of Marx that his monetary theory is incomplete, especially in his most detailed writings on credit in the third volume of Capital. Moreover, in these unfinished notes Marx takes sides with the banking school approach, notable for its opacity compared to the clear axioms of its currency school counterpart. A reconstruction is proposed based on Marx's step-by-step method, commencing with a critique of Say's Law under simple commodity circulation, these foundations formalised here using the model of pure labour developed by Pasinetti (1993). Piecing together the fragments, and filling in some of the gaps in Marx's writings on money, the analysis builds from commodity money and private debt contracts, to the modelling of pure credit and pure banking systems. Adapting the Pasinetti model of a real economy, its endogenous money requirements provide an alternative to the exogenous money approach of the currency school: a streamlined analytical core to the banking school approach, as interpreted by Marx. In addition, the structure of payment crises — as an extension of Marx's possibility theory of crises — is examined with money as a means of payment required to settle debts between producers and the banking system.

Trigg (2021) Reconstructing Marx's Theory of Credit and Payment Crises under Simple Circulation (pdf)

### 27.1 Social Monopoly

*Roberts on Stiglitz*

After all, monopoly power is really oligopoly (a few large companies) and oligopoly can exhibit fierce competition, nationally and internationally. The real cause of inequality is not monopoly but the increased exploitation of

labour by big capital since the 1980s in the effort to reverse falling and low profitability experienced in the 1970s. And the real cause of ‘stagnation’ and low productivity growth is not monopoly but the failure to invest, not only by large ‘monopolies’ but also by smaller capitals suffering from low profitability and high debts. In other words, it is not monopoly that is the problem per se, but the weakness of the capitalist mode of production where investment and employment is only for profit.

This Stiglitz ignores. As a result, his solution of government intervention to reduce inequality and create a more ‘level playing field’ for ‘competition’ among capitalist companies is utopian (you can’t turn the capitalist clock back) and unworkable (it would not achieve greater equality or better growth)

Ironically, there is another study that Stiglitz has not noticed that shows the rise in US inequality has coincided with the decline of large companies that used to employ hundreds of thousands or even millions of workers and their substitution by much smaller companies. The share of large employers in total US employment went down simultaneously with the increase in US income inequality. This study shows that is the decline in the power of labour through out-sourcing and globalisation that has driven up inequality in incomes.

The ‘internal’ break-up of large company (Fordist) employment into small contractors is the key feature of Stiglitz’s world of ‘monopoly’. In other words, what workers in America need is not the break-up of monopolies to create small companies in competition but trade unions. The monopoly power that matters is that held by capital over labour.

Yes, monopoly (more accurately oligopoly) power has increased in the last 150 years since Marx forecast that the capitalist mode of production would lead to increased concentration and centralisation of capital. And that shows that capitalism is in its late stage of development and so must be replaced by ‘social monopoly’.

Roberts (2016) Monopoly or competition: which is worse?

# 28

## Neo Classical Economics

The development of neoclassical economics can be read as one long apology for why capitalists deserve their income. Fix (2023) Inflation regulation by wage hikes

Neoclassicism is a religion dressed as a science

Neoclassical economic theory has never resembled a scientific enterprise. It's simply an ideology presented through an avalanche of mathematics. The underlying assumptions of neoclassical theory all serve to justify the capitalist status quo. When we equate market value with utility, we implicitly assume that individuals' income indicates their contribution to society.

Fix GDP](<https://economicsfromthetopdown.com/2019/12/15/why-we-should-abandon-real-gdp-as-a-measure-of-economic-activity/>)

### 28.1 General Equilibrium

*Ayres*

In a closed Walrasian model resources are assumed to be generated by labor and capital. The neo-classical (Walrasian) equilibrium system does not qualify as a dissipative structure. The neoclassical system is, in effect, a perpetual motion machine.

Ayres (1988) Self-organisation in Biology and Economics (pdf)

### 28.2 Free Market

*Fix*

According to neoclassical economics, the most efficient way to organize human activity is to use the free market. By stoking self interest, the theory claims, individuals can benefit society. This idea, however, conflicts with the evolutionary theory of multilevel selection, which proposes that rather than stoke self interest, successful groups must suppress it. Which theory better describes how human societies develop? I seek to answer this question by studying the opposite of the market: namely hierarchy. I find evidence that as human societies develop, they turn increasingly to hierarchical organization. Yet they do so, paradoxically, at the same time that the language of free markets becomes more common, and culture becomes more individualistic. This evidence, I argue, contradicts free-market theory, but only if we treat it as a scientific doctrine. If instead we treat free-market theory as an ideology, the pieces come together. Free-market thinking, I speculate, may stoke the formation of hierarchy by cloaking power in the language of ‘freedom’.

In this evolutionary context, the theory of free markets is an outlier. It posits that, contrary to what we observe among other social organisms, humans need not suppress self-interest to organize in large groups. And we need not use hierarchical organization. We can build complex societies, the theory claims, using decentralized competition.

Treating firms (not individuals) as the unit of competition legitimizes the firm as an autonomous unit, while leaving the firm’s internal structure as a ‘black box’. By championing firm autonomy, free-market theory may legitimize the firm’s internal chain of command, thereby justifying the accumulation of power.

Neoclassical economics may be best treated as a belief system whose existence should be explained using the tools of cultural evolution.

Neoclassical theory — claims that outcomes from perfectly competitive markets are ‘optimal’, whereas outcomes from centralized control are ‘inefficient’. It is much like if biologists deemed single-celled organisms to be ‘optimal’, but deemed multicellular organisms ‘inefficient’.

#### *Hierarchi - supressing lower-level selection*

More complex structure is built from simpler components. Growth of complexity involve the centralization of control. Nested hierarchy occurs through a process of evolutionary problem solving. Structures evolve that solve specific problems. Newly created structure serves as the building block to solve new problems. Large, complex organisms are not composed of autonomous units. The growth of complexity involve gradual loss of autonomy among sub-units and the growth of centralized control. As societies become more populous, they add new layers of administrative hierarchy. Centralized control arise for two (related) reasons. First, assembling a larger system from many smaller components requires coordination. Second, there is the problem of the ‘self-interest’ of sub-units. The major evolutionary transitions happened by merging sub-units that were previously autonomous. According to the theory of multilevel selection, this merger is not possible unless the ‘self-interest’ of sub-units is suppressed.

The key insight of multilevel selection theory is that high-level organization requires high-level selection that suppresses selection at lower levels. Group-level selection suppresses individual-level selection.

Successful groups suppress lower levels of selection by turning to top-down ‘management’. Large-scale organization is accomplished by integrating subunits into a hierarchical control structure.

Whether complex organization requires hierarchy is an open question. But it does seem that complexity and hierarchy go hand in hand.

#### *Free Market - No Hierarki*

According to the neoclassical theory of free markets, hierarchy is unnecessary for group organization. Instead, neoclassical theory argues that humans can organize effectively without any form of centralized control. All that is needed is a competitive market.

The ‘first fundamental theorem of welfare economics’ claims that under conditions of perfect competition (in which all firms are ‘price takers’), markets will allocate resources in a way that is ‘Pareto efficient’. With their welfare theorem in hand, neoclassical economists look at hierarchical organization and see an ‘inefficient’ system.

#### *The growth of hierarchy with economic development*

Fix (2021) Economic Development and the Death of the Free Market (pdf)

## 28.3 Trade Theory

International trade theory’s prediction of equalization of wages across countries is, in my view, the key terrible simplification that causes world hunger.

Not only are all qualitative differences assumed away, the production process itself is also abstracted away. Assuming away unemployment, as the World Bank traditionally does in its models, only adds another dimension to the terrible simplification on which our world economic order is based. In many countries, 80 per cent of the potentially active population are unemployed or underemployed. Assuming that fact away is a terrible simplification.

At the core of our world economic order lie the terrible simplifications of international trade theory. Assuming perfect information (i.e. that all know the same) and constant returns to scale for all ranges of output for all goods (i.e. no fixed costs), and assuming that all goods are private, there is no reason why there should be any trade at all (except in raw materials, for reasons of climate and geography). In its most simple form, the theory that regulates international trade is based on assumptions that mimic conditions which would not produce any division of labour or any trade. It describes a world in which every human

being would be a self-sufficient microcosm. The WTO and our world order are based on theories that are, at their very core, fairly simplistic banalities wrapped in an appearance of ‘science’.

Both Mill and Keynes saw that poor countries need an increasing returns sector, i.e. an industrial sector, in order to become wealthy.

What unites the failure to understand that a financial crisis was coming and persistent poverty in the Third World is an economic theory at a level of abstraction where production is left out, a theory where the world economy is perceived as stock markets and freight terminals. In reality, markets and trade are mere complements of an incredibly complex global system of *production*. By focusing on stock exchanges and trade, the complexities of world production have essentially been left out of economic theory.

Why are there so few middle-income countries? Why do countries tend to cluster in two convergence groups, developed and ‘underdeveloped’?

This paper argues that our inability to create middle-income countries is a result of ‘terrible simplifications’ resulting from destabilizing stability, as described by Minsky, from ‘theoretical overshooting’ in Hayek’s sense. The policy recommendations resulting from this theoretical overshooting have made the creation of new middle-income countries virtually impossible. A middle-income nation has an increasing returns (industrial) sector which, for a while, is not yet competitive on world markets. The WTO’s first Director-General, Renato Ruggieri, declared that we should unleash ‘the borderless economy’s potential to equalise relations among countries and regions’. Instead, this process ended up killing the incipient industrial sectors in poor countries, lowering real wages. The belief that the market, left to itself, guarantees harmony was at the core of the Washington Consensus ideology of the International Monetary Fund (IMF) and the World Bank.

### **Colonialism**

Involves a technology policy preventing increasing returns activities from being established in the colonies.

A poor nation is much better off with a relatively inefficient manufacturing sector than with no manufacturing sector at all.

Reinert (2011) The terrible simplifiers (pdf)

## **28.4 Human Capital Theory**

The idea of workers as embodied capital

Individual capabilities are fundamentally social

The sentiment behind eugenics (that some people are far more productive than others) lingers on in mainstream academia. It survives – even thrives – in human capital theory.

In the 1950s, economists at the University of Chicago tackled the question of individual income. Why do some people earn more than others? The explanation that these economists settled on was that income resulted from productivity.

The claim that income stems from productivity was not new. It dated back to the 19th-century work of John Bates Clark (1899) and Philip Wicksteed (1894), founders of the neoclassical theory of marginal productivity. Clark and Wicksteed, though, were concerned only with the income of social classes. What the Chicago-school economists did was expand productivist theory to individuals.

Doing so required inventing a new form of capital. The idea was that individuals' skills and abilities actually constituted a stock of capital – human capital. This stock made individuals more productive, and hence, earn more income.

The idea that skills constituted "human capital" was initially greeted with skepticism. For one thing, the term itself smacked of slavery. (Capital is property, so "human capital" implies human property.) For another, human capital theory overtly justified inequality. It implied that no matter how fat their incomes, the rich always earned what they produced. Any attempt (by the government) to redistribute income would therefore "distort" the natural order. During the 1950s and 1960s, there was little tolerance for such views. It was the era of welfare-state expansion, driven by Keynesian-style thinking. Yes, big government may have been "distorting" the free market – but society seemed all the better for it. Until the 1970s, human capital theory remained obscure.

In the 1990s, a second generation of economists took up the human-capital mantle. By then, neoliberal politics was in full swing. The fact that human capital theory explicitly justified inequality was no longer a liability. Today, the fortunes of human capital theory seem to have peaked.

We can see the scientific flaws by returning to William Muir's chicken experiment. I have already told you about his psychopathic chickens, created by breeding the most productive hens. But I have not told you about his alternative trial. In it, he bred the most productive *group* of chickens. The result was an astonishing increase in egg-laying productivity.

The reason this group selection worked is that chickens are social animals. That means productivity is influenced by the social environment. By selecting productive groups, Muir selected for egg-laying ability, but also for sociality. The resulting social hens flourished together.

Human capital theory supposes that income stems from productivity, and that this productivity is an isolated trait of the individual.

When we expose the realities of *power* (a social trait), we undermine the legitimacy of the social order.

Blair Fix: Human Capital Theory RWER95 (pdf)

## 28.5 Efficiency

*Klees*

Much has been written about the failure of neoclassical economic theory (NCT), so I won't belabor the point, but I do want to highlight what is too rarely said – that the central concept of NCT, economic (Pareto) efficiency is empty in theory and practice.

The great feat of neoclassical economics has been to convince people that there is a vantage point to view society, separable from concerns with equity and distribution. This vantage point, defined as economic efficiency, supposedly allows one to see if society as a whole is better off, such that decisions to produce a particular array of goods and services could be made in the interests of everybody, irrespective of how little one had, thus separating efficiency decisions from equity ones. However, if prices are not defined according to the exact dictates of what economists call "perfect competition," then private profitability tells us nothing about the comparative social advantages and the consequent "efficiency" of producing, let's say, more yachts for rich people instead of more rice and beans for poor people. Similarly, to argue that the allocation of resources can be "efficient" even if half the world is starving to death is ridiculous, but that is exactly what neoclassical economics says.

I find this legerdemain of inventing a concept of efficiency separate from equity, based on a completely unreal, obviously untrue, abstraction, is absurd on the face of it. If the absurdity of this framework is not obvious, one only has to look at what NCT calls "second best theory." The "first best" world is that of perfect competition; "second best" refers to a world with at least one "imperfection," say, one monopoly in a world that was otherwise perfectly competitive. Second-best theory essentially asks: "If we don't live in the first-best world of perfect competition but have, let's say, only one imperfection in an otherwise perfect world, what are the results?" It turns out, reluctantly admitted by neoclassical economists – second best is their own theory, not a plot by critics – that with just one imperfection, there are ripples so that all market prices become distorted, and Adam Smith's famous invisible hand is no longer a good guide to the social interest, and the system is no longer efficient — nor is there even any sense of whether it is close to efficiency. In the real world of multiple imperfections – where none of the assumptions of perfect competition hold – even if the neoclassical concept of efficiency had some meaning in theory, in practice, it is an abysmal failure, a completely empty idea.

The implication of my critique of NCT is that if economic efficiency is meaningless, neoclassical economics is useless.

There is no reason to stubbornly hang on to NCT and its justification for capi-

talism in the way that even critical neoclassical economists like Krugman, Reich, Rodrik, and Stiglitz do.

Klees (2021) Neoclassical Economics is Dead. What Comes Next?

## 28.6 Socialist Alternative to Human Capital Theory

The liberation of learning from the tyranny of earning.

*Mehta*

‘THE DEATH OF HUMAN CAPITAL?: Its Failed Promise and How to Renew It in an Age of Disruption’, by Phillip Brown, Hugh Lauder, and Sin Yi Cheung, disputes the theory behind one of the strangest features of the past 40 years of neoliberal economics, one rarely tackled so directly. This is human capital theory (HCT), which tends to shift the responsibility for good jobs and wages from business to higher education.

At one time, a company that laid off hundreds or thousands of workers would be admitting its managerial failure and incompetence; in the 1980s and ’90s, the mass layoff came to signal instead the kind of decisive cost-cutting that would pump up stock price.

Disposing of workers was just the first step. The next was to demand that they embark on a journey of self-improvement. This would make them employable in the “new economy” for the “jobs of the future.”

Public officials stopped expecting that firms maintain employment; they wrote tax law that favored companies that sent union jobs overseas. The once and future worker could only be worthy of new jobs if the country’s colleges — two-year and four-year, assisted by a new collection of for-profit colleges and training companies — acquired the proverbial “laser focus” on job-ready skills.

HCT, which appealed to conservatives and liberals alike, had become the master paradigm of the “information society” and the “knowledge economy” by the early 1960s. Forerunners of the theory had drawn the interest of some 19th-century economic thinkers, such as John Stuart Mill and Alfred Marshall (who identified what he called “personal capital”), and crucial postwar contributions came from a set of Chicago School economists: Milton Friedman, Theodore W. Schultz, Jacob Mincer, and, most insistently, Gary Becker.

HCT was taken up by university presidents like Clark Kerr to explain why universities were at the heart of the postwar economy, where new wealth came from knowledge as human capital and not just physical capital or physical labor. The theory was adopted by New Democrats in the 1980s and ’90s, who liked the claim that knowledge work, in alliance with technology, turbocharged the creation of value and wealth compared to regular industrial labor. In the

apparent ebbing of direct colonial extraction, knowledge work was to keep the West on top of the economic food chain, relegating the Global South to manual labor on products conceived and designed in London, Stuttgart, and Cupertino.

In his influential 1991 book *The Work of Nations*, Robert B. Reich (Bill Clinton's first secretary of labor) synthesized an evolutionary theory of the economy in which production workers in the United States would (and should) be replaced by that more advanced employee, the "symbolic analyst," who works with the mind on numbers, words, and ideas. HCT made the collective level of education — defined as its fit with advancing technology — the prime mover of contemporary capitalism. Getting this fit between education and technology became a main objective of public policy.

HCT emerged near the end of a century of high economic growth — a period during which, as Robert J. Gordon documents in his 2016 book, *The Rise and Fall of American Growth*, productivity and wages grew mostly because of revolutionary inventions — think electric grids, cars, telephones, and elevators — coupled with Fordist and then New Deal approaches to the distribution of the resulting economic gains.

Promoting education principally as human capital is not simply narrow-minded but increasingly dangerous. Using the monetary rewards of education to promote and finance it becomes an increasingly bad idea when those monetary rewards fail to materialize.

Having done serious damage to HCT, the authors offer a new kind of human capital theory. This is somewhat confusing, unless we accept that their progressive educational theory, grounded in John Dewey, among others, seeks to combine educational contributions to production with human development rather than eliminating the productivity dimension.

The emphasis of the new human capital is on education for personal growth, nurturing a holistic relation between knowing and doing.

But if their theory makes personal growth the central goal, it is still a human capital theory, whose focus includes without being limited to the "economic productivity of the human being." The authors are invoking the capabilities approach rooted in heterodox economics as practiced by Amartya Sen and Martha Nussbaum, and also socially grounded political theory, philosophy, and the psychology of labor and creativity, whose key figures include Hannah Arendt, W. E. B. Du Bois, and C. L. R. James, as well as Aristotle and Karl Marx.

The authors are trying to construct a socialist alternative to human capital theory. Replace HCT with an understanding of education and labor as related but distinct modes of human empowerment.

Education should focus on the full development of all capabilities of each individual in the whole population. Schooling must be universal, and in the 21st century postsecondary education should be too (though modes and structures will vary widely). Education must develop the whole range of capabilities and

not just those with manifest relevance to jobs and wages; capabilities go well beyond the life of homo economicus.

Which capabilities to emphasize will vary from person to person: a student who loves history, public policy, or set design should receive systematic education in the deep content and skills of history, journalism, and theater — and not, as now, given a smattering while being advised to be more interested in and better at math, coding, or accounting.

Learning should be seen as central to the individual's entire life and not mainly as an investment in a wage.

*Individual capabilities are fundamentally social*, derived from overall social intelligence and embedded in social relations that mix labor and learning on an ongoing basis.

The authors' new-HCT model would lead to a double transformation. The first is “the liberation of learning from the tyranny of earning.” Business has used HCT to cut education down to its own size, reducing social, cultural, and scientific knowledge that would serve the world in long-range and unpredictable ways.

‘The Death of Human Capital?’ points toward a world beyond human capital theory, which has functioned as a (failed) alternative to industrial policy, impaired equitable social development, and constrained the power of education. Other authors should build on the project under way here.

Mehta (2021) A Socialist Alternative to Human Capital Theory?

## 28.7 Production Function

*Fix*

Friedman's famous ‘F-twist’, in which he argued that a theory's assumptions are irrelevant. All that matters, Friedman claimed, is that the theory makes accurate predictions.

Friedman's F-twist gets dubious assumptions off the hook. But there is still the problem of predictions. How do you ensure that your theory is consistent with the evidence? Here, neoclassical economists have hit upon a tidy trick: frame your theory in terms of an accounting identity. Since the identity is true by definition, any ‘test’ of the theory will come out in your favor.

When neoclassical economists test their theory of income (the theory of marginal productivity), they invoke an accounting identity. They correlate two related forms of income (usually sales and wages) and then call one of the incomes ‘productivity’. Since they always find a correlation, they always ‘confirm’ their theory of income. Nifty!

Then there's the neoclassical theory of economic growth. The theory assumes that economic output is governed by a 'production function' that dictates how inputs of capital, labor and 'technological progress' are transformed into economic output. And guess what ... this approach seems to have overwhelming empirical support. The problem, pointed out by Anwar Shaikh, is that the production function is actually a re-arrangement of a national-accounting identity. The production function 'works' because it is true by definition. Nice!

Fix (2021) The Truth About Inflation

## 28.8 Keen Critique

*Bichler Nitzan*

Neoclassical economics is the official scientific underpinning of capitalism as well as its main ideological defence, and according to Keen, it fails in both tasks. Contrary to received opinion, neoclassicism cannot explain capitalism – either in detail or in the aggregate – and the policies it prescribes do not support but undermine the very system it defends.

The book focuses on three key issues:

- (1) the bizarre neoclassical perspective that money, credit and debt do not matter for the macroeconomy;
- (2) the neoclassical insistence that the economy's complex, nonlinear turbulences are best explained in linear, self-equilibrating terms; and
- (3) the fact that neoclassicists have hijacked the economics of climate change, using patently false assumptions to justify do-nothing policies with untold future consequences.

In the neoclassical universe, government is bad business.

But the book also has one important limitation: it is about economics. Keen offers to replace neoclassical dogma with a new way of thinking, researching and engaging with the economy. And while we agree that neoclassicism is a religion dressed as a science, in our view, what should come in its stead is not a different type of economics, but a new theory of capitalism more broadly. This isn't semantic nit-picking. All economic theories – including neoclassicism – engage with non-economic entities and forces. They all agree, willingly or reluctantly, that politics, sociology, anthropology, psychology, international relations and other aspects of society affect the economy. But these effects, whether supportive or distortive, are assumed external to the economy proper. And this assumption is pivotal. Although the effects of these so-called external factors alter economic outcomes, they leave the economic categories themselves intact. And this bifurcation, we argue, is the Achilles' heel of all economic theories, orthodox and heterodox, old and new. In our view, capitalism is not an economic system, but a conflictual mode of power. Those who rule this mode of power –

its dominant capitalists, politicians, mainstream academics, opinion makers and the various organizations they control – make every effort to conceal its power features. This is why neoclassical economics, beholden to its masters, can never be a science. But the problem besieges every and any economic theory that keeps power external to its basic categories. In our opinion, it is only when the study of capitalism substitutes for the narrow understanding of its economy that power can assume centre stage to reveal what economics is structured to conceal.

Bichler Nitzan (2021) on Stev Keen's Manifesto (pdf)



# 29

## Neo-liberal Economics

Neoliberalism is the ideology that advocates market primacy of social coordination.

The neoliberal solution to climate change is to hope that somehow it will become profitable to save the planet. This will not work. (@ExistentialComics)

Because neoliberalism has granted markets primacy, and because markets are vulnerable to large-scale runaway loops, neoliberalism is effectively a runaway feedback loop.

### 29.1 Washinton Consensus

John Williamson coined the term “Washington Consensus” to refer to a set of ten economic policies and reforms that received widespread support at the time. These policies included - maintaining fiscal discipline, - reordering public spending priorities (from subsidies to health and education expenditures), - reforming tax policy, - allowing the market to determine interest rates, - maintaining a competitive exchange rate, - liberalizing trade, - permitting inward foreign investment, - privatizing state enterprises, - deregulating barriers to entry and exit, and - securing property rights.

Williamson was writing in the context of Latin America as it was emerging from the debt crisis of the 1980s. His list of policies was not prescriptive but descriptive of what he thought various Washington-based institutions, such as the US Treasury, the International Monetary Fund, the World Bank, and various think tanks, agreed would stabilize and restore growth in the region.

Williamson’s original conception indicated the general direction in which policy should move, away from a heavily statist approach while retaining an important regulatory role for government.

Another version came to represent an extreme market-fundamentalist neoliberal approach that simplified economic policy to “stabilize, liberalize, and privatize” with minimal government, all of which was far from Williamson’s original intent.

Critics charged that the Washington Consensus ignored the problems associated with rising inequality and even encouraged the weakening of social safety nets.

A series of financial crises—the tequila crisis in 1994–95, the Asian crisis in 1997–98, and the Russian crisis of 1998—further damaged the reputation of Washington Consensus-type policies.

Of course, critics of the Washington Consensus usually did not argue that emerging markets should pursue policies of fiscal indiscipline, high inflation, financial repression, trade protectionism, overvalued exchange rates, more nationalization of business, and the like. Rather, they tended to argue that the original list of ten policies was incomplete and that additional policies were needed to improve economic performance. Williamson’s list was also very general, leaving ample room for debate as to how far to go in achieving those policy objectives.

But as we mark the thirtieth anniversary of John Williamson’s initial discussion of the Washington Consensus, it is important to recognize that a growing body of recent research suggests that the Consensus has produced tangible benefits while unorthodox populist policies have entailed significant economic costs. A key challenge for policymakers is to ensure that the benefits of economic reform are widely shared so that the divisions that lead to economic populism do not arise and erase those gains.

Peterson

Imagine writing ‘Washington Consensus really does work’ at the end of a year when central banks bought all bonds issued by fiscal authorities in high income countries, so said fiscal authorities can put safety nets under both capital and labour.

Including Nicaragua is problematic to start with: first Ortega regime had to contend with an internal war against paramilitaries (Contras) financed by US in the famous Iran-Contras affair. You’d think the paper would mention that.

Guys, the Sandinista Revolution was distracted from growth outcomes by Ronald Reagan bombing them for refusing to say ‘yes uncle, mi patria tu patio’

Ironically, Ortega’s rein since 2007 is far more consistent with the paper’s definition of ‘populism’, but it’s a Washington Consensus, pro-market populism, so of course, we go for the civil war period.

An entire subsection on infant mortality under Ortega vs ‘synthetic Nicaragua’ that does not mention the war! Of course, synthetic Nicaragua is one that the US empire doesn’t bomb.

Gabor (twitter comment)

Un thread à lire absolument pour voir le type d'analyse défendu par certains économistes américains universitaires réputés. Où inventer des pays “fictifs” entièrement à sa main est censé permettre de “prouver” le bénéfice de certaines lignes idéologiques. (@NBarreyre)

*Alves*

Decades of research have documented the devastating impacts of the Washington Consensus in the developing world. Yet revisionist accounts of this story have emerged in recent years. Remarkable amongst these, a recent blog post by the Peterson Institute for International Economics – “Washington Consensus stands the test of time better than populist policies” – draws on research that is jaw-droppingly ideological and flawed.

For decades, mainstream and heterodox economists broadly agreed that the Washington Consensus failed (Stewart 1995, Krueger 2004, Mkandawire 2005). Debt-crisis ridden developing countries that implemented the reforms associated with privatization, liberalisation and deregulation in the 1980s and 1990s tended to see an increase in poverty along with worsening health and educational outcomes. This led to the 1980s and 1990s being dubbed the ‘lost decades’ of development (Easterly 2001) and ultimately paved the way for the the post-Washington Consensus and pro-poor policies (Saad-Filho 2011).

But this is about to change. New methods that ‘produce credible counterfactuals in case studies’, turn the conventional wisdom of the Washington Consensus failure on its head (Marruzzo and Terzi 2017, Absher et al. 2020, Grier and Grier 2021). Essentially, the counterfactual approach involves first creating fictitious or synthetic countries, whose policy makers chose the opposite policy trajectory, and then testing whether the Washington Consensus package works better than the alternative. The results, the PIIE blog informs us, stack up for the Washington Consensus: countries adopting WC policies are shown to (eventually) be better off in GDP per capita terms. In contrast, left-wing populists – of the Latin American pedigree – hurt their economies by throwing the Washington Consensus policies out with the neoliberal bathwater.

If one unpacks its mechanics carefully, the counterfactual approach turns out to be a thinly-veiled ideological attempt to whitewash the Washington Consensus, to resurrect its key tenets: that minimising the footprint of the state is the right policy choice in health or education, that macroeconomic policy should mean inflation targeting by central banks not active fiscal policy by elected politicians, that state-owned companies are all white elephants in urgent need of privatization, that trade unions harm labour markets.

How does one empirically create a fictitious country? The synthetic control method predicts a ‘no Ortega’ growth/infant mortality path by creating a pool of ‘donor’ countries and calibrating their relative contribution to a synthetic Nicaragua such that the pre-Ortega growth or infant mortality path is close to actual Nicaragua. The Washington Counterfactual thus creates a synthetic

Nicaragua composed of 23% Chile, 54% Honduras, 9% Mexico, 8% Norway, and 7% the US.

Or, to bring a historical touch to the method, synthetic Nicaragua, like a neoliberal Frankenstein, consist of 7% country bombing Nicaragua (US), 54% country used by the CIA/US to bomb Nicaragua (Honduras), 23% country where Washington Consensus was being implemented by Chicago Boys and a military dictatorship (Chile), 8% country never analytically paired with the Washington Consensus (Norway), and Mexico. It is this synthetic Nicaragua where per capita GDP would have been 5.000 USD dollars higher, a Nicaragua that the US empire does not bomb.

Revisionist accounts of the Washington Consensus matter because the pandemic has revived the debate around the role that the state should play in the economy.

If anything, this is a powerful reminder that all economics is political, however much some hide it behind new or ‘sophisticated’ econometric techniques.

Alves on Peterson

## 29.2 Neoliberalism vs Capitalism

*Hickel*

**Neoliberalism is not the disease. It is just a symptom of the disease. The disease is capitalism.**

First, we need to understand what capitalism actually is. Under capitalism, the purpose of production is *not* primarily to meet human needs. This is no generic economy. Rather, the purpose is to maximize and accumulate profit. That is the core objective. Toward this end, capital seeks to cheapen inputs—labour and nature—as much as possible. For most of its history, capital brutally exploited workers in the core economies, and relied on imperialism to guarantee a steady supply of cheap labour and resources in the global South. But this arrangement came under threat after WWII. Labour movements in the core succeeded in winning better wages, better working conditions, and a wide-range of public services: healthcare, housing, education, transit... Meanwhile, in the South, anti-colonial movements overthrew imperialism and began introducing socialist reforms: nationalizing resources, improving wages, building public services, and using tariffs, capital controls and industrial policy to achieve economic sovereignty. This radical turn dramatically improved the lives of working people, North and South.

But the new regime of fair wages and resource prices made capital accumulation in the core increasingly untenable, triggering a crisis for elites in the 1970s. As it turns out, capitalism cannot function for very long under conditions of worker justice and decolonization.

For capitalists in the core, it was clear that something had to change. The core

states faced a choice: either they could accept the fair wages and decolonization, abandon capital accumulation and shift to a post-capitalist economy... *or* they could attack wages and somehow re-impose the imperial arrangement.

They opted hardcore for the latter. At home, they dismantled the unions and shredded public services. They slashed all manner of regulations and protections, in a desperate bid to restore the conditions for capital accumulation. Today we know this as neoliberalism. Neoliberalism was imposed even more brutally across the South, through structural adjustment programs. They reversed the socialist reforms of the anti-colonial era, cut wages and resource prices, and destroyed economic sovereignty... subordinating Southern economies once again. This was not some kind of “mistake”. Not just bad theory. Neoliberalism was imposed in order to restore the conditions for capital accumulation. It was an orchestrated backlash against the successes of the labour movement and the anti-colonial movement. This is why, despite 40 years of data on how destructive neoliberal policies are, we are still stuck in this nightmare.

We are stuck because the obvious solution—worker justice, regulation, and economic sovereignty in the South—is inimical to capital accumulation in the core. There is a way out of this nightmare, and that is to abandon capital accumulation as an objective and transition to a post-capitalist economy.

Neoliberalism is just a symptom. If we want to advance we need to deal with the underlying structural problem. \*steady, that is. We can have a democratic economy organized around meeting human needs at a high standard, where production is socially just and ecologically regenerative. Such a system is possible, but it requires transitioning out of capitalism.

Hickel (2022) Twitter thread ThreadReader



# 30

## Physiocrats

*Milanovic*

It is well-known in the history of economic thought that the founders of political economy, the Physiocrats and Quesnay in particular, thought that only agriculture is productive and manufacturing is “sterile”. Their use of the word “sterile”, and insistence on it, is unfortunate because the reality of what they argued is more sensible and sophisticated.

What they meant by “sterility” of manufacturing is that the price of manufactured goods does not reflect the true cost of production.

In a certain way, it was quite sensible: one cannot tax subsistence wages, nor can he tax profit that is at a “normal” rate if he believes that driving it below that rate will result in no production being undertaken at all. However, absence of surplus in manufacturing was at odds with what was observed in France at the time. As Georges Weulersse, the author of the most detailed analysis of physiocracy (see below), explains, large fortunes—by definition made of accumulated surpluses—existed in manufacturing. Yet Physiocrats stubbornly refused to admit that, and argued that these fortunes existed only because of special protection given to individual industrialists. Manufacturing, they held, could not produce surplus on its own without state protection.

It was only in agriculture that existed a surplus that could be taxed: ground rent. For in agriculture, price decomposes into depreciation, return to capital advanced by the tenant-farmer, subsistence wages paid to the hired labor and...the rent. Rent is not an income necessary to bring forth output. It is (as the nice formula has it) price-determined, not price-determining. It is the only net income which can be taxed and used to maintain a civilized society that needs government for the protection of property and administration of justice, and clergy for the provision of spiritual sustenance.

Physiocrats, quite consistently with this view, argued in favor of policies that would raise the price of land.

This is, in essence, the logic behind the view that only agriculture is productive, which, without looking at it more closely, seems strange to the modern ear. But thinking of it, poses the all-important question: what is net income? There is no general answer to that question. It depends on what the social structure is, and what is the goal of economic activity. Incomes that Physiocrats disregarded, i.e., wages, depreciation, interest, and entrepreneurial profit, are all parts of the gross value added as presently defined. Their and our components were not different. It is just that they were not interested in the components, like wages, that appear to us to be a valuable goal of economic activity.

Some suggested readings on Physiocrats:

Georges Weulersse, *Le mouvement physiocratique en France, de 1750 à 1770*. Paris: Maison des Sciences de Homme, Editions Mouton, 1910. Available at <http://archive.org/details/lemouvementphysi01weuluoft>. (A monumental two-volume discussion of the intellectual milieu before the Revolution within which the movement developed, its rise and fall, and its ideology.)

Gianni Vaggi, *The Economics of François Quesnay*, Durham, N.C : Duke University Press, 1987. (Excellent and sophisticated analysis of the physiocracy enlightened by Sraffianism.)

Ronald L. Meek, *Economics of Physiocracy*, Routledge, 1962. (A standard reference text with translation of selected writings, including *Le tableau économique* and brilliant introduction by the editor),

Marguerite Kuczynski and Ronald L. Meek (edited with new material, translations and notes), *Quesnay's "Tableau économique"*, London: MacMillan for the Royal Economic Society and the American Economic Association, 1972. (*Le Tableau* in all its grandeur and complexity with the commentary.)

Milanovic (2023) Net economic output in history: Why we work? Ideology behind economic accounting

# 31

## Productivism

*Rodrik*

There are signs of a major reorientation toward an economic policy framework that is rooted in production, work, and localism instead of finance, consumerism, and globalism. It might just turn into a new policy model that captures imaginations across the political spectrum.

A new bipartisan consensus may be emerging around “productivism,” which emphasizes the dissemination of productive economic opportunities throughout all regions and all segments of the labor force. Unlike neoliberalism, productivism gives governments and civil society a significant role in achieving that goal. It puts less faith in markets, is suspicious of large corporations, and emphasizes production and investment over finance, and revitalizing local communities over globalization.

Productivism also departs from the Keynesian welfare state by focusing less on redistribution, social transfers, and macroeconomic management and more on supply-side measures to create good jobs for everyone. And productivism diverges from both of its antecedents by reflecting greater skepticism toward technocrats and expressing less knee-jerk hostility to economic populism.

Examples include the embrace of industrial policies to facilitate the green transition, rebuild domestic supply chains, and stimulate good jobs; blaming large corporate profits as a culprit behind inflation, and refusing (so far) to revoke former President Donald Trump’s tariffs against China. When the administration’s most senior economist, Secretary of the Treasury Janet Yellen, extols the virtues of “friend-shoring” – sourcing supplies from US allies – over the World Trade Organization, we know the times are changing.

In those instances in which the market’s most efficient outcome is one that’s bad for our people what we need is targeted industrial policy to further the common good.

“State capacity” is one of its main planks, emphasizing that governments’ ability to provide public goods is important for a healthy economy.

“Pro-worker policies” and “the encouragement, through government policy, of domestic production.”

Rodrik (2022) Productivism

## 32

# Steady State Economics (SSE)

### 32.1 Herman Daly

Point Policy Summary From “A Steady-State Economy,” by Herman E. Daly  
School of Public Policy, University of Maryland, College Park MD 20742 USA

1. Cap-auction-trade systems for basic resources. Cap limits to biophysical scale according to source or sink constraint, whichever is more stringent. Auction captures scarcity rents for equitable redistribution. Trade allows efficient allocation to highest uses.
2. Ecological tax reform—shift tax base from value added (labor and capital) and on to “that to which value is added”, namely the entropic throughput of resources extracted from nature (depletion), through the economy, and back to nature (pollution). Internalizes external costs as well as raises revenue more equitably. Prices the scarce but previously unpriced contribution of nature.
3. Limit the range of inequality in income distribution—a minimum income and a maximum income. Without aggregate growth poverty reduction requires redistribution. Complete equality is unfair; unlimited inequality is unfair. Seek fair limits to inequality.
4. Free up the length of the working day, week, and year—allow greater option for leisure or personal work. Full-time external employment for all is hard to provide without growth.
5. Re-regulate international commerce—move away from free trade, free capital mobility and globalization, adopt compensating tariffs to protect effi-

cient national policies of cost internalization from standards-lowering competition from other countries.

6. Downgrade the IMF-WB-WTO to something like Keynes' plan for a multi-lateral payments clearing union, charging penalty rates on surplus as well as deficit balances— seek balance on current account, avoid large capital transfers and foreign debts.
7. Move to 100% reserve requirements instead of fractional reserve banking. Put control of money supply and seigniorage in hands of the government rather than private banks.
8. Enclose the remaining commons of rival natural capital in public trusts, and price it, while freeing from private enclosure and prices the non rival commonwealth of knowledge and information. Stop treating the scarce as if it were non scarce, and the non scarce as if it were scarce.
9. Stabilize population. Work toward a balance in which births plus immigrants equals deaths plus out-migrants.
10. Reform national accounts—separate GDP into a cost account and a benefits account. Compare them at the margin, stop growing when marginal costs equal marginal benefits. Never add the two accounts.

Herman Daly (2008) Steady State Economy (Sustainable Development Commission) (pdf)

# 33

## Spatial Economics

### Agglomeration Economics

(Ongoing Research Programme)

HSCIF

### 33.1 Urban Economics

When and why did the expertise associated with economics as an academic discipline become so highly valued in the world of public policy?

The embedding of agglomerationism within the thinking of policy-makers and governmental institutions provides a fascinating example of a broader shift towards the growing impact of economic expertise, and indeed of individual economists, on policy-making.

This focus sits within a wider field of study which is interested in the complex roles that economists have at times played – as public intellectuals, policy experts and academic specialists. How different kinds of analytical tools and a particular style of economic reasoning made their way into the world of elite decision-making is a major theme of interest for many historians and social scientists. So too is the related question of how quantification (testable theoretical hypotheses, measurement technique and indicators, as well as decision-models) has over the last few decades gained ascendancy in policy circles.

History of Urban Policy Expertise

#### 33.1.1 Expertise

*Expertise under Pressure*

What is the role of experts in understanding social change? Expert judgment today is both intensely sought out, across private and public spheres, and also intensely criticised and derided with well-publicised failures to predict various high profile social and natural phenomena. Does the problem lie with the very idea that objective expertise about complex processes is attainable? Or does it stem from the way that expert judgment is developed and communicated? Or, perhaps it reflects the diminished standing of experts and expert knowledge in democratic and pluralistic societies?

To explore these questions, we propose three case studies in which expert judgment is both consequential and controversial. They are the UK Government's emergency response, the use of agglomeration theory in city planning, and deep philosophical controversies about the possibility and objectivity of social science. These cases differ in scope and focus but they enable us to analyse four distinct features of legitimate expertise: sensitivity to temporal scale, translatability in space, ambivalence about precision, and moral responsibility. The overarching goal of the project is to establish a broad framework for understanding what makes expertise authoritative, when experts overreach, and what realistic demands communities should place on experts.

CRASSH Expertise under Pressure Programme

### 33.1.2 Trusting Science

*Bennett*

Trust is necessary for many kinds of policy, particularly where that policy requires citizens to comply with rules that come at significant cost, and coercion alone would be ineffective. What is distinctive about our pandemic policies is that they depend not just on public trust in policy, but public trust in the science that we are told informs that policy.

When public policy claims to follow the science, citizens are asked not just to believe what they are told by experts, but to follow expert recommendations.

While ministers defer to scientists, those same scientists have been eager to point out that their role is exclusively advisory.

We are still being asked by the government to trust in recommendations provided by experts, even if the government is not being led by evidence in the way it would have us believe. The communications strategy may not be honest.

Public trust in science is both a necessary and desirable feature of an effective public health response to the pandemic. But it is desirable only insofar as it is well placed trust. What makes trust in experts reasonable, when it is?

A perceived threat to knowledge about a range of basic facts that most of us don't have the resources to check for ourselves.

If an expert tells me that something is the case this is enough reason for me

to believe it too, provided that I have good reason to think that the expert in question has good reason to believe what they tell me.

Is it still reasonable to trust science when it doesn't just provide policy-relevant facts, but leads the policy itself?

Knowledge regarding the relevant facts might not reliably indicate ability to reason well about what to do in light of the facts.

Well-placed trust in the recommendation of an expert is more demanding than well-placed trust in their factual testimony.

A good reason for an expert to think I should do something is not necessarily a good reason for me to do it. This is because what I value and what the expert values can diverge without either of us being in any way mistaken about the facts of our situation.

One helpful measure to show the public that a policy does align with their interest is what is something called *expressive overdetermination*: investing policy with multiple meanings such that it can be accepted from diverse political perspectives. Reform to French abortion law is sometimes cited as an example of this. After decades of disagreement, France adopted a law that made abortion permissible provided the individual has been granted an unreviewable certification of personal emergency. This new policy was sufficiently polyvalent to be acceptable to the most important parties to the debate;

A second helpful measure, which complements expressive overdetermination, is to recruit spokespersons that are identifiable to diverse groups as similar to them in political outlook. This is sometimes called *identity vouching*. The strategy is to convince citizens that the relevant scientific advice, and the policy that follows that advice, is likely not to be a threat to their interests because that same consensus is accepted by those with similar values.

Expressive overdetermination and identity vouching are ways of showing the public that a policy is in their interests. Whether they really are successful at building public trust in policy, and more specifically in science-led policy, is a question that needs an empirical answer. What I have tried to show here is that we have good theoretical reasons to think that such additional measures are needed when we are asking the public not just to believe what scientists tell us is the case, but to comply with policy that is led by the best science.

Public trust in science comes in at least two very different forms: believing expert testimony, and following expert recommendations. Efforts to build trust in experts would do well to be sensitive to this difference.

[Bennett - Trusting the experts take more than belief(Blog Post)]<https://hscif.org/trusting-the-experts-takes-more-than-belief/>

## 33.2 History of Urban Economics

### *Cherrier and Rebours*

The field of ‘Urban Economics’ is an elusive object. That economic phenomena related to the city might need a distinctive form of analysis was something economists hardly thought about until the early 1960s. In the United States, it took a few simultaneous scholarly articles, a series of urban riots, and the attention of the largest American philanthropies to make this one of the hottest topics in economics. The hype about it was, however, short-lived enough so that, by the 1980s, urban economics was considered a small, ‘peripheral’ field. It was only through the absorption into a new framework to analyze the location of economic activities – the ‘New Economics Geography’ – in the 1990s that it regained prominence.

Understanding the development of urban economics as a field, or last least the variant which originated in the US and later became international, presents a tricky task. This is because the institutional markers of an academic field are difficult to grasp. A joint society with real estate economists was established in 1964, and a standalone one in 2006; a journal was founded in 1974, with an inaugural editorial which stated that: “Urban economics is a diffuse subject, with more ambiguous boundaries than most specialties. Situated within a master-discipline (economics) that is often described as exhibiting an articulated identity, clear boundaries with other sciences and strict hierarchies, urban economics is an outlier.”

There is, however, one stable and distinctive object that has been associated with the term ‘urban economics’ throughout the 1970s, the 1980s, the 2000s and the 2010s: the Alonso-Muth-Mills model (AMM). It represents a monocentric city where households make trade-offs between land, goods and services, and the commuting costs needed to access the workplace. The price of land decreases with distance from the city center. The model was articulated almost simultaneously in William Alonso’s dissertation, published in 1964, a 1967 article by Edwin B. Mills, and a book by John Muth published in 1969. This trilogy is often considered as a “founding act” of urban economics.

### **Agglomeration**

In 1956, William Alonso moved from Harvard, where he had completed architecture and urban planning degrees at the University of Pennsylvania. He became Walter Isard’s first graduate student in the newly founded department of “regional science.” He applied a model of agricultural land use developed 150 years earlier by the German economist Johann Von Thünen to a city where all employment is located in a Central Business District. His goal was to understand how the residential land market worked and could be improved. His resulting PhD, Location and Land Use, was completed in 1960. Around that time, young Chicago housing economist Richard Muth spent a snowstorm lockdown thinking about how markets determine land values. The resulting model he developed

was expanded to study population density. And a book based on it was published a decade later: *Cities and Housing*. Drafts of Alonso and Muth's work reached inventory specialist Edwin Mills in 1966, while he was working at the RAND corporation, and trying to turn models describing growth paths over time into a model explaining distance from an urban center. His "Aggregative Model of Resource Allocation in a Metropolitan Area" was published the next year.

This new set of models immediately drew attention from a wide array of transportation economists, engineers and geographers concerned with explaining the size and transformation of cities, why citizens chose to live in centers or suburbs, and how to develop an efficient transportation system. The economists included Raymond Vernon and Edgar Hoover, whose study of New York became the *Anatomy of the Metropolis*; RAND analyst Ira Lowry, who developed a famous spatial interaction model; spatial and transportation econometrician Martin Beckman, based at Brown; and Harvard's John Kain, who was then working on his spatial mismatch hypothesis and a simulation approach to model polycentric workplaces. Through the early works of Brian Berry and David Harvey, quantitative urban geographers also engaged with these new urban land use models.

But the development of a new generation of models relying on optimization behavior to explain urban location was by no mean sufficient to engender a separate field of economics. Neither Alonso, who saw himself as contributing to an interdisciplinary regional science, nor Muth, involved in Chicago housing policy debates, cared much about its institutionalization. But both were influenced and funded by men who did. Muth acknowledged the influence of Lowdon Wingo, who had authored a land use model. Together with Harvey Perloff, a professor of social sciences at the University of Chicago, they convinced the Washington-based think-thank Resource for the Future to establish a "Committee for Urban Economics" with the help of a grant by the Ford Foundation. The decision was fueled by urbanization and dissatisfaction with the urban renewal programs implemented in the 1950s. Their goal was to "develop a common analytical framework" through the establishment of graduate programs in urban economics.

Their agenda was soon boosted by the publication of Jane Jacobs' *The Death and Life of Great American Cities*, and by growing policy interest in the problems of congestion, pollution, housing segregation and ghettoization, labor discrimination, slums, crime and local government bankruptcy, and by the stream of housing and transportation acts which were passed in response to these. The Watts riots, followed by the McCone and Kerner commissions, acted as an important catalyst. The Ford Foundation poured more than \$ 20 millions into urban chairs, programs and institutes through urban grants awarded to Columbia, Chicago, Harvard and MIT in 1967 and 1970. The first round of funds emphasized "the development of an analytical framework", and the second sought "a direction for effective action." As a consequence of this massive investment,

virtually every well-known US economist turned to urban topics.

At MIT, for instance, Ford's money was used to set up a two-year "urban policy seminar," which was attended by more than half of the department. The organizer was welfare theorist Jerome Rothenberg, who had just published a book on the evaluation of urban renewal policies. He was developing a large-scale econometric model of the Boston area with Robert Engle and John Harris, and putting together a reader with his radical colleague Matt Edel. Department chair Carry Brown and Peter Diamond were working on municipal finance. Robert Hall was studying public assistance while Paul Joskow examined urban fire and property insurance. Robert Solow developed a theoretical model of urban congestion, published in a 1972 special issue of the Swedish Journal of Economics, alongside a model by taxation theorist Jim Mirrlees investigating the effect of commuter and housing state tax on land use. Solow's former student Avinash Dixit published an article modeling a tradeoff between city center economies of scale and commuting congestion costs in another special issue on urban economics in the Bell Journal the next year. A survey of the field was also published in the Journal of Economic Literature, just before the foundation of the Journal of Urban Economics in 1974.

### **Segregation**

But the publication of a dedicated journal, and growing awareness of the "New Urban Economics" was not the beginning of a breakthrough. It turned out to be the peak of this wave. On the demand side, the growing policy interest and financial support that had fueled this new body of work receded after the election of Richard Nixon and the reorientation of federal policies. On the supply side, the mix of questions, methods and conversations with neighboring scholars that had hitherto characterized urban economics was becoming an impediment. More generally, the 1970s was a period of consolidation for the economics profession. To be considered as bona fide parts of the discipline, applied fields needed to reshape themselves around a theoretical core, usually a few general equilibrium micro-founded workhorse models. Others resisted, but could rely on separate funding streams and policy networks (development and agricultural). Urban economics was stuck.

Policy and business interest was directed toward topics like housing, public choice and transportation. And, combined with the growing availability of new microdata, micro-econometrics advances, and the subsequent spread of the personal computer, this resulted in an outpouring of applied research. Computable transportation models and real estate forecasting models were especially fashionable.

On the other hand, a theoretical unification was not in sight. Workhorse models of the price of amenities, the demand for housing, or suburban transportation, were proposed by Sherwin Rosen, William Wheaton and Michelle White, among others. But explanations of the size, number, structure and growth of cities were now becoming contested. J. Vernon Henderson developed a general equilibrium

theory of urban systems based on the trade-off between external economies and diseconomies of city size, but in these agglomeration effects did not rely on individual behavior. Isard's former student Masahita Fujita proposed a unified theory of urban land use and city size that combined externalities and the monopolistic competition framework pioneered by Dixit and Joseph Stiglitz, but without making his framework dynamic or relaxing the monocentric hypothesis. At a point when there was growing interest in the phenomenon of business districts – or Edge cities as journalist Joël Garreau called them, this was considered a shortcoming by many economists. General equilibrium modelling was rejected by other contributors, including by figures like Harry Richardson, and a set of radical economists moving closer to urban geographers (such as David Harvey, Doreen Massey and Allen Scott) working with neo-Marxist ideas.

### **Renewal**

In the 1990s, various trends aimed at explaining the number, size, evolution of cities matured and were confronted to one another. In work which he framed as contributing to the new field of “economic geography,” Krugman aimed to employ his core-periphery model to sustain a unified explanation for the agglomeration of economic activity in space. At Chicago, those economists who had spent most of the 1980s modeling how different types of externalities and increasing returns could help explain growth – among them Robert Lucas, José Scheinkman and his student Ed Glaeser – increasingly reflected on Jane Jacob's claim that cities exist because of the spillover of ideas across industries which they facilitate. Some of them found empirical support for her claim than for the kind within-industry knowledge spillovers Henderson was advocating.

Krugman soon worked with Fujita to build a model with labour mobility, trade-offs between economies of scale at the plant level and transportation costs to cities. Their new framework he was adamant to compare to Henderson's general equilibrium model of systems of cities. He claimed that their framework enabled the derivation of agglomeration from individual behavior and could explain not only city size and structure, but also location. In his review of Krugman and Fujita's 1999 book with Venables, Glaeser praised the unification of urban, regional and international economics around the microfoundations of agglomeration theory. He also contrasted Krugman's emphasis upon transportation costs – which were then declining – with other frameworks focusing on people's own movement, and began to sketch out the research program focused on idea exchanges that he would develop in the next decades. He also insisted on the importance of working out empirically testable hypotheses.

The “New Economic Geography” was carried by a newly-minted John Bates Clark medalist who had, from the outset, promised to lift regional, spatial and urban economics from their “peripheral” status through parsimonious, micro-founded, tractable and flexible models. It attracted a new generation of international scholars, for some of whom working on cities was a special case of contributing to spatial economics. In the process, however, older ties with geographers were severed, and questions that were closely associated with changing

cities, like the emergence of the digital age, congestion, inequalities in housing, segregation, the rise of crime and urban riots, became less central to the identity of this field. The field lost some sort of autonomy.

Most recently, Glaeser's insistence that urban models need to be judged by their empirical fit may be again transforming the identity of urban economics. The shift is already visible in the latest volume of the series of Handbooks in Urban and Regional Science. Its editors (Gilles Duranton, Henderson and William Strange) explain that, while its previous volume (2004) was heavily focused on agglomeration theory, this one is "a return to more traditional urban topics." And the field is now characterised not in terms of a unified, theoretical framework, but with reference to a shared empirical epistemology about how to develop causal inferences from spatial data.

Overall, the successive shifts in urban economists' identity and autonomy which we describe here, were sometimes prompted by external pressures (urban crises and policy responses) and sometimes from internal epistemological shifts about what counts as "good economic science." A key development in the 1970s was the unification around general equilibrium, micro-founded models. It is widely held that the profession is currently experiencing an "applied turn" or a "credibility revolution", centered on the establishment of causal inference (gold) standards. How this will affect urban economics remains unclear.

Cherrier and Rebours

### 33.2.1 Jane Jacobs

Considering her contribution to economic theory may seem counter-intuitive. In addition to lacking academic credentials, she took little interest in engaging the discipline of economics. Her models were neither formal nor developed in reference to existing models. And her view of economic theory in general was dismissive. In the opening chapter of *Cities and The Wealth of Nations*, "Fool's paradise," Jacobs lays out a history of economic thought and arrives at this sweeping conclusion: "Choosing among the existing schools of thought is bootless. We are on our own." The same dismissive stance extended to academic institutions, as she refused numerous honorary degrees from various Universities.

#### **Jacobs Externalities**

Some economists picked up on her insights. A type of economic externality has been derived from her detailed historical accounts of new economic activities arising from urban diversity. Chicago and Harvard urban economists Glaeser, Kallal, Scheinkman, and Shleifer credited Jacobs in 1992 for identifying cross-industry knowledge transfers, which they dubbed "Jacobs externalities." The concept was based on Jacobs' *The Economy of Cities* and posits that knowledge transfer occur between different industries, and that local competition supports economic growth.

This came four years after future Nobel prize recipient Robert Lucas pointed to Jacobs' work while investigating the external effects of human capital in his 1988 article *On the Mechanics of Economic Development*, although without formalizing his insight. Lucas' endorsement earned Jacobs increasing recognition among economists over the following decades. Paul Krugman described her as a "patron saint of the new growth theory" and her unusual status was summed up by Robert Dimand and Robert Koehn who saw her as "her own distinctive kind of political economist ... an exceptional instance of a woman without academic affiliation or university training achieving recognition among leading academic economists". And a considerable literature grew up after Glaeser et al.'s piece. Despite this interest in her work, extended reassessments of her contribution to economic thought have yet to appear.

The city economy model, first developed in *The Economy of Cities*, argues that the desirable diversification of local economic activities depends largely on the destination of goods and services entering the city's economy. The key claim is that imports are key to economic development: they embody knowledge and allow further diversifications in the local economy, as imports are gradually replaced by local supply, and make "room" for new imports – in a similar manner to import substitution. Jacobs uses this model to stress the long-term undesirability of overspecialization derived from a focus on maximizing exports, and the importance of a large and diverse local economy – ultimately delivering a critique of comparative advantages as an organizing principle of trade.

The more niches that are filled in a given natural ecology, other things being equal, the more efficiently it uses the energy it has at its disposal ... That is another way of saying that economies producing diversely and amply for their own people and producers, as well as for others, are better off than specialized economies ...

The most elaborate study of Jacobs' use of biological and ecological analogies is provided in mathematician and philosopher David Ellerman's paper *How Do We Grow? Jane Jacobs on Diversification and Specialization* (2005).

Depicting the city economy's boundaries as an open system governed by evolutionary dynamics: "development is a conceptualized form of social learning." Incoming goods, the products of foreign know-how, are vectors of developmental learning. And exports of commodities and services fund these imports. When imports feed into the somewhat enclaved export economy (i.e. overspecialized), they have a lesser effect than when they are dissipated in local consumption.

Following Geoffrey Hodgson's taxonomy in *Economics and Evolution* (1993), part of Jacobs' system could be characterized as phylogenetic and non-consummatory, that is, as exhibiting an open-ended process of evolutionary selection among a population of firms and individuals.

Jacobs targeted development schemes developed by the World Bank. She pointed to the inherent weaknesses of Robert McNamara's development strategies for addressing "basic human needs" (literacy, nutrition, reduction

in infant mortality, and health) of poor populations. She argued that because economic development is a process, it cannot be thought of as a “collection of things” which can be bought or provided. The “basic human needs approach” ignored the necessity for solvent markets to support increased agricultural yields and the populations that were being displaced. As they could no longer rely on agricultural work to sustain themselves, displaced workers failed to find jobs in nearby city economies, where labor markets had not evolved alongside the increased agricultural yields through a succession of appropriate feedback mechanisms triggering the needed corrections. And she made the same argument against technology transfers in the “Green Revolution” of the 1960s and 1970s.

The mechanism of feedback relationships is one example among others of Jacobs’ usage of systemic concepts to draw boundaries around the city economy as a system and elaborate on its behavior. Further examination of Jacobs’ use of these concepts within the paradigm she adopted may reveal a consistent link between her analysis of cities as economic units and the policies she is tended to critique. In short, future attempts at more comprehensive interpretations of Jacobs’ economic thought might benefit from stepping away from the urban focus of *The Death and Life of Great American Cities* while considering more carefully her later economic writings.

Divry on Jacobs

### 33.3 Regional Economics

#### *Rebours*

The history of regional science offers an interesting case study, as well as a one of the few examples, of the institutionalization of an entirely new scientific field in the years after 1945. Its foundation by Walter Isard and a group of social scientists in the 1950s represents the most institutionalized attempt to stimulate the relationship between economics and geography. The original project of Isard, who was trained as an economist at Harvard, was to promote the study of location and regional problems.

And at the outset, regional science was, in various ways, a success. It attracted many scholars from different disciplines, mostly economics, geography and urban/regional planning, and it quickly became institutionalized formally through the foundation of the Regional Science Association (RSA) in 1954 and establishment of a Regional Science Department at the University of Pennsylvania in 1958. At the same time, the creation of the Papers and Proceedings of The Regional Science Association in 1955 and of the Journal of Regional Science in 1958, offered new publication venues for scholars interested in location analysis, in particular quantitative geographers who found it difficult to publish in traditional geography journals. Within economics, regional science influenced analytical works in urban economics, as, for instance, William Alonso’s thesis,

widely recognized as one of the foundational works of urban economics, was written at Penn under the supervision of Isard in 1960.

However, the prevailing processes of knowledge production and evaluation which shaped the emergence of this new field were deeply influenced by economics. Geographers became dissatisfied with Isard's vision of the hierarchical division between geographers and economists, and the primacy given to economic theorizing and modelling as the core of the new regional science. Thus, the social organization of the field of regional science and its interactions with other disciplines mirrored the particularity of economics, a hierarchical discipline organized around a strong theoretical core and an insularity from the rest of social sciences.

In the late 1940s, Isard became increasingly concerned about the lack of interest among economists in the location of economic activities. His perception of the subject was not really different to his colleagues, but he wanted to improve the theory they used, which, following the British tradition of the late 19th century, suffered from a lack of spatial dimension. He did not seek to challenge the general equilibrium economic theory that was becoming dominant, but sought instead to integrate a spatial aspect within it.

In 1949 Isard was recruited to Harvard by Wassily Leontief to develop an input-output approach to regional development. During the war, input-output analysis received much attention because it enabled the American Air Force to identify the best targets for bombing. As a consequence, Leontief had received large research funds to develop his input-output framework.

Isard expressed a hierarchical division between economists, who provided the analytical foundations of regional science, and the geographers, who provided the empirical facts and testing.

While, the identity of economics was legitimated and reinforced by its success during the war, in geography, there was an increasing dissatisfaction with the regional geography approach that dominated the field in the 1950s. The Cold War context facilitated the promotion of a new generation of quantitative geographers looking for more scientific methods.

By the mid-1970s, regional science experienced a progressive decline when geographers started to distance themselves from the analytical methods that were promoted by Isard. But even after the Regional Science Department at Penn closed its doors in 1993, regional science journals remained a going concern and continued to promote studies of spatial issues notably from urban economics and, after 1991, New Economic Geography.

Rebours



## 34

# Biophysical Economics

The field of ecological economics is extremely heterogeneous but can be separated, in my opinion, into two factions: those who wish to measure ecosystems in monetary units and those who wish to measure the human economy in biophysical units. (Blair Fix)

### *Yan Abstract*

Global civilization is experiencing social and economic turmoil. Human are experiencing deterioration of environment and uncontrollable declines in GDP. Traditional economic theory has been continuously advancing yet seems unable to predict these crises or provide adequate public policies to address them. A biophysical version of economic theory uses mass and energy flows as well as environmental constraints to describe the delivery of goods and services. Ongoing development in biophysical economic theory may provide some new guidance. In this review paper, Authors analyze the progression of historical economic arguments, explore their assumptions and their development and compare them to the currently developing biophysical economics framework which, instead of focusing on investment, debt, and growth, focuses on sustainable energy and mass flows to deliver goods and services to civilization

### *Yan Memo*

*Table 3. Comparison between biophysical economics and mainstream economics.*

Content	Neo-Classical	Biophysical
Wealth root	Land, Labor, Capital	Energy
Distribution	Market	Resource Constraints
Hypothesis	Rational people	Base on Nature
Determinants	Labor and Capital	Energy
Gov. role	Macro Control	Env.protection

Yan (2019) (pdf)

*Fix*

This book tested four implicit assumptions made by neoclassical growth theory:

1. Economic output can become decoupled from energy inputs.
2. Economic distribution is unrelated to growth.
3. Large institutions are not important for growth.
4. Labor force structure is not important for growth.

In all cases, the empirical evidence directly contradicted these assumptions. For those who think that a scientific theory should be based on empirically grounded facts, this critique alone provides compelling reasons to abandon neoclassical growth theory.

To conclude, the shortcomings of neoclassical growth theory can be summarized as follows:

1. It does not explain the phenomenon for which it is designed to explain. The majority of growth is attributed to the ‘Solow-residual’, which is an internalized error function. Neoclassical economists model the residual with an exponential function of time. However, if resorting to a function of time, Occam’s razor would suggest that we discard the remainder of the production function in favor of a pure function of time.
2. There are fundamental problems associated with the measurement of the theory’s basic variables (output and capital input). The accepted method is to

measure capital and output quantities by way of monetary value. However, such an approach requires making inherently subjective decisions, since the underlying unit (price) is not well-defined. Moreover, it appears that the current approach to measuring capital and output may be circularly dependent on neoclassical theory. Therefore, such metrics are inappropriate for testing neoclassical theory.

3. Its implicit assumptions are directly contradicted by empirical evidence. Rather than being ‘innocuously’ untrue, the implicit assumptions made by neoclassical theory are ‘insidiously’ untrue. The theory excludes from its scope some of the most fundamental aspects of growth. Thus neoclassical growth theory maintains simplicity by courting irrelevance.
4. The remaining empirical support for the theory is tautological. The strong empirical results on which neoclassical growth theory purportedly rests neither elucidate the underlying technical form of the economy nor provide support for the marginal productivity theory of distribution. Instead, they are the result of a tautological relation between the production function form and an algebraic transformation of the national accounts identity. Where, then, does this leave neoclassical growth theory? It seems fair to

conclude that it is an elegant mathematical construct that has little to do with the real world.

### **A Biophysical Approach**

Such a theory must begin by asking a very simple question, but one that is not often asked in economic theory: why do we have growth at all? Indeed, growth is such an ephemeral phenomenon in the history of humanity that its very existence should be surprising. In my opinion, satisfying theories about the origins of growth do not come from economics, but from thermodynamics and the study of complex systems. In order to understand why growth exists, I propose that we need only two hypotheses:

1. All complex, non-equilibrium systems must be sustained by flows of energy and/or matter. Increases in these flows allow the system to expand.
2. An industrial economy is a non-equilibrium system that is energetically sustained primarily by exploitation of the finite stock of fossil fuels. Growth, then, is possible whenever a new energy source is made available. Prior to industrialization, technological constraints prevented humans from exploiting fossil fuel energy. However, once sufficient technology existed, a feedback-loop set in. Previously harvested resources and energy were transformed into technology that was powered by fossil fuels and which generated enough surplus to not only power the economy but to exploit further fuels. Continuous iteration of this loop led to exponential growth.

Biophysical growth, as I have defined it in this book, is the increase in the rate at which resources (specifically energy) flow through the economy. Thus, in Bardi and Lavacchi's model, biophysical growth is represented by the rate of resource extraction ( $\dot{R}$ ). A robust feature of this model is that it produces bell-shaped resource extraction curves through time.

This model gives some analytic rigor to the peak and decline scenario envisioned at the outset of the book. But while it indicates that a future energy consumption curve might be bell-shaped, it does not indicate how a future energy decline will affect society. It is also important to distinguish between external and internal constraints to growth. External (resource) constraints can describe the long-run behavior of the economy, but internal (social) constraints dominate the short-run. Historical crises have almost all been due to internal, social dynamics.

Even with the imposition of external, biophysical constraints, there is little reason to think that complex social dynamics will cease to be of importance in the future. Thus, an understanding of the future will require models, but also in-depth empirical study of the past.

### **A Biophysical Approach**

Given the inadequacy of neoclassical theory, what is the best alternative? As

should be obvious by now, I think that a biophysical approach to growth theory provides the most suitable way forward. Such a theory must begin by asking a very simple question, but one that is not often asked in economic theory: why do we have growth at all? Indeed, growth is such an ephemeral phenomenon in the history of humanity that its very existence should be surprising. In my opinion, satisfying theories about the origins of growth do not come from economics, but from thermodynamics and the study of complex systems. In order to understand why growth exists, I propose that we need only two hypotheses:

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Growth, then, is possible whenever a new energy source is made available. Prior to industrialization, technological constraints prevented humans from exploiting fossil fuel energy. However, once sufficient technology existed, a feedback-loop set in. Previously harvested resources and energy were transformed into technology that was powered by fossil fuels and which generated enough surplus to not only power the economy but to exploit further fuels. Continuous iteration of this loop led to exponential growth.

What is the simplest way to model this feedback-loop? Bardi and Lavacchi (2009) have shown that the famous Lotka-Volterra equations (which are usually used to model predator-prey dynamics) can be adapted to model the resource exploitation process:

$$= -k_1 TR$$

$$= k_2 TR - k_3 T$$

Here  $R$  represents a resource stock and  $T$  represents a stock of technological infrastructure. Equation 1 states that the rate at which the resource is harvested ( $\dot{R}$ ) depends upon the size of the technological stock, the size of the resource stock, and the efficiency of resource extraction ( $k_1$ ). This equation indicates that a greater technological stock can accelerate resource exploitation, but as the size of the resource stock dwindles (as  $R$  decreases), the pace of resource exploitation will slow. Equation 2 states that harvested resources are transformed into technology. The rate of this transformation ( $\dot{T}$ ) is dictated by the rate of resource harvest ( $\dot{R}$ ) and the efficiency of the transformation process ( $k_2$ ). Additionally, technology (and its instruments) is subject to entropic decay ( $-k_3 T$ ) at a rate determined by  $k_3$ . Biophysical growth, as I have defined it in this book, is the increase in the rate at which resources (specifically energy) flow through the economy. Thus, in Bardi and Lavacchi's model, biophysical growth is represented by the rate of resource extraction ( $\dot{R}$ ). A robust feature

of this model is that it produces bell-shaped resource extraction curves through time. Thus, the essential insights of this model are:

- 1) growth can be modelled in terms of a feedback-loop between technology and natural resource extraction; and
- 2) the ultimate growth limit is set by the size of the finite stock of resources.

This model gives some analytic rigor to the peak and decline scenario envisioned at the outset of the book. But while it indicates that a future energy consumption curve might be bell-shaped, it does not indicate how a future energy decline will affect society. It is also important to distinguish between external and internal constraints to growth. External (resource) constraints can describe the long-run behavior of the economy, but internal (social) constraints dominate the short-run. Historical crises have almost all been due to internal, social dynamics (think of the Great Depression). Even with the imposition of external, biophysical constraints, there is little reason to think that complex social dynamics will cease to be of importance in the future. Thus, an understanding of the future will require models, but also in-depth empirical study of the past.

What is needed is a biophysical research agenda – one that seeks to **systematically understand the relation between energy consumption and all aspects of human society**. Energy scholars such as Ayres and Warr (2009), Giampietro et al. (2012), Hall and Klitgaard (2012) and Smil (2010) have made significant contributions on this front, but much more work is needed.

### **Stylized Biophysical Facts**

As I stated at the outset of the book, a good starting point for a new theory is to investigate the assumptions made by existing theory. If the results of this book tell us nothing else, it is that a good starting place for a biophysical growth theory is to begin with what neoclassical theory *ignores*.

Neoclassical growth theory ignores

- the role of energy, yet the expansion of energy consumption is the single most important aspect of growth.
- distribution, yet distribution is fundamentally connected to growth.
- large institutions, yet such institutions play a central role in growth.
- changes in labor structure, yet changes in this structure are essential to growth.

A theory is always the product of the phenomena it seeks to explain. What does neoclassical growth theory seek to explain? Nearly 60 years ago, Nicholas Kaldor (1957) outlined six statements that came to be known as the ‘Kaldor facts’ of economic growth. In many ways, the goal of neoclassical growth theory has been to explain these facts. Kaldor’s facts can be paraphrased as follows:

1. Output per worker grows at a roughly constant rate that does not decrease over time.
2. Capital per worker increases over time.
3. The capital/output ratio is roughly constant.
4. The rate of return to capital is roughly constant.
5. The share of capital and labor in net income are roughly constant.
6. Labor productivity growth rates vary considerably between societies.

Notice that 5 out of 6 of these facts are concerned with either something that remains ‘constant’ (facts 1, 3, 4, 5) and/or something that ‘grows over time’ (facts 1, 2). The logical offspring of these facts is a theory in which growth is constant and inevitable (i.e. neoclassical growth theory). Notice also the focus on capital. Neo-classical growth theory places capital at the center of its explanation of growth, but never bothers to explain *where capital comes from*.

This neglect is likely the result of the neoclassical duality of capital. Note that when one applies compound interest to financial capital, the financial stock will grow exponentially. Neoclassical theory takes the logic of financial capital and applies it to the physical capital stock. Yet such a stock cannot be self-perpetuating – the laws of thermodynamics forbid it. Neoclassical theory fails to see that physical capital (i.e. a technological stock) is primarily a means for converting energy into useful work. Without an energy flow, physical capital cannot fulfil its purpose (think of a tractor without fuel).

By focusing on constant and inevitable growth driven by the accumulation of capital, neoclassical theory set itself on the wrong course from the very beginning. The focus of a growth theory should be on *energy*. Energy is the driving force that sustains all biophysical systems.

### **Seven Stylized Biophysical Facts**

Trends accompanying increases in energy use per capita:

1. Large institutions (corporations and governments) increase their employment share.
2. Agricultural employment decreases.
3. Service employment increases.

Trends accompanying increases in the energy use per capita *growth rate*:

1. The value of production increases relative to the price of energy.
2. The share of profit in national income increases.
3. Debt claims decrease relative to the value of production.
4. Downward income redistribution is more likely to occur.

A good starting point for a biophysical growth theory is to attempt to explain these seven stylized biophysical facts in a way that is both internally coherent and consilient with accepted scientific knowledge.

Energy is the “universal currency”.

[Fix \(2015\) Biophysical Growth Theory \(pdf\)](#)

\*\* Hall and Klitgaard Preface\*

There are four books on our shelf that have the words, more or less, “wealth of nations” in their titles. They are Adam Smith’s 1776 pioneering work, An Inquiry into the Nature and Causes of the Wealth of Nations, and three of recent vintage, David Landes’ The Wealth and Poverty of Nations, David Warsh’s Knowledge and the Wealth of Nations, and Eric Beinhocker’s The Origin of Wealth. Warsh’s book is rather supportive of current approaches to economics while Beinhocker’s is critical, but all of these titles attempt to explain, in various ways, the origin of wealth and propose how it might be increased. Curiously, none have the word “energy” or “oil” in their glossary (one trivial exception), and none even have the words “natural resources.”

How can someone write a book about economics without mentioning energy?

How can economists ignore what might be the most important issue in economics?

Within the discipline of economics, economic activity is seemingly exempt from the need for energy and matter to make economies happen, as well as the second law of thermodynamics.

Instead we hear of “substitutes” and “technological innovation,” as if there were indefinite substitutes for matter, energy, and the environment.

Why is economics construed and taught only as a social science, since in reality economies are as much, and perhaps even principally, about the transformation and movement of all manner of biophysical stuff in a world governed by physical laws?

Part of the answer lies in the recent era of cheap and seemingly limitless fossil energy which has allowed a large proportion of humans to basically ignore the biophysical world. Without significant energy or other resource constraints, economists have believed the rate-determining step in any economic transaction to be the choice of insatiable humans attempting to get maximum psychological satisfaction from the money at their disposal, and markets seemed to have an infinite capacity to serve these needs and wants. Indeed the abundance of cheap energy has allowed essentially any economic theory to “work” and economic growth to be a way of life. For the last century, all we had to do was to pump more and more oil out of the ground. However, as we enter a new era of “the end of cheap oil,” energy has become a game changer for economics and anyone trying to balance a budget.

In brief, this book: 5 Provides a fresh perspective on eco- nomics for those wondering “what’s next” after the crash of 2008 and the near cessation of economic growth for much of the Western world since then 5 Summarizes the most important information needed to understand energy and our potential energy futures In summary, this is an economics text like no other, and it introduces ideas that are extremely powerful and are likely to transform how you look at economics and your own life.

Hall and Klitgaard (2018) Energy and the Wealth of Nations (pdf)

#### *Ayres Conclusion*

The first conclusion from the above analysis is that growth in exergy consumption generally, and electric power consumption in particular, have had an enormous impact on past economic growth. The mechanism responsible has recently been dubbed **the rebound effect**, which conveys the notion that increasing efficiency tends to result in lower costs, which trigger increasing demand that (often) results in greater – rather than less – exergy consumption. The second conclusion from our analysis is that thermodynamic efficiency improvements in the production of primary work can account for most of the so-called Solow residual<sup>1</sup>, namely that portion of economic growth attributable to ‘technical progress.’ Secondary work (end-use efficiency improvements) in transportation and some uses of electric power e.g. for lighting) may account for a considerable part of the remainder. We conjecture that the unexplained part of the Solow residual (since 1980) may be mostly attributable to the impact of information technology. The third important conclusion is that, technical progress in the past notwithstanding, there is still an enormous potential for future reductions in exergy consumption, especially in the residential and commercial heating area. A fourth and final conclusion of this paper is that the locus of technical progress has moved from energy (exergy) conversion efficiency to end-use efficiency or service output per unit of work (SOPUW). Purely thermodynamic efficiency improvements were largely exhausted by the 1960s. This does not rule out the possibility of further thermodynamic improvements in the future. However most gains since then have arisen from other factors. Although we have not attempted a detailed accounting of the latter category of improvements, it is very plausible that reduced material consumption per unit of service output has been a major driver of these gains, and that information technology will make increasingly important contributions in the future. A subtler but related, and arguably more important, question is whether the rebound effect is still the primary driver of economic growth and to what extent growth can be expected if the consumption of fossil fuels – the major source of primary exergy in the modern world – can be curtailed in order to stabilize the climate and minimize other kinds of environmental damage.

Ayres (2003) Energy, Power and Work in the US Economy (pdf)

## 35

# Ecological Economics

Its challenge would *not* be to blend the different domains of study under the same mindset – combining plants and profits in a single analysis – but to train students to see in complementary, but conflicting, ways.

While ‘environmental economists’ argue that we can easily correct markets by pricing carbon emissions and other pollutants – no matter that we barely have, in practice – the larger issue is that many of our ecological challenges are not amenable to a commodification ‘fix’, which relies on treating the environment as parts.

The issue comes to a head in the question of whether we should impute dollar values for ‘ecosystem services’ – to put a price on the Amazon rainforest, say. The question is not whether we can impute such values, but rather whether it is intelligent to do so. In this critical matter, which has divided ecologists, is the issue of whether ecology should yield to a dominant economic way of thinking or make a stand for its different way of seeing – a different way of appreciating and valuing – that challenges economics’ monetary default.

The pragmatic view has been to impute monetary values because we cannot afford for ecosystems to be valued at zero. [DH: rather - at infinite! nature is Holy!!]

Indeed, when such estimates are made, they reveal that the ‘value’ of global ecosystem services dwarfs global GDP! *Market measures of value miss more than they grasp.*

Sustainable business is confronting the fact it does not constitute ‘ecological’ thinking but rather the appropriation of some ecological concerns into a framework that remains steadfastly economic.

The scale and stubbornness of major problems simply may not yield to a more-

of-the-same technological fixing mentality, but instead require deeper cultural rebalancing, through a ground-up awakening.

The broader vision of the ecologist has room to understand the role the economist plays, but the economist – and the businessman and the investor – do not seem to know that they need the ecologist.

Austin (2021) The Matrix of the Emissary - Market Primacy and The Sustainability Crisis

*Parrique*

Let me introduce Romanian-American mathematician and economist Nicholas Georgescu-Roegen (1906–1994) who, at the beginning of the 1970s, laid out one theory so disruptive that it led to the creation of a new school of economic thought: ecological economics. His main idea, exposed in *The Entropy Law and the Economic Process* (1971), was that economic organization is a continuation of biological organization. Why? Because all machines are necessarily made of materials and use energy, and because all labour involves our biological bodies, which are also made of materials and use energy. The economy is — unavoidably — a bioeconomy, which means it is a subsystem of the larger finite and non-growing ecosystem that is the Earth. The logical conclusion becomes inevitable: nature holds non-negotiable market power and humans can only use whatever nature supplies. This also means that the prosperity of the economy is fundamentally linked to that of ecology. In the same way that a healthy organ cannot thrive for long in a dying body, an economy will not prosper within a collapsing biosphere (or at least not for long). In terms of manufacturing, this means that certain factors of production are non-substitutable. Any human-made artefact is necessarily made out of natural resources such as materials and energy and so therefore cannot be a true substitute to it. “One cannot build the same wooden house with half the timber no matter how many saws and carpenters one tries to substitute,” wrote Herman Daly (another economist who has laid out a deep theory to explain why infinite growth is an ecological impossibility). Regardless of how ingenious you are and the budget of your R&D department, you will not be able to build a wooden house without wood. If all economic activities require energy and materials, it means economic practices are unavoidably entropic (the second law of thermodynamics), which means they neither create nor destroy matter or energy but only transform it from a higher to a lower quality. Consider this an inescapable law of diminishing returns applied to the economy as a whole. You can produce more for a time, and produce more efficiently to be able to keep producing for a longer period of time, but you cannot keep increasing production forever. This is because all of the materials and energy we use come from a nature that is fundamentally finite in its ability to provide resources and assimilate waste.

What kind of theory do green growth advocates offer in opposition to that? Well, not much, in my opinion. The core assumption of modern mainstream economics comes from a 1974 paper from American economist Robert Solow

where he integrated natural resources as an input into the neoclassical production function while assuming its perfect substitutability with human-made capital. “If it is very easy to substitute other factors for natural resources,” Solow writes, “the world can, in effect, get along without natural resources.” Now, economists who think this makes sense should spend a bit more time in their garden, realising that it is not “very easy” (or even possible at all) to substitute other factors for natural resources (good luck growing food with a high-tech, smart shovel but without soil, bees, and water). So now, which theory should we choose? Should we trust experts who have developed their entire school of economics since the 1980s on the very question of how economy interacts with ecology, or should we rather ask a random neoclassical economist what they think on a matter they have only studied peripherally? I love both Nicholas Georgescu-Roegen and Robert Solow for different reasons, but picking Solow to understand the relation between growth and the environment would be like picking Zlatan Ibrahimović to play tennis — not the wisest pick.

The current hype for green growth is scientifically ungrounded, both empirically and theoretically.

Parrique (2022) Degrwoth is Good Economics Parrique Home (pdf)

## 35.1 Natural Resources and Energy

*Garzon*

The economist Georgescu-Rogen (2007) was one of the first to warn of the serious deficiencies in traditional ways of thinking about the economy. In particular, he highlighted the gap in economic models regarding the consumption of energy and materials. Both components restrict the possibilities of economic growth in ways that economics had ignored until just a few years ago[1]. In fact, planet Earth is a closed system of materials so that, aside from the very exceptional arrival of a meteorite or the removal of a human artefact, neither of which are significant in quantitative terms, the mass of materials is always the same. In the case of energy, planet Earth is an open system inasmuch as we receive energy flows from solar radiation, but even then, the laws of physics impose limits on energy use.

Every human process involves use of a series of energy sources governed by the laws of physics, particularly the laws of thermodynamics. The second principle of thermodynamics establishes that the quality of energy usable by human beings is decreasing and that, in converting energy (for example, converting the energy deriving from solar radiation to photosynthesis or generating electricity through photovoltaic panels), it is not possible to maintain 100% of the available energy. Much of the energy is dissipated as heat, so that conversion presupposes the transformation of high-quality, low-entropy energy, such as carbon, into low-quality, high-entropy energy such as heat. The history of technological development is the history of a constant struggle to improve the

energy efficiency of such conversions.

Flows of materials and flows of energy can be understood as two distinct aspects of the same process. In fact, a continuous flow of materials is only possible if there is a continuous flow of energy at the same time. In addition, these two restrictions on economic growth interact in very diverse ways and the ecological pressure and impact of productive activity also show up in the alteration of geochemical cycles.

There is no doubt that human beings have lived on Earth for at least two hundred thousand years, although most of the time they did so in hunter-gatherer social groups. The end of the last ice age, which occurred some twenty thousand years ago, gave way to an extraordinarily warm climate which, in its turn, enabled human beings to develop new economic and social practices, such as agriculture (developed some 12,000 years ago). Scientists have agreed to call this warm era the Holocene, in which current civilizations developed.

#### *Planetary Boundaries and Eco-Social Crisis*

One of the main problems with the planetary boundaries' framework, however, is that it looks at social metabolism in an essentially technical way. If the analysis is not broadened, the framework seems to place responsibility on abstract notions such as «humanity» or «the human being», when it is obvious that neither the causes nor the consequences of the ecological impact are symmetrically distributed either across the class structure or between the different geographical regions. There is in fact no global ecological crisis which means the same for all human beings (Brand et al., 2021). Therefore it is much more appropriate to talk of an eco-social crisis, because this helps to highlight the importance of socio-political relationships when assessing environmental degradation processes and seeking solutions.

Garzon (2022) The limits to growth: eco-socialism or barbarism

## 35.2 Against Steady-State Economics

### *Vettese*

Underlying Herman Daly's ecological economics is a faith in markets, neo-liberal regulatory tools and theory, and Malthusianism. While Daly criticizes economic growth, he *overestimates the ability of regulation to contain a capitalist economy* within a 'steady-state'. Cap-and-trade is his main tool to regulate a steady-state economy, even though that tool emerged from neo-liberal thought and has been instrumental in stymying the environmental movement's progress. Moreover, the neo-liberal Julian Simon developed a powerful critique of environmentalism in the 1980s, which Daly has not responded to. Over the last half-century, neo-liberal environmental thought has cast a shadow over ecological economics, even though Daly seems unable to perceive its influence on his life's work. If

the environmental movement wants to win the fight, then it needs an entirely new ecological economics.

Vettese (2020) Against Steady State Economics (pdf)



# 36

## Econophysics

*Jovanovic*

Although financial economics and mathematical finance still largely dominate modern financial theory, in the past few years a new player has increasingly been making itself felt, and could lead to a rethinking of some of the theoretical foundations of modern financial theory. This new player is econophysics.

This article makes three contributions to the history of modern financial theory: an analysis of the theoretical foundations of econophysics (and their connections with the history of financial economics); a study of the reasons underlying the emergence of econophysics; and a presentation of the manner in which econophysics has become the third component of modern financial theory.

Econophysics' major distinguishing feature is the use of pure Lévy processes.

Jovanovic (2013) History of Econophysics' Emergence (pdf)

*Blair Fix*

Econophysics is an attempt to understand economic phenomena (like the distribution of income) using the tools of statistical mechanics.

The particle model of physics demonstrates how a seemingly equal process (the random exchange of energy) can give rise to wide inequalities. If econophysicists are correct, this model tells us why human societies are mired by inequality. It's just basic thermodynamics.

The idea required a leap of faith: treat humans like gas particles. Econophysicists highlighted an interesting parallel. When humans exchange money, it is similar to when gas particles exchange energy. One party leaves with more money/energy, the other party leaves with less.

With the parallel between energy and money, ecophysicists arrived at a startling conclusion. Their models showed that when humans exchange money, inequality

is inevitable.

When econophysicists use ‘random exchange’ to explain income, many people are horrified by the lack of causality. To understand the behavior of large groups of particles, Boltzmann was forced to use the mathematics of probability. The resulting uncertainty in cause and effect made him uneasy.

Quantum mechanics would later show that at the deepest level, nature is uncertain. But this quantum surprise does not mean that probability and determinism are always incompatible. In many cases, the use of probability is just a ‘hack’. It is a way to simplify a deterministic system that is otherwise too difficult to model. Like a coin toss, econophysicists think we can treat monetary exchange in probabilistic terms.

Econophysicists think we can model the exchange of money without understanding property transactions.

Blair Fix

*Garrett Abstract*

Climate change is a two-way street during the Anthropocene: civilization depends upon a favorable climate at the same time that it modifies it. Yet studies that forecast economic growth employ fundamentally different equations and assumptions than those used to model Earth’s physical, chemical, and biological processes. In the interest of establishing a common theoretical framework, this article treats humanity like any other physical process; that is, as an open, nonequilibrium thermodynamic system that sustains existing circulations and furthers its material growth through the consumption and dissipation of energy. The link of physical to economic quantities comes from a prior result that establishes a fixed relationship between rates of global energy consumption and a historical accumulation of global economic wealth. What follows are nonequilibrium prognostic expressions for how wealth, energy consumption, and the Gross World Product (GWP) grow with time. This paper shows that the key components that determine whether civilization “innovates” itself toward faster economic growth include energy reserve discovery, improvements to human and infrastructure longevity, and reductions in the amount of energy required to extract raw materials. Growth slows due to a combination of prior growth, energy reserve depletion, and a “fraying” of civilization networks due to natural disasters. Theoretical and numerical arguments suggest that when growth rates approach zero, civilization becomes fragile to such externalities as natural disasters, and is at risk for an accelerating collapse.

Linking physical to economic quantities comes from a fixed relationship between rates of global energy consumption and historical accumulation of global economic wealth. When growth rates approach zero, civilization becomes fragile to externalities, such as natural disasters, and is at risk for accelerating collapse.

*Garrett Memo*

As with any other natural system, civilization is composed of matter. Internal circulations are maintained by a dissipation of potential energy. Oil, coal, and other fuels “heat” civilization to raise the potential of its internal components. Dissipative frictional, resistive, radiative, and viscous forces return the potential of civilization to its initial state, ready for the next cycle of energy consumption.

The material growth and decay of civilization networks is driven by a long-run imbalance between energy consumption and dissipation.

Treating civilization as a dissipative physical system like any other on our planet.

#### *Garrett Summary*

This paper has presented a physical basis for interpreting and forecasting global civilization growth, with the intent that it might be used to develop a consistent theoretical basis for forecasting interactions between humanity and climate during the Anthropocene. The perspective is that, like a living organism [Vermeij, 2009], energy consumption and dissipation drives material flows to civilization. If there is a net convergence of matter within civilization, then civilization grows. Growth increases the availability of new and existing reserves of matter and energy, and this leads to a positive feedback loop that allows growth to persist or even accelerate. These rather general thermodynamic results can be expressed in purely economic terms because there appears to be a fixed link between global rates of primary energy consumption and a very general expression of human wealth:  $\dot{C} = 7.1 \pm 0.1$  Watts of primary energy consumption is required to sustain each \$1000 of civilization value, adjusting for inflation to the year 2005 (see supporting information and Garrett [2012a]). It was argued that wealth does not rest in inert “physical capital”, as in traditional treatments. Rather, wealth can be interpreted to include all aspects of civilization, even the purely social. Value lies in the density of a network of connections between civilization elements, insofar as this network contributes to a global scale consumption and dissipation of energy (equation (41)). Global economic production  $Y$  is positive when consumption exceeds dissipation, and there is a net diffusion of matter to civilization that grows its size. This leads to an economic growth model for wealth  $C$  and economic production  $Y$  that is more simple, physical, and dimensionally self-consistent than mainstream models:  $dC = Y dt$  (70)  $Y = C^{\alpha}$  (71) where  $Y$  is directly proportional to a lengthening of civilization’s networks and growth of its energy reserves. The real rate of return on wealth is somewhat analogous to the total factor productivity in traditional models. Prognostic expressions for  $C$  presented here show that its value is determined by a combination of rates of civilization decay, the quantity of available energy reserves, the amount of energy required to incorporate raw materials into civilization’s structure, and the accumulated size of civilization due to past raw material flux convergence. Current values of the rate of return can be inferred from equation (71). For example, current global rates of return are about 2.2% per year [Garrett, 2012a]. Trends in  $C$  can be forecast based on estimates of future decay and rates of raw material and energy reserve discovery (equation (56)). Thus, this paper offers a set of prognostic expressions for the growth of

civilization, expressible in economic and energetic terms that can be linked to physically measurable quantities. The implications that have been described are summarized as follows:

- Civilization inflation-adjusted wealth is sustained by global energy consumption and grows only as fast.
- Some combination of price inflation and unemployment is related to rates of civilization decay.
- Rates of return on wealth decline in response to accelerated decay or increased resource scarcity.
- Rapid rates of current growth act as a drag on future rates of growth.
- Rates of return grow when there is “innovation” through technological change.
- The GWP grows when energy consumption grows super-exponentially (at an accelerating rate), or when global energy reserve discovery exceeds depletion.
- If growth rates of wealth approach zero, civilization becomes fragile with respect to externally forced decay. This appears to be particularly true if prior growth was super-exponential.

Many of these conclusions might seem intuitive, or as if they have been expressed already by others within more traditional economic perspectives. What is novel in this study is the expression of the economic system within a deterministic thermodynamic framework where a very wide variety of economic behaviors are derived from only a bare minimum of first principles. More importantly, a sufficient set of statistics exists for global economic productivity, inflation, energy consumption, raw material extraction and energy reserve discovery that the nonequilibrium solutions presented here can be evaluated and falsified with no requirement for any a priori tuning or fitting to historical data. Such evaluation will be addressed in Part II. Specifically, it will be shown that the logistic equation given by equation (64) closely matches the evolution of global economic rates of return since 1950, allowing for observed rates of technological change defined by equation (56). Logistic behavior has been recognized in the evolution of human empires throughout history. It will be shown to be evident in global rates of economic growth as well. Global civilization has enjoyed explosive growth since the industrial revolution, but it is unclear how long this can be sustained when it is facing ongoing resource depletion, pollution, and climate change. Global economic wealth is tied to energy consumption, and energy consumption through combustion is tied to carbon dioxide emissions. Without a sufficiently rapid switch to noncarbon sources of energy, growing wealth is necessarily linked to growing emissions.

Yet accumulating carbon dioxide in the atmosphere is also likely to drive accelerating civilization decay through amplified hydrological extremes, storm intensification, sea level rise, and mammalian heat stress. The prognostic expressions that have been derived here might be useful to help guide a physically plausible range of future timelines for civilization growth and decay, particularly in models that couple human and climate systems during the Anthropocene.

[Garrett \(2014\) Long-run evolution of the global economy:1. Physical basis \(pdf\)](#)

## 36.1 Economy as dissipative system

*Ayres*

In a closed Walrasian model resources are assumed to be generated by labor and capital. The neo-classical (Walrasian) equilibrium system does not qualify as a dissipative structure. The neoclassical system is, in effect, a perpetual motion machine. This fact was emphatically pointed out by the Nobel prize-winning chemist F. Soddy in 1922 (Daly, 1980), but Soddy's work was virtually ignored by economists. The first economists to stress the dissipative nature of the economic system were Boulding (1966) and Georgescu-Roegen (1971). The relevance of mass and energy conservation to environmental-resource economics was first emphasized by Kneese et al. (1970).

In reality, resource inputs originate outside the economic system per se: they include air, water, sunlight and material substances, fuels, food, and fiber crops, all of which embody free energy or available work.

The economic system, in reality, is absolutely dependent on a continuing flow of free energy from the environment.

Evidently, the real economic system looks very much like a self-organizing dissipative structure in Prigogine's sense: it is dependent on a continuous flow of free energy (the sun or fossil fuels), and it exhibits coherent, orderly behavior. Moreover, like living organisms, it embodies structural information as morphological differentiation and functional specialization.

- (1) Since the economy is, by assumption, a dissipative structure, it depends on a continuous flow of free energy and materials from and to the environment. Such links are precluded by closed neoclassical general equilibrium models, either static or quasi-static.
- (2) The energy and physical materials inputs to the economy have shifted over the past two centuries from mainly renewable to mainly nonrenewable sources.
- (3) Dynamic economic growth is driven by technological change (generated, in turn, by economic forces), which also results in continuous structural change in the economic system. For instance, so-called Leontief input-output coefficients do not remain constant.
- (4) It follows, incidentally, that a long-term survival path must sooner or later reverse the historical shift away from renewable resources. This will only be feasible if human technological capabilities continue to rise to levels much higher than current ones [8]. But, since technological capability is itself an output of the economic system, it will continue to increase if, and only if, deliberate investment in R&D is continued or even increased.

In short, the role of knowledge-generating activity in retarding global entropy seems to be growing in importance.

The economic system is not necessarily stable against all perturbations, and the more it is intentionally managed to optimize growth, the more it becomes vulnerable to the consequences of human error.

Ayres (1988) Self-organisation in Biology and Economics (pdf)

#### *Shiozawa*

Many protests and contestations have been voiced out against equilibrium theory. Some argued that it neglects the increasing returns to scale which underlies in the development of modern industries. Others contested the maximizing principle which is always supposed in the formulation of economic behaviors, both for consumers and producers. In 1970's, many eminent economists criticized the state of the art of economic science and proposed to abandon a equilibrium analysis. But, this has not been done, partly for lack of new framework and partly for fear of us loosing ready made formulae for economic behaviors.

New image of systems theory is requested and I think this new image should be the notion of "dissipative structure". Professor Prigogine, in his early days of his research, was interested in non-equilibrium phenomena and remarked to the dissipative structure, which appears both in space and time. The importance of dissipative structure is evident, if one once knows that any living systems and subsystems are far from equilibrium but that they are all dissipative structure.

Most simple example of dissipative structure is given as the flame of a candle. Once lit, a candle continues to burn unless all wax is consumed or the oxygen is exhausted.

Dissipative structure sometimes takes the form of stationary state but it is very different from equilibrium. The latter is sensitive to boundary conditions.

The concept of dissipative structure is important for economics, because it makes possible to have new idea how economic system works. In the equilibrium framework, boundary conditions are imposed as constraints of the system. In the dissipative framework, boundary conditions are not directly related to the speed of the consumptions or the extent of employment. It is instead *the internal structure which determines volumes and speeds of economic quantities*.

Most simple example is the extent of cultivated field. When there is a large surface of cultivable field and there is relatively small population, it is easy to see that whole surface is not necessarily cultivated. Some part which can be cultivated by the population will be cultivated effectively.

Keynes was the first person to realize that, in economy, it is not the boundary condition or the amount of resources which determines how much of the resources are used.

50 years have passed after Keynes went to other world. During these years, many efforts had been made, in vain, to harmonize Keynesian macroeconomic theory with the neo-classical micro-economics. This is a natural outcome. The micro-economics, which is based on equilibrium framework, denies the existence

of internal structure such as dissipative structure. Unless we are emancipated from the framework of general equilibrium, there will be no breakthrough for a new economics.

If the problem is only the existence of internal structure, the economics system can be characterized as self-organizing system. But, the economy is not only a self-organizing system. Viewed as an ecological system, it is a system which constantly brings resources in and cast waste off. Economic activities are based on the constant flow of energy and materials. So the economy is also a dissipative structure.

The proper difficulty of the economics is that the complexity is the real condition for the economic agents. This is not true for physical and chemical sciences.

If we consider the boundedness of our rationality, it becomes rather evident that our behavior is not directed by a decision made once for all. It is a continuous sequence of adaptive adjustments, which will be organized according to rough program of purpose pursuit. Consequently, the theoretical framework of the economics should be reorganized as process analysis. Equilibrium analysis has been the obstruction for the economics to proceed to this old but still new direction.

Shiozawa (1996) Economy as a Dissipative Structure (pdf)

#### *Caballero*

Some of the motivations for the econophysics literature do strike a chord with the task ahead for macroeconomists. For example, Albert and Barabási (2002), in advocating for the use of statistical mechanics tools for complex networks, write:

Physics, a major beneficiary of reductionism, has developed an arsenal of successful tools for predicting the behavior of a system as a whole from the properties of its constituents. We now understand how magnetism emerges from the collective behavior of millions of spins . . . The success of these modeling efforts is based on the simplicity of the interactions between the elements: there is no ambiguity as to what interacts with what, and the interaction strength is uniquely determined by the physical distance. We are at a loss, however, to describe systems for which physical distance is irrelevant or for which there is ambiguity as to whether two components interact . . . there is an increasingly voiced need to move beyond reductionist approaches and try to understand the behavior of the system as a whole. Along this route, understanding the topology of the interactions between the components, i.e., networks, is unavoidable . . .

The complex-systems literature itself offers fascinating examples of the power of interconnectedness. Bak, Chen, Scheinkman, and Woodford. (1992) and Scheinkman and Woodford (1994) bring methods and metaphors from statistical

mechanics to macroeconomics. They argue that local, nonlinear interactions can allow small idiosyncratic shocks to generate large aggregate fluctuations, rather than washing out via the law of large numbers. They discuss a kind of macroeconomic instability called “self-organized criticality,” comparing the economy to a sand hill: at first, a tiny grain of sand dropped on the hill causes no aggregate effect, but as the slope of the hill increases, eventually one grain of sand can be sufficient to cause an avalanche. In the limit, aggregate fluctuations may emerge from hard-to-detect and purely idiosyncratic shocks.

Put differently, a complex environment has an enormous potential to generate truly confusing surprises. This fact of life needs to be made an integral part of macroeconomic modeling and policymaking. Reality is immensely more complex than models, with millions of potential weak links. After a crisis has occurred, it is relatively easy to highlight the link that blew up, but before the crisis, it is a different matter. All market participants and policymakers know their own local world, but understanding all the possible linkages across these different worlds is too complex. The extent to which the lack of understanding of the full network matters to economic agents varies over the cycle. The importance of this lack of understanding is at its most extreme level during financial crises, when seemingly irrelevant and distant linkages are perceived to be relevant. Moreover, this change in paradigm, from irrelevant to critical linkages, can trigger massive uncertainty, which can unleash destructive flights to quality.

Mandelbrot (2008, in a PBS NewsHour interview with Paul Solman on October 21, 2008) said: “[T]he basis of weather forecasting is looking from a satellite and seeing a storm coming, but not predicting that the storm will form. The behavior of economic phenomena is far more complicated than the behavior of liquids or gases.”

When acute financial distress emerges in parts of the financial network, it is not enough to be informed about these direct trading partners, but it also becomes important for the banks to learn about the health of the partners of their trading partners to assess the chances of an indirect hit. As conditions continue to deteriorate, banks must learn about the health of the trading partners of the trading partners of their trading partners, and so on. At some point, the cost of information gathering becomes too large and the banks, now facing enormous uncertainty, choose to withdraw from loan commitments and illiquid positions. A flight-to-quality ensues, and the financial crisis spreads. The common aspects of investor behavior across these episodes re-evaluation of models, conservatism, and disengagement from risky activities indicate that these episodes involved Knightian uncertainty and not merely an increase in risk exposure. The extreme emphasis on tail outcomes and worst-case scenarios in agents’ decision rules suggests aversion to this kind of uncertainty. ...conflated the possibility of catastrophe with catastrophe itself.

The very acceptance of the key role played by complexity in significant macroeconomic events should be enough to point us in the direction of the kind of policies that can help to limit macroeconomic turbulence.

Caballero (2010) Macroeconomics after the Crisis: Time to Deal with the Pretense-of-Knowledge Syndrome

*Durlauf Abstract*

This article explores the state of interplay between recent efforts to introduce complex systems methods into economics and the understanding of empirical phenomena. The empirical side of economic complexity may be divided into three general branches: historical studies, the identification of power and scaling laws, and analyses of social interactions. I argue that, while providing useful ‘stylised facts’, none of these empirical approaches has produced compelling evidence that economic contexts exhibit the substantive microstructure or properties of complex systems. This failure reflects inadequate attention to identification problems. Identification analysis should therefore be at the centre of future work on the empirics of complexity.

*Durlauf Memo*

There are three main areas of work on the complexity/empirics interface. The first consists of historical studies. The study of economic complexity was in fact originally championed to a large extent by economic historians in the context of empirical studies of path dependence in economic activity. The second consists of the identification of data patterns that are consistent with some of the features of complex environments. A major feature of this work has been the effort to identify where power laws, which represent a particular class of probability distributions, and scaling laws, which describe relationships between variables that appear to be independent of the scale of measurement, occur in various economic data series. This search has to a substantial extent been led by physicists as there are a number of physical systems in which such laws are present. A third area of work has focused on the study of social interactions. To a large extent, this work has eschewed an explicit connection to complexity; nevertheless a number of social interactions models, e.g. Brock and Durlauf (2001a,b; 2003) and Glaeser et al. (1996), possess structures mathematically equivalent to certain complex systems. More important for the purposes of this article, empirical work on social interactions has focused on the analysis of precisely the type of interdependences between individual actors that lie at the heart of the microstructure of complexity-based models. My overall assessment of the empirical complexity literature is critical. The literature has succeeded in describing interesting historical episodes and performing original statistical calculations that are consistent with complex systems models as well as presenting a body of regression evidence that suggests the presence of the sorts of interdependences across individuals that are a hallmark of complexity. However, this evidence is far from decisive and is amenable to alternative interpretations. It is therefore unclear whether this work has provided evidence in support of economic complexity *per se*.

Following Durlauf (2001), four properties seem particularly relevant to social science contexts

- (i) Nonergodicity. A system is nonergodic if the conditional probability statements that describe the system do not uniquely characterise the average or long-run behaviour of the system. A standard example of a nonergodic system is one where a shock at one point in time affects the long-run state of the system.
- (ii) Phase transition. A system exhibits a phase transition if it can undergo a qualitative change in its aggregate properties for a small change in its parameters. Phase transitions are commonplace in physical contexts. Water experiences a phase transition when its temperature moves below 0 degrees centigrade. Similarly, if one heats a magnetised piece of iron, there is a temperature above which magnetisation disappears.
- (iii) Emergent properties. Following ideas well described in Anderson (1972) and Crutchfield (1994), emergent properties are properties of a system that exist at a higher level of aggregation than the original description of a system. By this definition, ice is an emergent property of water. While the property of being ice describes how water molecules are collectively aligned, not of one molecule in isolation, the properties by which one molecule aligns with its neighbours are described at the level of the molecule. Similarly, magnetisation is an emergent property as it derives from the alignment of spins of individual atoms in a common piece of iron.
- (iv) Universality. A property is universal if its presence is robust to alternative specifications of the microstructure of the system. In physics, magnetisation is universal in the sense that its presence in iron occurs for a range of different specifications of the interdependence of spins between individual atoms.

*Power Laws and Scaling Laws*

A second area of empirical work on economic complexity has attempted to identify the presence in economic data of certain statistical properties that are associated with complex systems. In particular, this work has attempted to identify power and scaling laws.

Recent research has focused on the identification of Zipf-type properties in a range of socioeconomic data. Important examples include Axtell (2001) on firm sizes and Gabaix (1999) on city sizes.

Durlauf (2004) Durlauf 2004 Complexity and Empirical Economics

## 37

# Complexity Economics

The discovery that higher order phenomena cannot be directly extrapolated from lower order systems is a commonplace conclusion in genuine sciences today: it's known as the "emergence" issue in complex systems (Nicolis and Prigogine, 1971, Ramos-Martin, 2003). The dominant characteristics of a complex system come from the interactions between its entities, rather than from the properties of a single entity considered in isolation.

The fallacy in the belief that higher level phenomena (like macroeconomics) had to be, or even could be, derived from lower level phenomena (like microeconomics) was pointed out clearly in 1972—again, before Lucas wrote—by the Physics Nobel Laureate Philip Anderson:

The main fallacy in this kind of thinking is that the reductionist hypothesis does not by any means imply a "constructionist" one: The ability to reduce everything to simple fundamental laws does not imply the ability to start from those laws and reconstruct the universe. (Anderson, 1972, p. 393)

The impossibility of taking a "constructionist" approach to macroeconomics, as Anderson described it, means that if we are to derive a decent macroeconomics, we have to start at the level of the macroeconomy itself. This is the approach of complex systems theorists: to work from the structure of the system they are analysing, since this structure, properly laid out, will contain the interactions between the system's entities that give it its dominant characteristics.

Neoclassical macroeconomists have tried to derive macroeconomics from the wrong end—that of the individual rather than the economy—and have done so in a way that glossed over the aggregation problems that entails by pretending that an isolated individual can be scaled up to the aggregate level. It is certainly sounder—and may well be easier—to proceed in the reverse direction, by starting from aggregate statements that are true by definition, and then by

disaggregating those when more detail is required.

Using these definitions, it is possible to develop, from first principles that no macroeconomist can dispute, a model that does four things that no DSGE model can do: it generates endogenous cycles; it reproduces the tendency to crisis that Minsky argued was endemic to capitalism; it explains the growth of inequality over the last 50 years; and it implies that the crisis will be preceded, as it indeed was, by a “Great Moderation” in employment and inflation.

The three core definitions from which a rudimentary macro-founded macroeconomic model can be derived are the employment rate (the ratio of those with a job to total population, as an indicator of both the level of economic activity and the bargaining power of workers), the wages share of output (the ratio of wages to GDP, as an indicator of the distribution of income), and, as Minsky insisted, the private debt to GDP ratio.

A simple model can explain most of the behaviour of a complex system, because most of its complexity come from the fact that its components interact—and not from the well-specified behaviour of the individual components themselves

So the simplest possible relationships may still reveal the core properties of the dynamic system—which in this case is the economy itself.

Even at this simple level, its behaviour is far more complex than even the most advanced DSGE model, for at least three reasons. Firstly, the relationships between variables in this model aren’t constrained to be simply additive, as they are in the vast majority of DSGE models: changes in one variable can therefore compound changes in another, leading to changes in trends that a linear DSGE model cannot capture. Secondly, non-equilibrium behaviour isn’t ruled out by assumption, as in DSGE models: the entire range of outcomes that can happen is considered, and not just those that are either compatible with or lead towards equilibrium. Thirdly, the finance sector, which is ignored in DSGE models (or at best treated merely as a source of “frictions” that slow down the convergence to equilibrium), is included in a simple but fundamental way in this model, by the empirically confirmed assumption that investment in excess of profits is debt-financed

With a higher propensity to invest comes the debt-driven crisis that Minsky predicted, and which we experienced in 2008. However, something that Minsky did not predict, but which did happen in the real world, also occurs in this model: the crisis is preceded by a period of apparent economic tranquillity that superficially looks the same as the transition to equilibrium in the good outcome. Before the crisis begins, there is a period of diminishing volatility in unemployment.

The difference between the good and bad outcomes is the factor Minsky insisted was crucial to understanding capitalism, but which is absent from mainstream DSGE models: the level of private debt. It stabilizes at a low level in the good outcome, but reaches a high level and does not stabilize in the bad outcome.

The model produces another prediction which has also become an empirical given: rising inequality. Workers' share of GDP falls as the debt ratio rises, even though in this simple model, workers do no borrowing at all. If the debt ratio stabilises, then inequality stabilises too, as income shares reach positive equilibrium values. But if the debt ratio continues rising—as it does with a higher propensity to invest—then inequality keeps rising as well. Rising inequality is therefore not merely a “bad thing” in this model: it is also a prelude to a crisis.

The dynamics of rising inequality are more obvious in the next stage in the model's development, which introduces prices and variable nominal interest rates. As debt rises over a number of cycles, a rising share going to bankers is offset by a smaller share going to workers, so that the capitalists share fluctuates but remains relatively constant over time. However, as wages and inflation are driven down, the compounding of debt ultimately overwhelms falling wages, and profit share collapses.

Steve Keen

*Tverberg*

Complexity is anything that gives structure or organization to the overall economic system. It includes any form of government or laws. The educational system is part of complexity. International trade is part of complexity. The financial system, with its money and debt, is part of complexity. The electrical system, with all its transmission needs, is part of complexity. Roads, railroads, and pipelines are part of complexity. The internet system and cloud storage are part of complexity.

Wind turbines and solar panels are only possible because of complexity and the availability of fossil fuels. Storage systems for electricity, food, and fossil fuels are all part of complexity.

With all this complexity, plus the energy needed to support the complexity, the economy is structured in a very different way than it would be without fossil fuels. For example, without fossil fuels, a high percentage of workers would make a living by performing subsistence agriculture. Complexity, together with fossil fuels, allows the wide range of occupations that are available today.

Tverberg (2023) When the Economy Gets Squeezed by Too Little Energy



## 38

# Functional Finance

Functional finance is a heterodox macroeconomic theory developed by Abba Lerner during World War II that seeks to eliminate economic insecurity (i.e., the business cycle) through government intervention in the economy. Functional finance emphasizes the result of interventionist policies on the economy. It actively promotes government deficit spending as an effective way of reducing unemployment.

Functional finance is based on three major beliefs:

1. It is the role of government to stave off inflation and unemployment by controlling consumer spending through the raising and lowering of taxes.
2. The purpose of government borrowing and lending is to control interest rates, investment levels, and inflation.
3. The government should print, hoard or destroy money as it sees fit to achieve these goals.

Functional finance also says that the sole purpose of taxation is to control consumer spending because the government can pay its expenses and debts by printing money. Furthermore, Lerner's theory does not believe it is necessary for governments to balance their budgets.

Lerner was a follower of the extremely influential economist John Maynard Keynes and helped to develop and popularize some of his ideas. Keynesian economics embraced the concept that optimal economic performance could be achieved by using economic intervention policies by the government to influence

Investopedia

Levy Publications

Tankus on Krugman vs MMT



# 39

## Macro-Finance

The ultimate driver of government financing costs is the central bank.

### 39.1 Institutional Supercycles

*Dafermos*

#### **Supercycle**

We build upon the Minskian concepts of ‘thwarting mechanisms’ and ‘super-cycles’ to develop a framework for the analysis of the dynamic evolutionary interactions between macrofinancial, institutional and political processes.

Thwarting mechanisms are institutional structures that aim to stabilise the macrofinancial system. The effectiveness of such structures changes over time, creating a secular cyclical pattern in capitalism: the supercycle.

We develop a macrofinancial stability index and identify two supercycles in the post-war period, which we label the industrial and financial globalisation supercycle respectively.

For each, we apply a four-phase classification system, based on the effectiveness of institutions, customs and political structures for stabilising the macrofinancial system.

The supercycles framework can be used to explain and anticipate macroeconomic, financial and thus political developments, and moves beyond conventional approaches in which such developments are treated as exogenous shocks.

*Framework*

Despite the bidirectional and dynamic nature of the interactions between institutions and macrofinancial processes, analysis is often partial and static. In the political economy literature, institutional change is linked with exogenous

macroeconomic or financial shocks, such as shifts in inflation or the policy interest rate (Iversen and Soskice, 2012; Gabor and Ban, 2013). Conversely, macro-financial developments are explained as arising from exogenous institutional change, such as alterations to financial regulation or labour market legislation. A framework in which institutional change and macrofinancial processes are dynamically interlinked is still missing.

In this paper, we develop an evolutionary framework that connects macrofinancial processes and institutional change. The foundations of this framework lie with two largely overlooked concepts in Minsky's analysis of financial capitalism (Palley, 2011). The first is that of 'thwarting mechanisms.' This concept draws on Minsky's insight that, although capitalism is inherently unstable, this instability rarely becomes explosive because of the existence of 'customs, institutions or policy interventions' that tame destabilising forces (Ferri and Minsky, 1992, p. 84). Thwarting mechanisms counteract the inherent instability of capitalism, allowing for long periods of high economic activity and social and financial stability. However, the effectiveness of thwarting mechanisms varies over time, eventually diminishing as a result of the profit-seeking actions of economic agents and the generation of new sources of long-run instability. This endogenous erosion gives rise to crises, which, in turn, lead to the development of new thwarting mechanisms. The rise and fall of thwarting mechanisms generates secular cycles in macrofinancial stability. This 'supercycle' is the second concept we borrow from Minsky and Palley.

#### *Thwarting Mechanisms*

Minsky's concept of thwarting mechanisms: 'customs, institutions or policy interventions that make observed values of macroeconomic variables different from what they would have been if each economic agent pursued "only his own gain"'.

Thwarting mechanisms reduce the amplitude of basic cycles, constraining instability by *imposing ceilings and floors* on the dynamic path of the economic system.

*Floor mechanisms* aim to ensure a minimum level of aggregate demand, thereby placing a floor under the level of economic activity. These mechanisms may be the result of deliberate policy interventions, (e.g. activist fiscal policy), or a side effect of other developments (e.g. expansion of household debt to maintain consumption spending).

*Ceiling mechanisms* aim to impose upper limits on the economic expansion by restricting activities that may enhance growth but also generate instability. Examples of ceiling mechanisms include inflation targeting, financial regulation aimed at reducing procyclicality and leverage, and capital controls to restrict speculative financial inflows.

The supercycle is a long-run institutional and political cycle over which the effectiveness of a particular configuration of thwarting mechanisms first increases

and then declines. The configuration of thwarting mechanisms shapes the supercycle, hardwiring powerful macroeconomic ideas into policy regimes.

Macrofinancial stability is primarily driven by the effectiveness of thwarting mechanisms.

#### *Four Phases*

Four phases of the supercycle: expansion, maturity, crisis and genesis.

During the *expansion* phase, newly introduced thwarting mechanisms are effective, leading to economic expansion and broad social and financial stability: economic and financial activity is disrupted by the recessions of the basic cycles, but thwarting mechanisms prevent a systemic crisis. Economic agents learn how to adapt to the new institutional environment, however, innovating to preserve or increase their profits and thereby reducing the effectiveness of thwarting mechanisms. Further, mechanisms introduced to reduce one source of instability may over time create others, potentially as a result of interaction with other thwarting mechanisms.

Once the effectiveness of thwarting mechanisms starts to decline, the cycle enters the *maturity* phase, during which economic expansion continues but the macrofinancial stability of the system is diminishing.

The declining effectiveness of thwarting mechanisms ultimately leads to *crisis*, because the institutional framework is no longer sufficient to constrain the dynamics of the basic cycle. At this point, a basic-cycle recession leads to deep economic, political and social instability, and institutional restructuring. While government intervention may stabilise the economy, broad-based recovery is impossible because existing thwarting mechanisms are ineffective: the institutional structure is can no longer ensure macrofinancial stability.

The ensuing *genesis* phase sees attempts to establish a new configuration of thwarting mechanisms, attempts shaped by political struggles. When – or if – effective new mechanisms are introduced, the next supercycle begins. In the case that – for political, social or technological reasons – such mechanisms cannot be introduced, the crisis phase will be prolonged, likely accompanied by political and social turmoil.

#### *Institutional Change*

Institutions, understood as ‘rules of the game’ provide mechanisms to facilitate market exchange in the presence of transactions costs that prevent an optimal frictionless equilibrium.

Causation is largely unidirectional: given the presence of transactions costs, exogenously imposed ‘good’ institutions – usually understood as the rule of law, secure property rights, well-developed financial markets etc. – produce good economic outcomes. Changes in institutional structure, understood as formal ‘rules of the game’ result from ongoing optimisation by market participants over

the costs of reconfiguration relative to the benefits, given incomplete information sets, technology, and firm-specific knowledge.

Recent work goes beyond this micro-based analysis to examine the possibility of emergent properties in *complex evolutionary systems*, using agent-based modelling techniques. Thwarting mechanisms can be viewed as constraining the macrofinancial instability that arises from the emergent properties of such complex systems.

Institutional structure itself, understood as the configuration of thwarting mechanisms, emerges and evolves as a result of the profit-seeking behaviour of agents. The agent-driven erosion of thwarting mechanisms can give rise to macrofinancial instability.

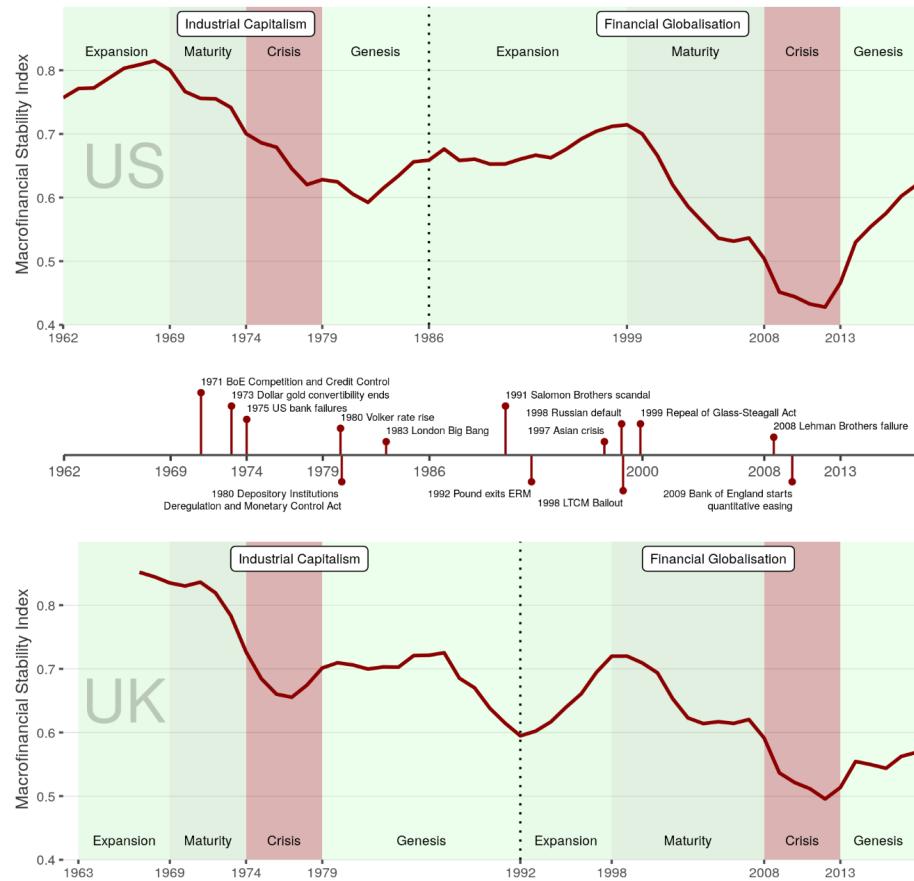
The distribution of power influences the design of thwarting mechanisms; it does not merely affect macroeconomic targets and the associated policy design. Policy makers need to establish mechanisms that keep a range of key macroeconomic variables within certain bounds, irrespective of the primary macroeconomic target; otherwise, macroeconomic instability would undermine political stability.

The way that thwarting mechanisms are eroded is specific to each supercycle: the strength of labour in the 1970s undermined the wage-price consensus, giving rise to inflationary pressure, while the strength of finance in the 2000s placed limits on the effectiveness of mechanisms to constrain financial instability.

#### *Macrofinancial Stability Index (MSI)*

The MSI is constructed using a number of ‘floor’, ‘ceiling’ and ‘corridor’ macroeconomic and financial variables.

The MSI is calculated as one minus an average of the normalised distances of floor, ceiling and corridor variables from their maximum, minimum and average values respectively (over the period under investigation). The MSI thus takes values between 0 (minimum stability) and 1 (maximum stability).



High-income countries experienced common secular cyclical movements in their macrofinancial stability in the post-World War II period.

The ideological shift on macroeconomic management at the end of the 1970s brought independent central banks oriented to inflation targeting and fiscal deficits financed on sovereign debt markets. Mass privatisation reduced the state's economic footprint, while previous gains on employment protection and unemployment benefits were substantially rolled back. Growth increasingly relied on rapid expansion of leverage and increasing financial activity. The financial sector, in turn, found that new institutional structures were required to enable leverage to expand beyond traditional constraints. During the expansionary phase of the FG supercycle, shadow banking expanded significantly, absorbing the flow of assets resulting from the continued expansion of credit. Securitisation and the originate-to-distribute model allowed banks to transform illiquid assets, mortgage loans in particular, into marketable securities. These securities were financed with short-term liabilities such as repos and asset-backed commercial paper (ABCP). Growth became increasingly reliant on collateral-

based financial activity.

Collateral plays a central role in funding neorentier balance sheets. Neorentiers issue short-term (often overnight) repo deposits secured by tradable collateral. For lenders such as institutional cash pools or money market funds, collateral makes repos a better liquidity management vehicle than unsecured bank deposits. Repo borrowing allows a wide range of institutions to access money market funding, while rising asset prices lead to increasing leverage capacity because repo collateral is marked to market. The use of collateral functionally, and imperfectly, replaces direct sovereign guarantees on short-term liquid assets.

The rise of collateral-based finance fundamentally changed the relationships between central banks and governments. In the 1990s, central banks in high-income countries collectively sanctioned neorentiers' turn to shadow deposits by liberalising repo markets, often to enable Ministries of Finance to develop liquid government bond markets. States turned to neorentiers in the age of independent central banks and capital market financing of budget deficits, introducing reforms in sovereign bond markets designed according to neorentier preferences: regular auctions facilitated by primary dealers and deregulated repo markets

The promise of liquidity for sovereign bonds entrenches the 'infrastructural power' of finance: neorentiers promise liquidity to Ministries of Finance, and well-functioning monetary transmission mechanisms to central banks, improving their ability to oppose policy innovations or tighter regulatory measures. The rising power of neorentiers thus serves to discipline states, curbing fiscal and regulatory thwarting mechanisms: market financing of fiscal deficits privileges neorentiers as mediators between the monetary and the fiscal arms of the state, and creates conflicting objectives for the central bank and the Treasury.

Easy credit conditions allowed sustained expansion of private debt, enabling aggregate demand to keep up with productive capacity in the face of weak income growth and government retrenchment. Credit-financed consumption took over from capital investment as the driver of growth.

While crisis-era innovations succeeded in preventing financial system collapse and depression, growth has not returned. In our framework, this less due to 'secular stagnation' than to the institutional architecture of the FG supercycle – weak and 'flexible' labour, high inequality and government retrenchment. Without a change in this architecture – without a new set of thwarting mechanisms – it is difficult to identify a likely source of sustained demand growth other than a return to credit expansion.

Overall, while institutional changes improved the effectiveness of stabilising mechanisms in the period prior to the coronavirus pandemic, the continuous push for asset-based welfare reinforced the structural drivers of neorentier capitalism without delivering a new engine of growth. When the coronavirus crisis struck, a new configuration of thwarting mechanisms that could foster economic expansion alongside financial stability had not yet emerged. The thwarting mechanisms of the next supercycle will be, at least in part, the result of the

rapid institutional change that has taken place as a result of this crisis, and of greater awareness of the potential for future pandemics. Inevitably, the next supercycle will also be conditioned by the even greater crisis of climate change.

#### *Green Supercycle*

What is most urgently required, in light of the COVID-19 and climate crises, is a detailed understanding of the current genesis phase and the prospects for the emergence of a new set of thwarting mechanisms that would underpin a green supercycle.

Dafermos Gabor (2020) Institutional Supercycles (pdf)

## 39.2 Central Banking

### *Braun*

The impact of international economic integration on social protection is conditional on the monetary regime.

The role of the European Central Bank (ECB) as the supranational enforcer of the economic logic of integration since monetary union.

While Polanyi conceptualized central banking as an institution of non-market coordination that evolved to protect the domestic economy from gold standard pressures, the ECB has acted as an enforcer of disembedding “euro standard” pressures vis-à-vis national labor market and welfare state institutions.

Despite lacking the mandate or the authority to override national legislation, the ECB, strategically pursuing its organizational and systemic interests, pushed for structural reforms via discursive advocacy and conditionality. Our results show that Europe’s prospects for Polanyian non-market coordination are determined by Frankfurt as much as by Luxembourg and Brussels.

### **The death of ‘Social Europe’**

The European Commission’s slogan of “a Europe that protects”, introduced in 2019, subtly diverges from the Treaty of Rome’s commitment to “proper social protection.” This is no accident. The euro area debt crisis accelerated labor market deregulation and welfare state retrenchment, and the idea of a “Social Europe” has been declared “dead.” At the same time, and particularly among those most affected by these developments, protectionist and nationalist sentiments have been on the rise. Brussels watchers have read “a Europe that protects” as a bellwether of a new, non-liberal politics of protection.

The European Union (EU) as a unique case combining high levels of protection with full “globalization in the strict sense of the word”, namely unrestricted competition for capital, goods and services.

The strictures of the euro considerably amplified the economic logic of integration relative to the legal and political logics expressed through the ECJ and the Commission, respectively. With the introduction of the euro in 1999, this economic logic of integration found its institutional expression in the European Central Bank (ECB). Since then, the relationship between economic integration and social protection has been shaped in Frankfurt as much as in Brussels and Luxembourg.

### **Structural Reforms**

The ECB defined structural reforms, in strikingly Polanyian terms, as policies that “change the fabric of an economy, the institutional and regulatory framework in which businesses and people operate.”

This advocacy constitutes a puzzle: The ECB lacks both a mandate and the legal means to shape labor market and social policies at the member-state level. Pushing to “change the fabric” of societies therefore entails significant reputational risks. Why, then, did the ECB chose to push for structural reforms? Our explanatory framework places the emphasis on the ECB’s organizational (credibility and legitimacy) and systemic (survival of the euro) interests. In pursuing those interests, the ECB strategically adjusted the method and content of its structural reform advocacy to fit the economic and political context. In the wake of the euro area debt crisis, the ECB acquired the power—shared with the Commission and the International Monetary Fund (IMF)—to impose and enforce policy conditionality.

### **Polanyi**

Our analysis, while drawing on Polanyi, fills an important gap in Polanyian thinking on the political economy of central banking. According to Polanyi, national central banking evolved as an expression of the countermovement to the commodification of money under the international gold standard. Whereas Polanyi said little about potential conflicts between non-market coordination in the domain of money (central banks) and social protection in the domain of labor (social policies and trade unions), this conflict subsequently moved to the very center of macroeconomic governance. A large literature has since studied the interaction between national central banks and national labor market policies and wage-setting actors.

The institutional setting of this interaction changed dramatically with EMU, which established a supranational monetary regime with its own supranational central bank. From the beginning, heterogeneous labor market institutions and social policies threatened divergent national inflation developments, which clashed with the ECB’s one-size-fits-all monetary policy.

Whereas Polanyi would have expected a central bank to protect national economies from the disembedding pressures of the monetary regime, the ECB has instead embodied these very pressures, acting as a—if not the—key planner of laissez-faire in national labor markets.

Looking beyond Europe, our analysis contributes to the literature on policy diffusion in the context of economic globalization. Here, national policymakers routinely encounter the problems of translating and enforcing perceived functional pressures emanating from the international level.

The IMF, guided by the “Washington Consensus,” made its emergency lending conditional on governments’ implementing specific structural reforms, playing the role of both translator and enforcer.

Central banks, as the ultimate repositories of “epistemic authority” on economic matters, are uniquely positioned to play a similar role at the domestic level. In the euro area, the role of translator and—to a lesser but significant extent—enforcer of perceived functional pressures was assumed by the ECB identified—and sought to counter via structural reforms and public-sector wage restraint—the diverging trend in unit labor costs as early as 2005, years before the European Commission.

The ECB has been a highly articulate proponent of specific structural reforms in national labor markets and social policy regimes. When unit labor cost divergence, first recognized and prioritized by Trichet, threatened the very effectiveness of supranational monetary policy, the ECB began to promote structural reforms as means of macroeconomic adjustment, both in public speeches and behind the scenes with national policymakers. Executive Board members urged governments to seek downward wage adjustments, both via structural labor market reforms and by imposing wage restraint on the public sector. When the euro-area debt crisis hit, the ground for its interpretation as a crisis of competitiveness divergence had already been prepared by the ECB. When circumstances added formal and informal conditionality to the ECB’s toolkit, it wielded those instruments to help *enforce* labor market liberalization, internal devaluation, and public sector wage cuts. It was only when deflationary pressures and criticism in the European Parliament and elsewhere threatened its legitimacy that the ECB abandoned its advocacy of structural reforms.

Despite lacking both a mandate and the legal means to directly override national regulations, the ECB has been a keen supranational advocate of market-enhancing integration in the field of labor market and social policy.

This analysis also sheds new light on the broader political economy of central banking. Polanyi and others have shown that national central banking evolved under the international gold standard to buffer the disruptive adjustment pressures on national economies. The supranational ECB provided such protection for the financial system, but not for labor. Instead, emulating the role the IMF in other parts of the world, the ECB translated—and subsequently helped to enforce—the perceived functional pressures of international monetary and financial integration. Whether the ECB is constitutionally wedded to the role of “prime mover in the move to a market society” remains to be seen.<sup>135</sup> Its recent shift from structural reform advocacy to calls for wage increases has been echoed in the US, where the Federal Reserve has signaled that it will priori-

tize employment and wage growth over consumer and asset price stabilization. Central banks may yet again become “active agents of the countermovement.”

Braun (2021) Planning Laissez-faire: Supranational Central Banking (pdf)

### 39.2.1 ECB - Implosion?

*Gabor*

Under the financial capitalism supercycle of the past decades, inflation-targeting central banks have been outposts of (financial) capital in the state, guardians of a distributional status-quo that destroyed workers’ collective power while building safety nets for shadow banking. The limits of this institutional arrangement that concentrates (pricing) power and profit in (a few) corporate hands are now plain to see. .... What if Zugzwang is that last stage of a central banking paradigm, when it implodes under the contradictions of its class politics?

In turning European states into a collateral factory for private finance, the founding fathers did not consider the financial stability implications for the ECB.

The eurozone’s macro-financial architecture is wired to amplify volatility in sovereign spreads to the German Bund, via the €9tn repo market. This wholesale money market provides the plumbing for private credit creation, both on bank balance sheets and through securities markets. It was designed — by the ECB and the European Commission — to mainly rely on eurozone sovereign bonds as repo collateral. Yet we know from the eurozone sovereign debt crisis that repo collateral valuation means cyclical market liquidity in eurozone sovereigns except Germany, threatening liquidity spirals that only the ECB can prevent. Liquidity spirals, it is worth remembering, or not just bad for eurozone governments, but also for private institutions that use those bonds as collateral.

Putin’s invasion of Ukraine, coupled with the reluctance of European governments to act decisively with energy price caps, have left the ECB as a convenient scapegoat. Scapegoating invariably turns dovish central bankers into hawks, particularly when their peers elsewhere act as obedient vassals to the dollar hegemon. Indeed, monetary historians will marvel at that brief period when European politicians believed so much in the euro’s potential to unseat the US dollar ... With that illusion behind us and the euro below parity, the ECB is just another central bank trapped in the global dollar financial cycle, prey to facile comparisons with other central bank interest rates.

“If the climate and geopolitical (shocks, sic) of 2022 are omens of Isabel Schnabel’s Great Volatility that most central banks and pundits expect for the near future, then macro-financial stability requires new framework for co-ordination between central banks and Treasuries that can support a state more willing to, and capable of, disciplining capital.”

Such a (new) framework would threaten the privileged position that central

banks have had in the macro-financial architecture and in our macroeconomic models. The history of central banking teaches us that policy paradigms die when they cannot offer a useful framework for stabilising macroeconomic conditions, but never at the hands of central bankers themselves.

Gabor by Tooze (2022) Zugzwang in Central Banking



# 40

## Externalities

### 40.1 Commons

Resource extraction and pollution of the commons power the beating heart of global economic prosperity.

#### 40.1.1 Hardin and Ostrom

*Nijhuis*

The features of successful systems, Ostrom and her colleagues found, include clear boundaries (the ‘community’ doing the managing must be well-defined); reliable monitoring of the shared resource; a reasonable balance of costs and benefits for participants; a predictable process for the fast and fair resolution of conflicts; an escalating series of punishments for cheaters; and good relationships between the community and other layers of authority, from household heads to international institutions.

Like Hardin, many conservationists assume that humans can only be destructive, not constructive, and that meaningful conservation can be achieved only through total privatisation or total government control.

In southern Africa in the 1980s, some conservationists recognised that parks and reserves, many created by colonial governments, had divided subsistence hunters and farmers from much of the wildlife that had long sustained them – and which, in some cases, they’d managed as a commons for generations. The resulting lack of local support meant that even the best-patrolled park boundaries were vulnerable to incursions by human neighbours, people unlikely to tolerate – much less protect – the large, sometimes troublesome species that ranged beyond even the largest reserves.

In 1987, when the South African conservationist Garth Owen-Smith attended a

conference on community-based conservation in Zimbabwe, a comment by Harry Chabwela, the director of Zambia's national parks, left a lasting impression. 'At this conference we have talked a lot about giving local people this and giving them that, but what has been forgotten is that they also want power,' Chabwela said. 'They want a say over the resources that affect their lives. That is more important than money.'

In 1996, the Namibian National Assembly passed a law that allowed groups of people living on communal land to establish institutions called conservancies. Conservancies would be governed by elected committees, and all members would share the benefits of any tourism or commercial hunting within conservancy boundaries.

Nijhuis (2021) The miracle of the commons

## 40.2 History of Economics' 'Externalities'

*Duncan Austin*

### Incomplete Markets

Externalities were generally ignored through most of the 20 Century. After Pigou had identified the problem in the 1920s, there followed a long barren period for "welfare economics", the natural home for this type of thinking. This lasted until the early 1970s when there were the first stirrings of renewed interest by serious economists.

Framed as "externalities", market failures could be more easily dismissed. The term encourages a perception of unpriced damages as being mere residuals to the centrepiece of a priced economy. Since Pigou, some have sought to "beef up" the terminology. K. William Kapp, for example, bluntly described the market mechanism, *in toto*, as a "cost-shifting" institution. In this framing, externalities are not a bug, but a feature.

The mathematization of economics – another marker of the discipline's scientific aspiration – exacerbated the situation. The desire for manageable equations and functioning models further pushed troublesome market imperfections away. Possibly, there was the sense that positive and negative externalities might roughly cancel each other out, leaving GDP incomplete but still reliable enough as a directional indicator. That rests on the assumption that positive and negative externalities are symmetrical in nature.

However, there is an important asymmetry. Positive externalities take the form of "free goodies", whereas certain negative externalities constitute systemic risks that may be catastrophic to "trip" or breach. While you generally cannot have too much of a positive externality – a "free good thing" – too much of certain unwanted harms may induce systemic failure.

Externalities exist because markets have an incomplete grasp of what humans

value. Markets work off prices and not everything has – or can have – a price. As such, marketed values – or prices – exist amidst a broader “value field” of things that humans care about and which have an influence on our wellbeing.

Pigou's proposition was an inconvenient truth for economics. It suggested that there are real limits to what conventional economics might say about matters of human value and, hence, to how far markets might serve human wellbeing. The inconvenience of his idea may be why Pigou is not better known – seemingly more tolerated, than celebrated

#### **Complete markets...?**

As a discipline, economics did the very human thing of trying to ignore a difficult proposition. By not confronting Pigou's awkward challenge, the door was opened for a line of theorizing that led in exactly the opposite direction. Economists for most of the 20 Century sought to establish economics as a comprehensive corpus of thought with universal application.

Hence, by the 1950s, a very appealing theory of complete markets had been developed. No externalities in this theory, none at all.

Complete market theory is the laying down of a conceptual blanket over all our preferences that leaves no space for externalities.

The formulation of complete markets theory was deemed a major milestone for economics. Its authors were Kenneth Arrow and Gérard Debreu. It provided the cornerstone for the discipline's claim for the superiority of markets as a mechanism for social coordination.

**Rather, the key mistake made by 20 Century economics was not in misunderstanding externalities, but in grossly underestimating their magnitude** and so foreclosing a debate on the innate limits of economic thinking. The discipline considered that markets were “complete enough” to safely proceed as if they were actually complete! We are now waking up to the consequences of that misjudgement.

#### **... Or very incomplete markets?**

Consider, for example, a recent study by Robert Costanza and colleagues. They estimated the monetary value of the “services” provided free by the Earth's ecosystem at \$125 trillion in 2011, nearly twice the value of global GDP (gross domestic product) at the time. The authors believe this to be a conservative estimate because it grasps only about half of the “services” we know ecosystems provide.

Other studies have contemplated the value of unmonetized social systems, including one estimate that unpaid housework in the UK in 2016 was about 65 percent of GDP – another huge block of value not captured by the market. Just combining this figure with the Costanza et al. figure suggests that measured GDP captures about a third of some larger conception of value.

From its very inception, GDP has been derided as an incomplete measure of well-being. However, in elevating GDP to its current perch of influence, the working assumption has been that GDP, and the market system it reflects, captures the lion's share of what matters. What the latest estimates of "externalities" and non-market values suggest – and what our sustainability crisis seems to underscore – is that our perception of GDP's reach may be horribly off. Such an estimate suggests that it is not that the market does not capture *all* things of value, it does not even capture *most* things of value. **Far from externalities being peripheral, they may be the main event!**

The failure of economics to fully incorporate externalities in its 20th-century theorizing now appears to be the dropped stitch that defines the whole discipline. For a long time, this was a tolerable neglect as markets were more robustly counterbalanced by pre-market institutions that upheld unpriced values, and as the environment was able to absorb the fewer demands of a smaller, less consumptive population. But, with the onset of climate and biodiversity emergencies, the context has changed considerably. It matters more and more that we might not have *slightly incomplete markets*, but *very incomplete markets*.

It has left us at the start of the 21 Century transforming the matter and energy of the world using economic and financial tools that have only a very limited grasp of the reality they fashion.

In a world of very incomplete markets, things of human value lie in two separate realms – the marketed domain and the non-marketed domain. Some of the growth of the marketed economy genuinely arises from human ingenuity and creativity unlocking better ideas and products from new combinations of inputs. This is "good" growth, which ought to be celebrated and encouraged. However, other parts of monetized "growth" arise from simply running down the stocks of what is valuable but in the non-marketed realm. This is the illusion of wealth creation based on registering the increase in marketed value, but not recording the decrease in unmarketed values. In contrast to growth from genuine ingenuity, this is robbing Peter to pay Paul.

Measured economic "growth" overall combines in unknown proportions a "creative growth", which we want to encourage, and a "parasitic growth", which we do not. At an aggregate level, it is almost impossible to trace the origins – creative or parasitic – of GDP growth, and very few official metrics make any attempt to do so.

Our working assumption is that all economic growth is good – as it indeed would be if we had complete markets eliminating the possibility of parasitic growth. However, in not knowing the real-world mix between creative and parasitic growth, do we want more GDP growth, or less? It is not clear. And, given that companies work to the same price register as GDP, do we want companies to beat profit expectations or would it be better if they missed them? Who really knows? The conventional argument – captured by the notion of an Environmental Kuznets Curve – is that it is only by increasing monetary wealth

that we can develop better technology to protect the environment. However, it is not clear in the aggregate whether the deployment of such new capabilities ever makes good the damage done by the initial enabling wealth creation. While anecdotes can be summoned to support the idea – electric cars, wind turbines, LEDs etc – thus far, at the global level that matters, data shows we remain in net ecological destruction mode.

### Markets within Cultures

Paradoxically, then, to use markets more than we are, to introduce more externality pricing, would require a new cultural level reassertion that markets are a tool within culture. We need not a sustainable economy, but a sustainable culture that has an economy. Such a culture would establish room for governments to introduce new markets which powerful market incumbents may not like, but which improve human wellbeing. In turn, such a culture would also invigorate non-market means to protect our environment, for we must remember that not everything of human value can be priced and “internalized”. The interesting question, worth a moment’s reflection, is: why is that?

### Commodifiable Externalities

Though Pigou identified commodifiable externalities, there are many things of human value that cannot withstand the disembedding from their context necessary for them to be commodified and, hence, be transactable via market exchange. Such values are non-transactable because they are irrevocably embedded either in specific things – they are unique – or in specific relations – they exist “between” certain things. Some examples: friendship, reputation, loyalty, integrity, trust, community, mental health, etc. If you believe you have purchased any of these items, you might want to check the label.

What is tricky is that most things in the world bear both separable transactable values and intrinsic non-transactable values. A tree has both separable value as a feedstock for furniture and paper and intrinsic value as part of the ecosystem in which it is relationally embedded.

We tend to value trees in managed plantations for their separable values, but we value General Sherman, the 26-story-tall giant sequoia that is the largest known tree on Earth, for its non-separable attribute of being uniquely the tree we call General Sherman. With General Sherman, we have chosen to perceive and value its uniqueness over its instrumental value. Indeed, we might say that General Sherman is price-less. The “economist” denies the validity of this perspective by arguing that everything has a price. To say that something is priceless is merely to say that nobody has yet offered a high enough price. In turn, the “ecologist” denies the “economist’s” perspective, arguing that while you can apply such economic thinking to General Sherman, it is the wrong sort of thinking to apply.

Both the “economic” transactional perspective and the “ecological” intrinsic perspective are beneficial and valid, but they are incompatible.

The decision to apply an economic perspective to the external world is always a value judgment that necessarily transcends economics. More, it is a value judgment that can never be justified or refuted on economic grounds precisely because it is an argument about the validity of applying an economic perspective.

All this is a discussion that the field of economics may well have taken more seriously 100 years ago, had it been more open to the significance and implications of Pigou's formulation of externalities. Alas, we are now having to unknit to pick up this dropped stitch in a world now confronting large-scale problems of missed externalities.

### **Incompleteness Theorem of Economics**

Economics might be well served by formalizing an incompleteness theorem that would act as a proverbial knot-in-a-handkerchief reminder about the limits of claims that economics can make. It is an oddity of human intellectual thought that the most logical of our sciences, mathematics, had a formal Incompleteness Theorem as early as 1930, while economics formalized a complete market theory in the 1950s and seemingly still has no definitive statement of incompleteness.

### **Ringfencing Economics**

One of the ways, then, that we could better protect ecological values is for economics to recognize – re-recognize – the wisdom of culturally ring-fencing where economic thinking is preferred. In other words, to recognize the non-monetizable value of non-economic thinking.

Designating areas as protected are to explicitly restrain the ever-eager economic perspective. Such boundaries need to be upheld at the social or cultural level to count for anything. If not individuals can always free ride and extract the monetary instrumental value that others have agreed not to pursue.

While economics is undoubtedly *a* valuable form of knowledge, it is a way of seeing things, not *the* way.

A full century after Pigou formalized the idea of externalities, we might mark the anniversary by taking more seriously the effort to clarify the appropriate reach of economics and markets within the broader social and cultural context.

### **Economics is about solved Political Problems**

Arguably, one of the most important questions in economics is not even an economic question. The field effectively punts the matter of its own ontology – the things that economics can talk about – to a different discipline. In Abba Lerner's words:

“An economic transaction is a solved political problem. Economics has gained the title of Queen of the Social Sciences by choosing solved political problems as its domain.”

Economics has been strangely content to focus its efforts on pattern-seeking within a domain it leaves other disciplines to define, but in the absence of contemplating its boundaries more explicitly, it has hubristically come to believe it has greater reach than it really has.

In turn, this leaves most economists – and the great many people who think and act economically in conducting their professional duties – dangerously unaware of where economic thinking is beneficial and valid and where it ultimately hits limits.

Duncan Austin: Pigou and the dropped stitch of economics RWER95 (pdf)

### 40.3 Ecosystem Services

*Constanza*

- Global loss of ecosystem services due to land use change is \$US 4.3–20.2 trillion/yr.
- Ecoservices contribute more than twice as much to human well-being as global GDP.
- Estimates in monetary units are useful to show the relative magnitude of ecoservices.
- Valuation of ecosystem services is not the same as commodification or privatization.
- Ecosystem services are best considered public goods requiring new institutions.

In 1997, the global value of ecosystem services was estimated to average \$33 trillion/yr in 1995 \$US (\$46 trillion/yr in 2007 \$US). In this paper, we provide an updated estimate based on updated unit ecosystem service values and land use change estimates between 1997 and 2011. We also address some of the critiques of the 1997 paper. Using the same methods as in the 1997 paper but with updated data, the estimate for the total global ecosystem services in 2011 is \$125 trillion/yr (assuming updated unit values and changes to biome areas) and \$145 trillion/yr (assuming only unit values changed), both in 2007 \$US. From this we estimated the loss of eco-services from 1997 to 2011 due to land use change at \$4.3–20.2 trillion/yr, depending on which unit values are used. Global estimates expressed in monetary accounting units, such as this, are useful to highlight the magnitude of eco-services, but have no specific decision-making context. However, the underlying data and models can be applied at multiple scales to assess changes resulting from various scenarios and policies. We emphasize that valuation of eco-services (in whatever units) is not the same as commodification or privatization. Many eco-services are best considered public goods or common pool resources, so conventional markets are often not the best institutional frameworks to manage them. However, these services must be (and are being) valued, and we need new, common asset institutions to better take these values into account.

Constanza (2014) Global value of ecosystem services (Paywall) (pdf)

Constanza (2019) Natural Capital and ERcosystem Services

"The fossil fuel industry has been granted the greatest market subsidy ever: the privilege to dump its waste products into the atmosphere at no charge."  
 (Michael Mann)

## 40.4 Environmental Degradation

### 40.4.1 Kuznets and Engel Curves

*Environmental Kuznets and Engel's Curve*

I think degrowth is wrong on the merits (environmental kuznets curves and environmental engel curves are both concave), but it's also an obvious nonstarter even if it was founded on solid footing, To spell this out: if EKC and EECs are concave, redistribution within or between countries doesn't necessarily reduce environmental damages. (John Voorheis (twitter))

*Abstract Maneejuk:*

This study aims to examine the relationship between economic development and environmental degradation based on the Environmental Kuznets Curve (EKC) hypothesis. The level of CO<sub>2</sub> emissions is used as the indicator of environmental damage to determine whether or not greater economic growth can lower environmental degradation under the EKC hypothesis. The investigation was performed on eight major international economic communities covering 44 countries across the world. The relationship between economic growth and environmental condition was estimated using the kink regression model, which identifies the turning point of the change in the relationship. The findings indicate that the EKC hypothesis is valid in only three out of the eight international economic communities, namely the European Union (EU), Organization for Economic Co-operation and Development (OECD), and Group of Seven (G7). In addition, interesting results were obtained from the inclusion of four other control variables into the estimation model for groups of countries to explain the impact on environmental quality. Financial development (FIN), the industrial sector (IND), and urbanization (URB) were found to lead to increasing CO<sub>2</sub> emissions, while renewable energies (RNE) appeared to reduce the environmental degradation. In addition, when we further investigated the existence of the EKC hypothesis in an individual country, the results showed that the EKC hypothesis is valid in only 9 out of the 44 individual countries.

Maneejuk (2020) Does the Environmental Kuznets Curve Exist? (pdf)

The Kuznets curve expresses a hypothesis advanced by economist Simon Kuznets in the 1950s and 1960s. **As an economy develops, market forces first increase and then decrease economic inequality.**

Since 1991 the environmental Kuznets curve (EKC) has become a standard feature in the technical literature of environmental policy, though its application there has been strongly contested.

The environmental Kuznets curve (EKC) is a hypothesized relationship between environmental quality and GDP growth: according to its argument, which is spurious, various indicators of environmental degradation tend to get worse as modern economic growth occurs until average income reaches a certain point over the course of development, at which point some studies have argued, they improve.

It first became popular as introduced by Gene Grossman and Paul Krueger in their working paper: “Environmental Impacts of a North American Free Trade Agreement.” This paper simply showed that the non-direct Greenhouse gas, Sodium Dioxide, Dark Matter, and Suspended particles followed an inverted-U shaped pattern. This was almost immediately misinterpreted by the World Bank and Beckerman and adopted into policy as an argument that all negative environmental effects would follow an EKC pattern. Copious research has concluded that beyond these pollutants, and issues like water quality, that immediately threaten human health, GDP growth essentially harms, and does not help the environment with no lasting “turning point.” The EKC has led to poor policy choices reaping untold environmental damage.

Wikipedia

## 40.5 Energy and Transport

The “hidden cost” of our largely fossil fuel-based energy and transport systems could add up to around \$25 trillion (£18 trillion) – the equivalent of more than a quarter of the world’s entire economic output.

That’s according to new research, which estimates the hidden environmental, social and health costs associated with different forms of transport and electricity generation.

Sovacol (2021) (pdf)[(pdf/Sovacol\_2021\_Energy\_and\_Transport\_Externalities.pdf)



# 41

## Inflation

Inflation is about power, not money.

Contrary to the fantasy world of neoclassical economics — in which businesses ‘take’ prices from the market — in the real world, prices are always ‘set’.

mainstream economists believe that elevated inflation is a result of “excess” aggregate demand.

### 41.1 Wage-Price Spiral

*Roberts*

A general rise in the rate of wages will result in a fall of the general rate of profit, but not affect the prices of commodities. In other words, wage rises are much more likely to lower the share of income going to profits and thus eventually lower the profitability of capital. And that is the reason capitalists and their economist prize-fighters oppose wage rises. The claim that there is a wage-price spiral and that wage rises cause price rises is an ideological smokescreen to protect profitability.

The IMF has compiled a comprehensive data analysis (pdf) of the movement of wage and price rises that refutes Bailey and Furman. The IMF “address these questions by creating an empirical definition of a wage-price spiral and applying this on a cross-economy database of past episodes among advanced economies going back to the 1960s.” So over 60 years and in many countries.

What did the IMF find: “Wage-price spirals, at least defined as a sustained acceleration of prices and wages, are hard to find in the recent historical record.

Also, there appears to be no inverse correlation between changes in wages, prices and unemployment – this classic Keynesian Phillips curve that claimed this

relation has been shown to be false. And the latest empirical estimates show the Phillips curve to be broadly flat – in other words, there is no correlation between wages, prices and unemployment. No wage-price spiral.

Capitalists want ‘wage restraint’ in the face of spiralling inflation in order to protect and sustain profits.

The real aim of interest-rate hikes is not to stop a wage-price spiral but to raise unemployment and weaken the bargaining power of labour.

Alan Budd, then chief economic adviser to British PM Margaret Thatcher in the 1980s: “There may have been people making the actual policy decisions... who never believed for a moment that this was the correct way to bring down inflation. They did, however, see that [monetarism] would be a very, very good way to raise unemployment, and raising unemployment was an extremely desirable way of reducing the strength of the working classes.”

Roberts (2022) The wage price spiral refuted

## 41.2 Phillips Curve

*Roberts*

Gavyn Davies, former chief economist at Goldman Sachs, once explained why the theory that inflation is caused by wage rises persists even though it has been discredited theoretically and empirically. Davies: “*without the Phillips Curve, the whole complicated paraphernalia that underpins central bank policy suddenly looks very shaky. For this reason, the Phillips Curve will not be abandoned lightly by policy makers*”.

Neoliberal ascendancy, deregulation has allowed corporations to amass pricing power.

The sharp rise in the prices of non-labor inputs that were “the likely culprits for the acceleration in inflation”. They rose because of the shutdown of key suppliers during COVID in China and other developing countries and from the loss of electronic components supply that went into the production of consumers goods and because the supply chain system was broken with the collapse of the just in time inventory methods over the last four decades. Prices in oligopolistic markets are likely to be higher than in more competitive markets “*but it is not the case that this can explain the continuous rise in prices; that would require a change in the competitive conditions, something that is not clearly taken place in the last two years.*”

Higher inflation can occur both with fairly competitive or oligopolistic market structures. In the late 19th century, the so-called Gilded Age Era was characterized by the rise of cartels, but with deflation in prices; and the 1990s, often seen as a second Gilded Age with increasing market concentration, experienced a so-called Great Moderation in price inflation ie disinflation. Indeed, in the

last big inflationary spiral of the 1970s, profits actually fell. According to Sylos-Labini, wiring then: “the decline of the share of profits in several capitalist countries can be attributed primarily to the persistent increase of direct costs in labor, raw materials, and energy”. This contradicts views according to which: “Companies with enough market power can also unilaterally raise prices in a quest for greater and greater profits” as MMT economist, Stephanie Kelton has argued.

It all depends on the point in the cycle of expansion and contraction that a capitalist economy is undergoing, not on the ability of monopolies to ‘price gouge’ as such.

The persistence of contractionary demand, mostly monetary, policy as the main tool to contain inflation seems to respond more to the prevailing prejudices and the ideological biases of the profession, than to the analysis of the real causes of inflation.

However, it is not helpful that the main challenge to this consensus has been to blame corporations for increasing their profit margins, since this view also provides an incorrect explanation for the recent acceleration of inflation. The main culprit for the inflationary acceleration in the U.S. and most advanced economies is related to the supply side snags, and the shock to energy and food prices resulting from the pandemic and the war in the Ukraine.

Michael Roberts (2023)

### 41.3 Stagflation

*Napier*

Stagflation is the combination of high inflation and high unemployment. That’s not what we have today, as we have record low unemployment. You get stagflation after years of badly misallocated capital, which tends to happen when the government interferes for too long in the allocation of capital.

Napier (2022) We Will See the Return of Capital Investment on a Massive Scale

*Fix*

Inflation in the midst of stagnation is not an anomaly. If anything, it is the general rule.

#### **Stagflation is a business strategy**

The idea is that ‘stagflation’ — economic stagnation combined with high inflation — is not some exogenous ‘market shock’. According to Nitzan and Bichler, stagflation is a business strategy — one of two main routes to profit.

The first route to profit is for businesses to hold prices steady while they try to sell more stuff. The second route is to jack up prices. Since this latter option

requires restricting the flow of resources (stuff that flows freely cannot be dear), Nitzan and Bichler reason that when inflation rears its head, it ought to come with economic stagnation. In other words, stagflation is the norm.

If this stagflation thesis is correct, then inflation ought to correlate negatively with economic growth. Looking at the United States, Nitzan and Bichler find evidence that it does. Here, I broaden their stagflation research by looking at all countries in the World Bank's global development database.

I find that both within and across countries, economic growth (measured in terms of energy use) tends to decline as inflation increases. So Nitzan and Bichler appear to be onto something. Over the last half century, stagflation is the general rule.

The reason is that to many people, the word ‘inflation’ implies a decrease in the purchasing power of money. Although not wrong, the problem with this interpretation is that it is needlessly indirect. Framing inflation in terms of *decreasing purchasing power* is like discussing your child’s growth in terms of the ‘shrinking height capacity’ of your doors. Sure, it’s true in a sense. But it is also tediously circuitous. The fact remains that it is your child (not your doors) who changes.

The same is true of inflation. When inflation rears its head, money appears to lose its value. But the reality is that it is *prices* (not the nature of money) that change. So if we want to understand the phenomenon of ‘inflation’, we should study prices directly.

As a social species, humans have an intense desire to conform to social norms. Sometimes this desire leads to stability — as with religious traditions that last for centuries. Other times, though, conformity leads to social change.

Fashion is a good example of both tendencies. As individuals, we like to dress the same as other people, leading to a (relative) uniformity in our attire. And yet over time, fashion changes — a herd behavior in which people conform to the new way of dressing. And so we get coordination (changing fashion) through conformity.

Something similar happens with businesses. Often, businesses compete by cutting costs and increasing the amount of stuff they sell. But this is not the only mode of competition. Sometimes, a business raises its prices and its competitor responds by doing the same. If enough businesses join in, suddenly we have a herd behavior in which every business is attempting to raise prices. Coordination through conformity. Inflation!

When inflation rears its head, it should be accompanied by economic stagnation — a combination that economists call ‘stagflation’.

You can’t look at the scale of inflation variation (Figure Inflation by countries) and claim it all boils down to ‘supply-chain problems’.

To predict whether a country will have high (or low) inflation, we need only rank its per capita income. If the country is poor, inflation will be high. But if the country is rich, inflation will be low.

As energy growth rates increase, inflation tends to decline. Or put another way, energy stagnation is associated with greater inflation. Stagflation!

Fix (2023) Is Stagflation the Norm?

## 41.4 Inflation - Growth Tradeoff?

*Fix*

According to standard theory, there is a trade off between low inflation and high economic growth. The idea is that you can have one or the other, but not both. So if you want to keep inflation low, you have to ‘cool off’ the economy by slowing economic growth. (Like many things in economics, this idea comes from the totem of supply and demand.)

The trouble is, the empirical evidence shows that the opposite is true. Rather than being driven by ‘excessive’ economic growth, inflation tends to come during periods of stagnation. So despite what mainstream economists proclaim, there is little evidence for a ‘growth-inflation trade off’. Instead, ‘stagflation’ seems to be the norm.

Soon after I published ‘Is Stagflation the Norm?’ several readers pointed out that I should take a look at causation. The idea is that we want to know what drives what. Does (low) inflation drive (high) economic growth? Or does (low) economic growth drive (high) inflation?

Business sabotage, plain and simple. It’s inflation through enforced scarcity. Maintaining high prices requires restriction.

Musk turned on the inflation dial by charging for blue checkmarks.

De Beers (a diamond cartel) spent years buying up diamonds to purposefully keep them off the market. Like all savvy businesses, De Beers knew that enforced scarcity (aka sabotage) was the key to high prices.

Nitzan and Bichler argue that this enforced scarcity tends to come in waves, largely because it is unstable.

Neoclassical economists look at these dynamics and conclude that they will lead to market equilibrium. But that’s because economists suppose that businesses won’t coordinate. In the real world, though, businesses coordinate all the time. It’s called herd behavior.

If the herd decides to restrict supply and hike prices, I’d best join in. The result will be an oscillation between periods of economic boom with low inflation, and periods of economic bust with high inflation.

Across countries, economic growth (as measured by energy consumption) tends to be high when inflation is low (and vice versa).

#### *Causation*

What causes what? Does high inflation cause low economic growth? Or does low economic growth cause high inflation? If the sabotage thesis is correct, then the latter should be true. Purposeful restriction (by business) should lead to higher prices.

While causation is difficult to establish, it is easier to rule out. That's because if a hypothesized 'cause' comes after the hypothesized 'effect', the hypothesis is wrong.

One way to test for causation (or to be more precise, eliminate non-causation) is to take time-series data and introduce leads and/or lags. So instead of correlating data observed in the same year, we correlate data in adjacent years.

Inflation is measured in terms of the change in the consumer price index. I use the growth rate of energy consumption per capita as a measure of economic growth.

Energy growth rates are a decent predictor of next-year's inflation rates. But the reverse is not true. Price gouging is preceded by a period of energy restriction. What's causing this restriction, though, is still unknown.

For their part, mainstream economists will be happy to look at energy restriction and identify 'exogenous shocks' to the market. But by 'exogenous', economists really mean a cause that they don't care to think about.

War is a good example. For mainstream economists, war is simply not part of their theory. But for Nitzan and Bichler, war is the most extreme form of sabotage, frequently associated with price gouging and profiteering. In particular, the (differential) profitability of oil companies seems to be tightly related to war in the Middle East.

On that front, it's worth concluding with some history. If you lived through the 1970s, you'll remember it as a period of rampant inflation. But do you recall the chain of events that led up to the crisis?

Here's what happened.

In October 1973, Egypt and Syria attacked Israeli-occupied territory in the Sinai Peninsula and the Golan Heights. The United States rushed to back Israel, while the Soviet Union rushed to back its Arab allies. As retribution, in December 1973, the Arab-dominated OPEC cartel announced an oil embargo against the United States. Oil prices skyrocketed. Generalized inflation soon followed.

Now we can quibble about the details, but the point is that nothing in this story fits the standard theory of inflation. There was no growth-inflation trade off. Instead, there was war, followed by an embargo imposed by a business cartel, followed by energy shortages (in the United States), followed by rampant

inflation. That pretty much fits the sabotage thesis advanced by Nitzan and Bichler.

Interestingly, the wider evidence that I've reviewed here suggests that the last two steps of this causal chain are quite general — energy restriction precedes inflation. The harder part is to then determine what drives short-term energy restriction.

As is the norm, empirical evidence answers some questions, but leads to others. I'm fine with that because it's better than the alternative (namely, to stop asking questions and take Econ rituals as received wisdom).

Fix (2023) The Cause of Stagflation

## 41.5 Fiscal Theory of Price Level

### *Cochrane Abstract*

I introduce and summarize the fiscal theory of the price level. Fiscal theory states that the price level adjusts so that the real value of government debt equals the present value of real primary surpluses. Monetary policy remains important. The central bank can set an interest rate target, which determines expected inflation, and then innovations to the present value of surpluses pick unexpected inflation. Fiscal theory is a frictionless supply and demand foundation, on which we can add interesting ingredients. Long-term debt is an important buffer and allows a higher interest rate to lower inflation without a fiscal shock. An s-shaped surplus process and time-varying interest rate are crucial to fitting data. One can easily integrate fiscal theory with standard new-Keynesian macroeconomic models. The models are observationally equivalent. That equivalence is a feature not a bug. It opens the door to easy translation. It focuses our attention on direct information about government policy rather than statistical tests. It shows how to fix the current generation of fiscal theory models to describe the whole sample, and better, not just periods of undesirable high inflation. Fiscal theory overturns many traditional doctrines of monetary policy. It accounts for the stability of inflation at the zero bound. Fiscal theory offers a warning that containing a new inflation will be harder, as interest costs on a large debt and the fiscal costs of debt revaluation will be larger.

### *Cochrane Memo*

Cochrane (2021) The Fiscal Theory of the Price Level: An Introduction and Overview (pdf)

### *Smith on Ghana Case*

Ghana's inflation, however, doesn't appear to be due to an attempt to pay off external debt by printing local currency. In fact, the central bank has been raising interest rates very fast in order to fight the inflation from food and fuel

prices, as well as in a (failed) attempt to halt currency depreciation. So this is not the typical “print money to pay off foreign debt” story we’re seeing.

Higher interest rates, unfortunately, exacerbate the government’s debt burden. Ghana is not a country that can borrow cheaply in the first place, and global interest rates have been going up, so the central bank’s rate hikes have just added fuel to the fire. Interest on the government debt is now absorbing 70% of tax revenues, which is crowding out anything else useful the government might try to do, and which is obviously unsustainable.

The huge debt burden, in turn, probably led to soaring inflation. Ghanaian businesspeople looked at the mountain of government debt and decided that eventually the government would reverse its pattern of rate hikes and resort to printing a ton of money to pay off its debt. So they got in ahead of the game and started raising prices, which made inflation a self-fulfilling prophecy. Economists call this kind of thing the “fiscal theory of the price level”.

## 41.6 Price Control



Weber

A critical factor that is driving up prices remains largely overlooked: an explosion in profits. Large corporations with market power have used supply problems as an opportunity to increase prices and scoop windfall profits.

Today economists are divided into two camps on the inflation question: team Transitory argues we ought not to worry about inflation since it will soon go

away. Team Stagflation urges for fiscal restraint and a raise in interest rates. But there is a third option: the government could target the specific prices that drive inflation instead of moving to austerity which risks a recession.

As long as bottlenecks make it impossible for supply to meet demand, price controls for important goods should be continued to prevent prices from shooting up.

The role of price controls would be “strategic”. It will not stop inflation, but it gains the time for the measures that do.

Weber (2021) We have a powerful weapon to fight inflation: price controls. It's time we consider it

*Krugman*

I am not a free-market zealot. But this is truly stupid.

Krugman on Weber (Twitter Thread)

Paul Krugman ? Deleting, with extreme apologies, my tweet about Isabella Weber on price controls. No excuses. It's always wrong to use that tone against anyone arguing in good faith, no matter how much you disagree — especially when there's so much bad faith out there.

*Comment by Jonathan McCarty:* ? is against price controls for consumer goods, but supportive when it comes to the cost of labor, rent and money.  
So gov't is too stupid to set the price of bread but smart enough to set the price of money? Bread shortages are not okay, but housing shortages are?

*Galbraith*

In The Guardian, Weber provides careful parallels to the spring of 1946, when Paul Samuelson – Krugman’s own chief mentor – signed a letter to The New York Times urging continued price controls, given ongoing bottlenecks and temporary shortages – precisely today’s situation...

The point of strategic price control, then and now, was to prevent an outbreak of inflation, followed by loss of purchasing power and confidence. A further purpose now, not relevant yet in 1946, is to forestall counterproductive hikes in interest rates by the Federal Reserve...

Krugman’s tweets, by contrast, are the trite repetition of textbook banalities.

Kelton on behalf of Galbraith(Twitter Thread)

*Galbraith 2001*

So what is modern economics about? It seems to be, mainly, about *itself*

Thirty years ago, Friedman-style monetarists wiped out all alternative theories of inflation. The ideas of “cost push” and “wage-price spirals,” on which the successful anti-inflation strategies of the 1960s had been based, disappeared. To

this day, there exist no alternatives for fighting inflation, except higher interest rates, recession, and unemployment. These are the hard measures, the brutal measures, for which we have the monetarists to thank.

Galbraith (2001) How the Economists Got It Wrong

*Smith*

### Price controls: Simple theory

If there's one thing you should know about macroeconomics, it's this: Convincing evidence is really really hard to come by, so people end up relying a lot on theory and making a lot of assumptions. Price controls are no different. So we can't just point at evidence for whether price controls are good or bad; we have to think about how we believe the economy works.

The basic theory of competitive supply and demand says that price ceilings cause shortages. Here's the graph showing the theoretical gap between how much people want and how much they get when government caps the price of something:

The basic logic here isn't complicated. Government declares that milk shall be super-cheap. People say "Oooh, milk is super cheap!" and rush out to buy milk. The shelves empty out and there's no more milk. The people who were late to the store can't find any milk, and they get mad. The end.

But this perfectly competitive model is often a bad description of reality. Sometimes, as we've seen with minimum wage, price controls don't distort markets by a noticeable amount. In that case, the model we want to think about is more like a monopoly model. When there's monopoly power in the economy, a price ceiling can actually move the price toward what it ought to be, and relieve shortages instead of exacerbating them.

Monopolies make goods more expensive and limit the amount people can consume; a modest price ceiling can make goods less expensive while also making them more abundant.

But does this make any sense when talking about inflation? Monopoly models like the one in the picture above are static, long-term equilibrium models; they don't say much about the rate of change. It's probably not plausible that monopoly power would change significantly in the course of one year due to supply bottlenecks. In other words, as Matt Bruenig points out, if powerful companies could have jacked up prices before now they would have done so; if their ability to jack up prices has increased, it's probably not because they've suddenly become much more powerful.

An economy with lots of monopoly power in various markets might have steeper supply curves in those markets, which in turn might make aggregate supply steeper, which would make inflation tend to be higher.

But if this is how the economy works, would price controls in various markets

reduce inflation at a time like now? Probably not, no. Go back and notice that in the monopoly model, the price ceiling doesn't actually change the supply curve.

Even if there are monopolies in each market, that doesn't mean the macroeconomy overall acts like a monopolized market. There's no one company that has a monopoly over aggregate production. So price controls, macroeconomically, are likely to reduce inflation only at the cost of causing a recession.

That would be a bad idea; sure, we'd beat inflation, but we'd throw a ton of people out of work. If that's what we want to do, we might as well use monetary policy.

Simple theory suggests that that enacting economy-wide price controls just to bring inflation back down to 2% is not worth the damage it'll cause.

But simple theories like AD-AS aren't always sufficient for determining policy. Real macroeconomies have a lot more going on.

One possibility is that if price controls do cause empty shelves — as they will if they're strong enough to overcome the amount of monopoly power in the economy — that this will cause people to engage in hoarding behavior.

Hoarding could be especially bad. It would boost demand (because everyone is trying to hoard), which will lead to even more inflation, causing the government to respond with even more price controls, etc. That would be a very unpleasant spiral, even beyond the hardships and unfairness created by hoarding. This possibility of a price-control-inflation spiral has occurred to economists, but it's very hard to measure.

Many economists theorize that inflation is, at least sometimes, determined by people's beliefs about monetary policy. If people think the government (especially the central bank) doesn't care that much about fighting inflation, then they'll raise prices now in anticipation of future cost increases, causing fear of inflation to become a self-fulfilling prophecy. This is one leading explanation for the high inflation of the 1970s — the oil shocks caused some prices to rise and the Fed didn't respond, which convinced people that the Fed didn't care that much about inflation, which caused inflation to spiral upward much more than the oil shocks should have caused just by themselves.

So if price controls became the government's primary tool for inflation-fighting — as Kelton suggests — it could send a very dangerous signal. It could convince the public that the government isn't willing to use monetary policy to do the job.

*Evidence Argentina:* price controls have only a small and temporary effect on inflation that reverses itself as soon as the controls are lifted. Second, contrary to common beliefs, we find that controlled goods are consistently available for sale. Third, firms compensate for price controls by introducing new product varieties at higher prices, thereby increasing price dispersion within narrow categories.

Overall, our results show that targeted price controls are just as ineffective as more traditional forms of price controls in reducing aggregate inflation.

*Evidence Venezuela* The utter failure of Venezuelan price controls should also serve as a reminder that there are real-world factors that don't appear in macroeconomic models — for example, the black market.

In the U.S., a vigorous, comprehensive regime of price controls would undoubtedly cause people to turn to cryptocurrency, and to technologies like the dark web, to evade the controls.

History is hard to interpret, theory involves lots of assumptions, and macroeconomists have been largely derelict in their duty of studying inflation in recent decades (though I predict this will change quickly now).

There are multiple obvious downsides and potentially catastrophic possible downsides.

We don't know for certain that price controls can't work as an inflation-fighting tool.

Smith (2021) Why price controls are a bad tool for fighting inflation

*Tooke*

As Eric Levitz makes clear in his excellent write-up of the debate, whether you find Weber's op-ed convincing or not, there is a serious position to be argued with. The effort to assert the monopoly of conventional inflation-fighting disarms us.

One could make a strong case for more stringent controls throughout the American health-care system. And price controls are themselves just one of many unorthodox approaches to inflation management. Reducing the monopoly power of price-gouging firms, channeling credit to sectors where demand outstrips supply, forcing (or strongly encouraging) workers to save a fraction of their paychecks, and direct public investment in expanded production are others.

All of these measures have the potential for negative side effects and unintended consequences. But the same can be said of raising interest rates. If policymakers reflexively presume the wisdom of conventional tools, and dismiss the potential of unorthodox ones, we will all pay the price.

I am impressed by recent BIS work which shows the common factor in recent price movements declining in significance.

The question becomes which instruments might usefully address which drivers of which price increases.

Weber starts by stressing rising profit margins as an important driver of general inflation. On that score I find the critique by BLS-economist and Substacker Joseph Politano wholly persuasive. It just isn't likely that a general surge in profit margins is doing the damage here.

Likewise, I find Politano's breakdown of the sectoral logic of inflation highly persuasive as well as his skepticism towards price controls as a means of addressing inflation in energy prices, for instance.

There is no doubt a case for driving down the price of pharmaceuticals in the US. Rent controls may be part of housing-policy trade-off in some cities. The meat lobby has an anti-trust case to answer. But I see little advantage in packing an array of discrete measures using existing instruments under the (deliberately) provocative rubric of "price controls".

I don't think it is pejorative to describe the use of the term "price controls" as provocative. I take it to be the purpose of this language to provoke debate and break open the confines of conventional discourse.

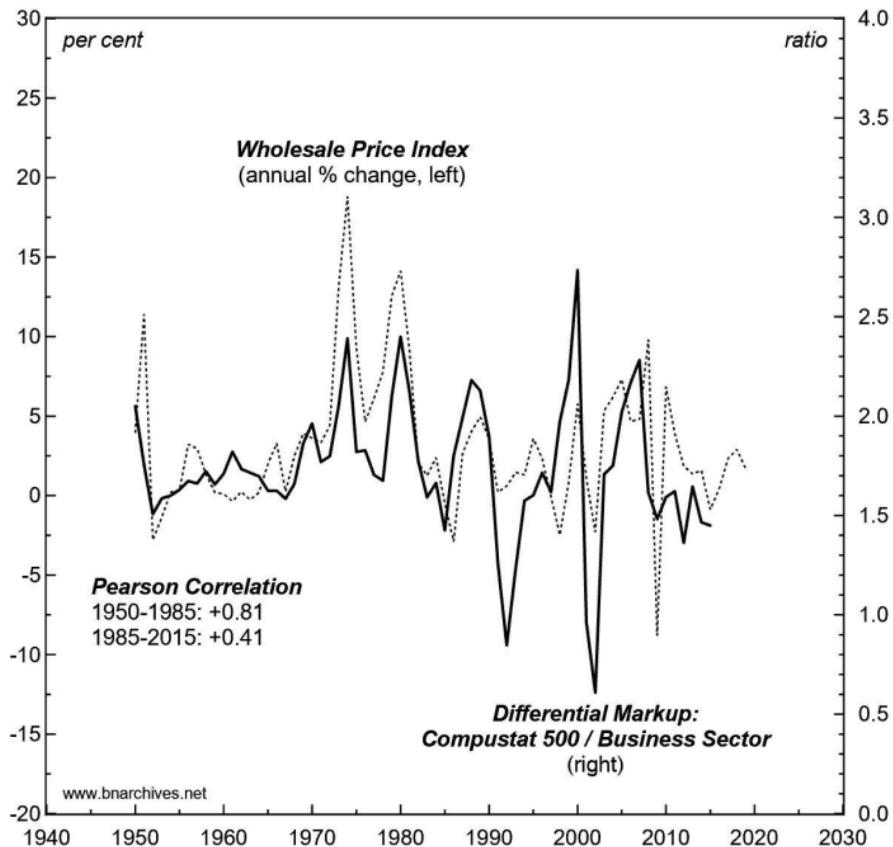
But as desirable as that kind of heterodox challenge may be in general terms, we will be kidding ourselves if we imagine that such measures are a "powerful weapon" to fight the spike in prices in 2022.

Tooze (2022) Inflation & Price Controls

## 41.7 Greedflation

*Fix*

big business is systematically benefiting from inflation, it implies that these big corporations are raising prices faster than everyone else. In other words, it is oligopolies that are driving inflation.



*Figure: Inflation benefits big business*

Inflation looks nothing like it does in economics textbooks. Yes, inflation is a ‘monetary phenomenon’ — as is anything to do with prices. But more importantly, inflation is a power struggle over who can raise prices the fastest.

Fix (2022) The Truth About Inflation: Why Milton Friedman Was Wrong, Again

## 41.8 Structural Reallocation

### *Guerreri Abstract*

We characterize optimal monetary policy in response to asymmetric shocks that shift demand from one sector to another, a condition arguably faced by many economies emerging from the Covid-19 crisis. We show that the asymmetry manifests itself as an endogenous cost-push shock, breaking divine coincidence, and resulting in inflation optimally exceeding its target despite elevated unem-

ployment. In fact, there is no simple, possibly re-weighted, inflation index that can be used as the optimal target. When labor is mobile between sectors, monetary easing can have the additional benefit of inducing faster reallocation, by producing wage increases in the expanding sector.

*Guerreri Memo*

Uneven shocks pose important challenges to policy, given that different sectors can suffer from opposite problems. How should monetary policy respond to this type of situation? Is the optimal response to target economy-wide average measures of inflation and of the output gap, or do the asymmetries across sectors require a deviation from standard recommendations, in one direction or another? We address here how monetary policy interacts with the process of sectoral reallocation.

When uneven shocks have a persistent nature, a natural concern is that the economy should readjust by moving productive resources from declining sectors, that suffer from insufficient demand, towards growing sectors where demand is expanding. Excessively easy monetary policy may hamper the reallocation process.

Monetary policy must balance various goals. The macroeconomic literature on optimal monetary policy has developed insights into navigating these goals.

An influential and celebrated idea provides conditions under which inflation targeting can obtain both price and employment stability—as in some situations there is no trade-off, and we have the so-called “divine coincidence.” It is well appreciated that we may have to depart from this benchmark. This paper explores scenarios that fall quite some distance away from divine coincidence. We build a stylized model that departs from workhorse macroeconomic models in important ways, incorporating realistic features such as multiple sectors, downward wage rigidities and costly labor reallocation. We then consider a reallocation shock and study optimal monetary policy.

Monetary policy should not only be concerned with average inflation and the average output gap, but also with getting relative prices across sectors close to their frictionless level, so as to reduce inefficiencies in the composition of output.

We build our analysis in a model with downward rigid nominal wages, which introduces non-linear Phillips curves at the sectoral level. The main implication of this difference, is that to get relative prices right it is easier to get inflation in the expanding sectors than to get deflation in the contracting sectors, imparting an inflationary bias to optimal policy.

The main question of our paper which is whether reallocation objectives impart a contractionary or expansionary bias to monetary policy. Does the presence of sectoral mobility add a negative or a positive social benefit to increasing  $M$ ? Tools that encourage labor mobility (or remove obstacles to mobility), allow the central bank, all else equal, to achieve a better mix of inflation and unemployment.

### *Guerreri Conclusion*

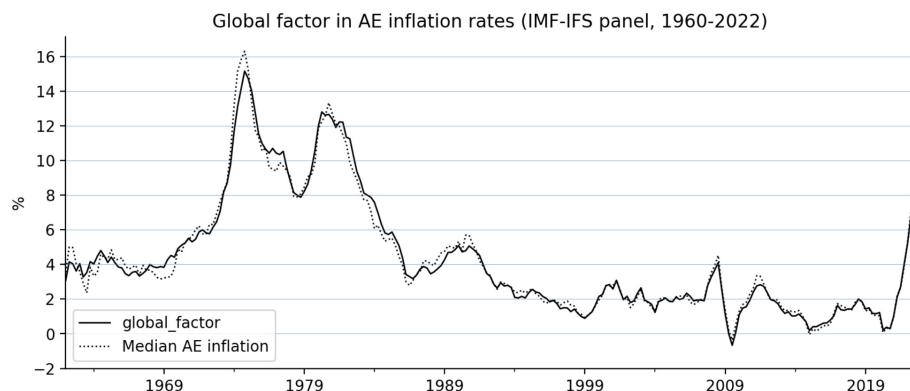
The paper has explored the optimal conduct of monetary policy in the presence of asymmetric shocks, which can cause a permanent reallocation of resources among sectors. Asymmetric shocks require adjustments in relative prices across sectors, and in the presence of downward nominal rigidity, this may lead to a more expansionary monetary policy being optimal. Moreover, when labor can move across sectors, households do not internalize the benefits of labor reallocation towards the booming sectors, and incentivizing reallocation is desirable. Does easier monetary policy speed up or slow down such reallocation? We presented examples where both are possible. If the dominant effect of easier monetary policy is to improve employment prospects in the declining sector, reallocation tends to be slowed down; if instead easier monetary policy has sufficiently powerful effects on relative wages, reallocation is accelerated. An investigation into which of these two forces is empirically stronger, is a promising avenue for further research.

Guerreri (2021) Monetary Policy in Times of Structural Reallocation (pdf) Krugman on Guerreri

## 41.9 Global Inflation

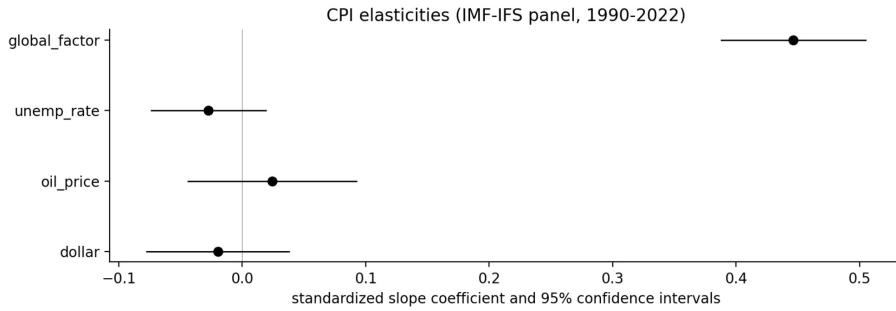
### *PolicyTensor*

We've shown previously that inflation in advanced open economies is not a function of domestic slack. Instead, it is a function of slack in the global production system servicing the Western consumer as a whole. We revisit the empirical evidence and ask whether there's any reason to do a Bayesian update of our model of the inflation process.



*Fig:* We obtain data on inflation and unemployment from the IMF. We restrict the sample to twenty advanced economies because EM inflation rates are confounded by unanchored inflation expectations. We isolate the global factor in inflation from our AE panel using latent factor analysis.

As is clear from the graph, the global factor closely tracks median inflation in advanced economies. We can think of it as the rate of inflation in the global tradable sector jointly faced by all advanced economies. The global factor thus contains a very strong signal of slack in the global production system as a whole. We expect inflation in the advanced economies to be more sensitive to the global factor than domestic slack.



*Fig:* We fit panel regressions with CPI as the response, and the global factor and domestic slack as features. We proxy domestic slack by the unemployment rate. We detrend by first-differencing and standardize all variables to have zero mean and unit variance. The slope coefficients therefore represent effect sizes measured in standard deviation units. In all our regressions, we control for the price of crude, dollar strength, country fixed-effects, and lagged CPI. Country fixed-effects and the persistence term are included but not shown.

Our estimates show that AE inflation is a function of global slack, not domestic slack. The elasticity of inflation in an advanced economy against domestic slack is statistically indistinguishable from zero at the 10 percent level ( $P = 0.254$ ). Meanwhile, the elasticity of inflation against the global factor is very large and statistically significant at the 1 percent level.

In order to test the hypothesis of recent changes in the inflation process, we divide the data into pre-Covid and post-Covid samples, and compare elasticity estimates.

We find that AE inflation has become more sensitive to the global factor since Covid, not less. Our point estimates suggest that the global factor is still six times as important as domestic slack in the determination of AE inflation.

Blanchard may be “one of Europe’s most prominent economists” but he is simply mistaken about the inflation process. It’s hard to see how evidence against the Phillips curve theory of inflation can ever get him to lose his religion. But one poorly-informed technocrat is not so important. What we should be worried about is broader intellectual regression among economists.

Inflation could come down rapidly in 2023, stay stubbornly high, or even start climbing again. Given the substantial uncertainty around the inflation outlook, it is extremely important for central bankers to refrain from imposing their

theoretical priors on the data. Monetary policymakers should **not** base their expectations of the future path of inflation on the very poor signal in the tightness of domestic labor markets.

Policytensor (2023) Blanchard is still wrong

## 41.10 Interest rate and inflation

*Fix*

In his article ‘Do Interest Rate Hikes Worsen Inflation?’ Tim Di Muzio claims that there is good reason for monetary orthodoxy to be wrong. The problem boils down to the *ceteris paribus* clause — the assumption that when we raise interest rates, nothing else changes. To restate orthodox reasoning, if I have a fixed budget to spend on servicing my debt, then it follows that when interest rates rise, I’ll borrow less money. But what if my debt-servicing budget is not fixed? Then orthodoxy breaks down.

In the real world, Di Muzio observes, businesses don’t need to reduce borrowing in the face of higher interest rates. Why? Because when interest expenses increase, businesses can respond by trying to raise their income. In other words, businesses can maintain their debt levels by passing their greater debt-servicing costs along to customers.

Let’s lay out the consequences of this heretical thinking. If businesses practice ‘cost-plus’ pricing — meaning they tack a fixed markup onto their current costs — then raising interest rates ought to *stimulate* inflation.

How should we interpret the fact that higher interest rates are associated with higher inflation? The least painful option is to suppose that monetary policy is well-intentioned yet toothless. In other words, policy-makers consistently respond to higher inflation with higher interest rates. And yet equally consistently, these rate hikes fail to do their job.

A more incendiary possibility is that monetary orthodoxy does the opposite of what it intends. As heretic Tim Di Muzio observes, if businesses practice cost-plus pricing (tacking a fixed markup onto existing costs), then higher interest rates should actually stoke inflation. Blasphemy, yes. But the idea is supported by the evidence.

Monetary orthodoxy is *true by definition*. Interest rates everywhere and always down-regulate inflation. It’s just that in our imperfect world, there are ubiquitous distortions that hide this truth.

By definition, monetary policy works the way it should. It’s just that we can never observe this canonical outcome, for it is hidden by a barrage of distortions. And yet we have faith. We have faith that the plane of economic truth is there, waiting to be imagined.

Fix (2023) Do high interest rates reduce inflation

### 41.11 Inflation as Redistribution

*Bichler and Nitzan*

There is the much broader question of whether we should think of inflation as a stand-alone variable in the economist's arsenal, or as a process that is deeply interlaced with and shapes the political-economic space. The former, conventional view sees various concepts and processes such as 'technology', 'GDP', 'growth', 'income', 'government', 'capital' and 'inflation' as distinct entities that interact with each other in an otherwise independent Newtonian space called 'the market'. The latter view, which CasP prefers, is that the social space is not Newtonian, but Leibnitzian. It does not exist on its own, but rather is defined, bent and transformed by the entities that comprise it. Seen from this latter perspective, inflation is not separate from the strategic sabotage and stagnation that causes it or the constant redistribution of income and assets it engenders. Taken together, these conceptual quandaries, missing data and the perception of inflation as part and parcel of the changing structure of society, make the study of inflationary redistribution truly daunting. To engage in such research, you must come up with thoughtful simplifications that do not sacrifice reality, create clever constructs and indices to transcend the vast voids of missing data and rethink the ways in which price changes reorder the very structure of society.

Bichler and Nitzan (2023) Inflation as Redistribution (pdf) ([pdfbucket](#))

### 41.12 Return of Inflation

*Vernengo*

The Great Moderation, characterized by increasing stability in prices lasting from around 1980s to the recent inflation acceleration, and the ideological victory of Monetarism in the 1970s, led to a certain theoretical complacency, and a view of inflation as being fundamentally related to excess demand, a positive output gap, and the notion that central banks could manage the inflation expectations and target it at around 2 percent in advanced economies. The long period of price stability has been seen, by the mainstream, as resulting mainly from the good practices of central banks which included a clear mandate to maintain price stability as the hierarchical goal of monetary policy, political and operational (instrument) independence, in particular the adoption of inflation targeting, and the required credibility and persistence "to counter inflation psychology and anchor inflation expectations at a low level" (Bernanke, 2022: 43).

In addition, structural reforms, and the spread of the market friendly policies of the Washington Consensus led to responsible fiscal policies, and these coupled

with independent and inflation conscious central banks explained, in this view, the relatively low levels of inflation.

The reality underpinning the Great Moderation are more complex. Most likely structural causes including falling commodity prices and reduced power of labor unions due to the recessions of the 1980s, including the debt crisis in the developing world, and the 1990s, the rise and expansion of globalization and the large increase in the supply of low-wage workers from China, East Asia and Eastern Europe into global markets.

The challenge to conventional wisdom, and its emphasis on demand, has come from left of center authors, like Robert Reich, that suggest inflation is caused by greedy corporations that have increased their profit margins during a crisis. This has brought back the old debate about the relationship between administered prices and inflation, and the proposition that inflation is directly related to highly concentrated market structures, or what might be termed oligopolistic inflation.

There is an ideological divide between those that blame inflation in an incompetent government and central bank reaction to the pandemic versus those that suggest that the real culprits are greedy corporations rising their mark up above their costs.

While supply side factors are central for inflationary pressures, and while it is true that in advanced economies higher interest rates might not have a significant impact in the control of prices, the same is not true in peripheral countries. Central banks in peripheral countries reacted more promptly and with greater intensity to the rise in inflation than did developed central banks. The rise in interest rates in peripheral economies was aimed to a great extent at reducing the impact of depreciating national currencies on inflation and to reduce the possibility of capital outflows. If the risk in the center has been associated with an overreaction of central banks, and excessively contractionary monetary policy, in the periphery the risks are associated with a mild reaction and the possible inflationary impacts of depreciating currencies.

The paper is divided in three sections, discussing the limitations of demand-pull and oligopolistic inflation in the center in the following one, an analysis of inflationary factors in some peripheral countries, particularly Latin American ones, and a brief conclusion:

The return of inflation as a central macroeconomic problem after almost forty years has taken place at a time in which the belief in the self-adjusting nature of the economy has been under questioning, if not by the economic profession, at least by society at large. The notion that the economy has a strong tendency to be close to full employment should be at the top of the ideas to be debunked. A second one to be discredited should be the notion that inflation is a monetary phenomenon.

If the economy is only rarely at full employment, it should be clear that inflation

seldom is caused by excess demand. Surprisingly, most economists would agree that the economy is close to full employment in the U.S. and that inflation is essentially caused by the overreaction of government and excessive spending and monetary expansion during the pandemic. The conventional narrative about the so-called Great Inflation of the 1970s is, however, incredibly persistent and prevalent. In fact, the very term Great Inflation is supposed to suggest that this was a crisis of the same proportion as the Great Depression, and to some extent justified the neoliberal turn in economic policies around the globe.

The persistence of contractionary demand, mostly monetary, policy as the main tool to contain inflation seems to respond more to the prevailing prejudices and the ideological biases of the profession, than to the analysis of the real causes of inflation. It is not helpful that the main challenge to this consensus has been to blame corporations for increasing their profit margins, since this view also provides an incorrect explanation for the recent acceleration of inflation. The main culprit for the inflationary acceleration in the U.S. and most advanced economies is related to the supply side snags, and the shock to energy and food prices resulting from the pandemic and the war in the Ukraine.

The main effect of inflation is distributive, and its cost is the fall of real wages, or even more precisely of the wages of the groups at the bottom of the income distribution. Inflation has limited effects on growth even at relatively high levels

Vernengo (2023) Return of Inflation (pdf)

### 41.13 Productivity Failure behind Inflation

*Roberts*

What is missing from all this [debate] is what caused inflation to rise in the first place and why it stays 'sticky'. The recovery in output globally has been weak since the end of the pandemic. Growth in the productivity of labour (output per worker) has been low. Indeed in value terms (ie hours of work) supply has been flat or falling.

As a result any increase in spending or credit has ended up adding to price inflation. But nobody mentions that **it is the failure of capitalist accumulation to boost the productivity of labour (and value creation) [that is behind inflation]**; instead the argument is about whether labour or capital should take the hit; or whether inflation should be allowed to stay high or be driven down despite the risk of slump.

The BoE data above reveal that the lower is productivity growth, the higher is the sticky' core inflation rate. And as the BIS also said above, inflation won't come down without a slump unless productivity growth rises sharply.

The reason the US labour market is 'tight' is not because the economy is expanding at a fast rate and delivering well-paid jobs for all. It is because so many

skilled people of working age have left the labour market since the pandemic.

Also immigration, a key driver of labour supply has diminished as many countries apply yet more restrictions. And so far, AI technology is not delivering faster productivity growth from the existing workforce.

Why is productivity growth not appearing? It's because investment in technology is not picking up; instead companies prefer to find cheap labour even from a 'tight' labour market. Why is investment not picking up? It's because the profitability of capital is still low and has not seen any significant shift up – outside of the small group of mega companies in energy, food and tech.

And while US real GDP has risen, that is not reflected in domestic income growth. There is a significant divergence between the gross domestic product (GDP) and gross domestic income (GDI). That divergence is due to both wages and profits (after inflation) falling. So, on a GDI basis, the US economy is already in recession.

The next recession would not be triggered by a housing bust or a stock market bust, or even a financial crash, but by increasing corporate debt costs, driving sections of the corporate sector into bankruptcy – namely 'fallen angels' and 'zombie companies'. Corporate debt is still at record highs and whereas the cost of servicing that debt was comfortable for most due to low interest rates, that is no longer the case.

Roberts (2023) From greedflation to stagflation to slumpflation



## 42

# Innovation

### 42.1 US vs Scandinavia

*Smith on Acemoglu*

In 2012, Daron Acemoglu, James Robinson, and Thierry Verdier came out with a paper about the different “varieties of capitalism”. The basic idea was that Scandinavia’s more safety net discouraged entrepreneurship, while America’s relative lack of government support forced people to be risk-takers, and that this explained America’s greater rate of innovation. This is the kind of theory economists tend to like, because it emphasizes tradeoffs, and because it tells a story that allows economists to place themselves in the political center, charting the optimal middle path between the kind-hearted Democrats who want to give out free stuff and the exacting Republicans who want to force people to work for their supper. But other economists and bloggers immediately started noting problems with the thesis — most importantly, the fact that the Nordic countries are generally more innovative than the U.S. by many measures. Those countries are small, so you don’t hear about their innovations as much, but they really punch above their weight. Acemoglu et al. were trying to explain a “fact” that didn’t really exist.

Smith (2021) Cutthroat capitalism vs. cuddly capitalism



## 43

# Interest Rate

What debt does, no more and no less, is to establish a contractual agreement to tie an allocation of resources in the present to a mirroring reallocation of resources in the future.

If they cannot be paid, the one thing we know about debts is that they should be written off. [Tooze (2022) Chartbook #181: Finance and the polycrisis (6): Africa's debt crisis](<https://adamtooze.substack.com/p/finance-and-the-polycrisis-6-africas>)

### 43.1 Natural Rate of Interest

*Roberts*

Indeed, ‘managing’ an anarchic capitalist economy is not easy – indeed impossible. Even worse, the navigation guide that Powell and mainstream economics are trying to use is the so-called ‘neutral policy rate’ that supposedly tells economists when demand and supply; or more accurately, aggregate savings and investment, are in balance. But this  $r^*$ , as it named, is a nonsense concept that comes from the neoclassical equilibrium economics of Kurt Wicksell.. Many studies have shown up the myth of this theory. It’s less an astronomic navigation tool and more the astrology of the zodiac. Nevertheless, Powell referred to this ‘natural rate of interest’ theory as his policy foundation, but then dissed it by saying “we cannot identify with certainty the neutral rate of interest, and that assessment is further complicated by uncertainty about the duration of the lags with which monetary tightening affects economic activity and especially inflation.” Yes, indeed.

Roberts (2023) Navigating by the stars under cloudy skies – and holed below the water line

### 43.1.1 From $R^*$ to $r$

*Roberts*

The Fed has been following a monetary policy theory that there is some ‘equilibrium’ rate of interest that can be identified that would be appropriate for an economy to be back at trend growth and full employment without serious inflation. The Fed calls this (imaginary) rate,  $R$ . *This idea is based on the theory of the neo-classical economist Kurt Wicksell. The trouble is that it is nonsense – there is no equilibrium rate. Even worse, the Fed’s economists have no idea what it should be anyway. In their latest projection, they reckon  $R$  is anywhere between 1% and 5% for two years ahead, with a best guess at about 2%. The current Fed rate is 0.5%.*

$R^*$  is not really anywhere near as high as the Fed economists think. The major economies are in a state of ‘secular stagnation’ caused by ageing, slowing productivity growth, falling prices of investment goods, reductions in public investment, rising inequality, the “global savings glut” and shifting preferences for less risky assets. If we recognise that  $R^*$  is really low, then we can adopt the policy of handing out cash to companies and individuals directly and combine that with more public spending (with larger government budget deficits) on investment projects. These answers are really an admission of the failure of monetarism and monetary policy.

The capitalist economy does not respond to injections of money (or, for that matter, injections of government spending) but to the profitability of investment. The rate of profit on capital invested is the best indicator for investment and growth, not the rate of interest on borrowing. It is  $r$ , not  $R^*$ , that matters.

Roberts (2016) From  $R^*$  to  $r$

## 43.2 Unpayable debt in a Stationary Economy

*Hartley Abstract*

Under what circumstances are interest-bearing loans compatible with an economy without much growth? The question is becoming increasingly important given a tendency towards declining growth in industrialised economies and increasing evidence that continued growth is incompatible with environmental sustainability. Previous theoretical work suggests that when interest-bearing loans compound, this results in exponentially growing debts that are impossible to repay in the absence of economic growth. We here examine ten historical cases to assess support for this finding. We find that interest-bearing loans have typically resulted in unpayable debts in these non- and slow-growing economies. We further identify four broad category of measures to prevent or alleviate the problem of unpayable debts, and show how they have been employed in the past. Our Appendix compiles sources of debt regulation from across the world over five millennia.

*Hartley Memo*

Compound interest debt-based money is incompatible with a stationary economy but interest bearing debt-based money does not necessarily imply compound interest.

Positive interest rates do not systematically lead to exponentially growing deposits, because taxation and consumption out of wealth and income can dampen the positive feedback loop of compound interest.

Our starting point for this paper, then, is the longstanding body of literature which suggests that when interest compounds it can result in exponentially growing debts that are unpayable in the absence of economic growth. This body of theory has been developed to analyse modern economies, with the particular aim of better understanding what may happen if today's economies stop growing.

Rome, for example, had significant levels of financial intermediation and credit creation, with one recent comparative analysis concluding "that financial institutions in the early Roman Empire were better than those of eighteenth-century France and Holland. They were similar to those in eighteenth-century London and probably better than those available elsewhere in England"

What particularly motivates us here is a desire to understand the consequences of positive interest in the absence of growth, and also to shed light on how these societies tried to mitigate the potential negative effects of interest-bearing loans.

The charging of interest in the absence of substantial economic growth was accompanied by notable levels of unpayable debt in seven out of our ten cases.

In these seven cases, there is evidence that in different periods this resulted in debtor dispossession and indenture, and at least some degree of social upheaval or revolt.

The more extended lending is, the more individual problems of indebtedness are likely to translate into a bigger social problem.

One might also argue that if lending markets worked efficiently, real interest rates in modern economies should converge towards the rate of real economic activity, which would suggest that real interest rates in a non-growing economy should tend towards zero.

Current theories that suggest interest-bearing loans may become problematic in the absence of substantial growth have significant empirical support when tested against historical cases.

Hartley and Kallis (2021) Interest-bearing loans and unpayable debts in slow-growing economies: Insights from ten historical cases (pdf) (SI pdf)



## **44**

# **Investment**

“Now, capitalists do many things as a class, but they certainly do not invest as a class’ (Kalecki)



## 45

# Knowledge Economy - Intangibles

*Roberts*

There is a new book out called Capitalism without capital – the rise of the intangible economy. The authors, by Jonathan Haskel of Imperial College and Stian Westlake of Nesta, are out to emphasise a big change in the nature of modern capital accumulation – namely that increasingly investment by large and small companies is not in what are called tangible assets, machines, factories, offices etc but in ‘intangibles’, research and development, software, databases, branding and design. This is where investment is rising fast relative to investment in material items.

The authors call this capitalism without capital. But of course, this is using ‘capital’ in its physicalist sense, not as a mode of production and social relation, as Marxist theory uses the word. For Marxist theory what matters is the exploitative relation between the owners of the means of production (tangible and intangible) and the producers of value, whether they are manual or ‘mental’ workers.

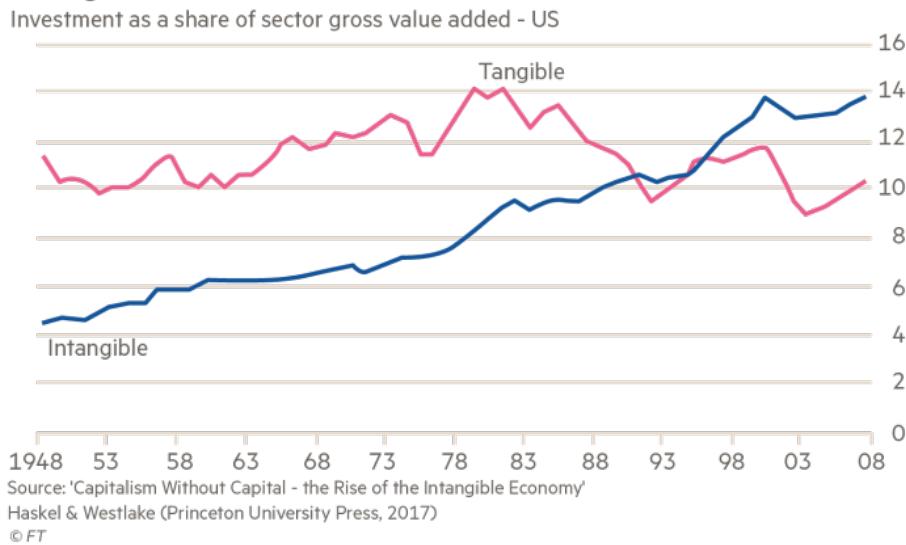
As G Carchedi has explained, there is no fundamental distinction between manual and mental labour in explaining exploitation under capitalism. Capitalism cannot be without capital in that sense.

Knowledge is produced by mental labour but this is not ultimately different from manual labour. Both entail expenditure of human energy. The human brain, we are told, consumes 20% of all the energy we derive from nourishment and the development of knowledge in the brain produces material changes in the nervous system and synaptic changes which can be measured. Once the material nature of knowledge is established, the material nature of mental work follows. Productive labour (whether manual or mental) transforms existing use-

values into new use-values (realised in exchange value). Mental labour is labour transforming mental use values into new mental use values. Manual labour consists of objective transformations of the world outside us; mental labour of transformations of our perception and knowledge of that world. But both are material.

The point is that discoveries, generally now made by teams of mental workers, are appropriated by capital and controlled by patents, by intellectual property or similar means. Production of knowledge is directed towards profit.

### Intangible assets have soared in the US ...



And they reckon this is changing the nature of modern capitalism. Indeed, it could expose the uselessness of the so-called market economy. The argument is that an intangible asset (like a piece of software) can be used over and over again at low cost and allow a business to grow very fast. That's an exaggeration, of course, because tangible assets like machines can also be used over again, but it's true that they have 'wear and tear' and depreciation. But then software also gets out of date and also becomes 'tired' for the continually changing purposes required.

Indeed, the 'moral depreciation' of intangibles is probably even greater than tangibles and so increases the contradictions of capitalist accumulation. For an individual capitalist, protecting profit gained from a new piece of research or software, or the branding of a company, becomes much more difficult when software can easily be replicated and brands copied.

Capitalism is continually facing a dynamic tension between the underlying forces of competition and monopoly. That's why companies are keen on intellectual

property rights (IPR). But IPR is actually inefficient in developing production. ‘Spillover’, as the authors call it, where the benefit of any new discovery is shared in the community, is more productive, but by definition almost, is only possible outside capitalism and private profit – in other words rather than *capitalism without capital*; it becomes *capital without capitalism*.

As Martin Wolf of the FT concludes in his analysis of the rise of ‘intangibles’, “intangibles exhibit synergies. This goes against the spillovers. Synergies encourage inter-firm co-operation (or outright mergers), while spillovers are likely to discourage it. Who really wants to give a free lunch to competitors?” So “Taken together, these features explain two other core features of the intangible economy: uncertainty and contestedness. The market economy ceases to function in the familiar ways.”

Under capitalism, the rise of intangible investment is leading to increased inequality between capitalists. The leading companies are controlling the development of ideas, research and design and blocking ‘spillover’ to others. The FANGs are gaining monopoly rents as a result, but at the expense of the profitability of others.

Indeed, the control of intangibles by a small number of mega companies could well be weakening the ability to find new ideas and develop them.

we have the position where the new leading sectors are increasingly investing in intangibles while investment overall falls along with productivity and profitability. Marx’s law of profitability is not modified but intensified.

The rise of intangibles means the increased concentration and centralisation of capital. Capital without capitalism becomes a socialist imperative.

Roberts (2017) Capitalism without capital – or capital without capitalism?



## 46

# Phillips Curve

*Ratner Abstract*

Is the Phillips curve dead? If so, who killed it? Conventional wisdom has it that the sound monetary policy since the 1980s not only conquered the Great Inflation, but also buried the Phillips curve itself. This paper provides an alternative explanation: labor market policies that have eroded worker bargaining power might have been the source of the demise of the Phillips curve. We develop what we call the “Kaleckian Phillips curve”, the slope of which is determined by the bargaining power of trade unions. We show that a nearly 90 percent reduction in inflation volatility is possible even without any changes in monetary policy when the economy transitions from equal shares of power between workers and firms to a new balance in which firms dominate. In addition, we show that the decline of trade union power reduces the share of monopoly rents appropriated by workers, and thus helps explain the secular decline of labor share, and the rise of profit share. We provide time series and cross sectional evidence.

Ratner (2022) Who killed the Phillips Curve (pdf) (pdf Slides)

*Seccareccia on Rattner*

A repeat of the anti-inflation policy scenario of the early 1980s of sharply raising central bank interest rates might prove inappropriate, if not catastrophic, as solution to dealing with the current inflationary environment.

Seccareccia (2022) The Fed Tackles Kalecki

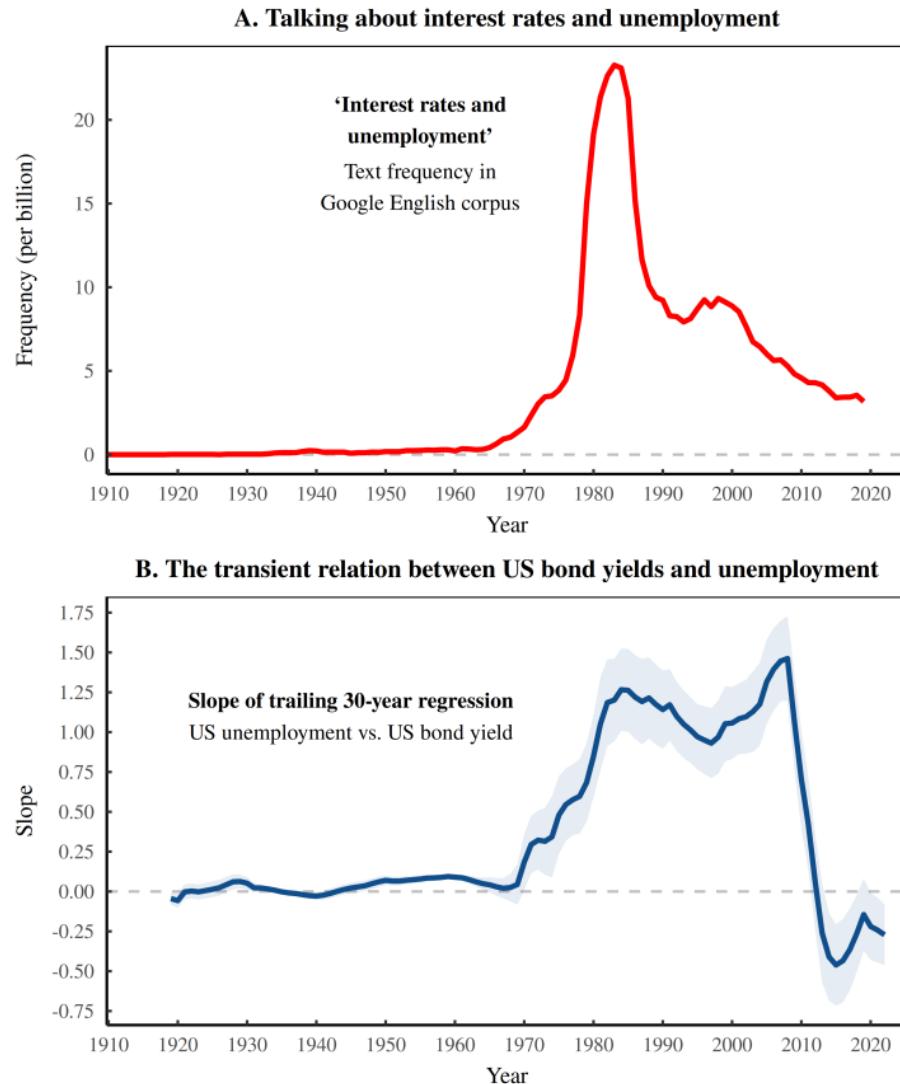
### 46.1 Unemployment and interest rates

*Fix*

Prior to 1970, there was essentially no connection between unemployment and bond yields. But from 1980 to the late 2000s, there was a one-to-one connec-

tion. In other words, just as bond yields started to move with unemployment, economists began to connect unemployment with the rate of interest.

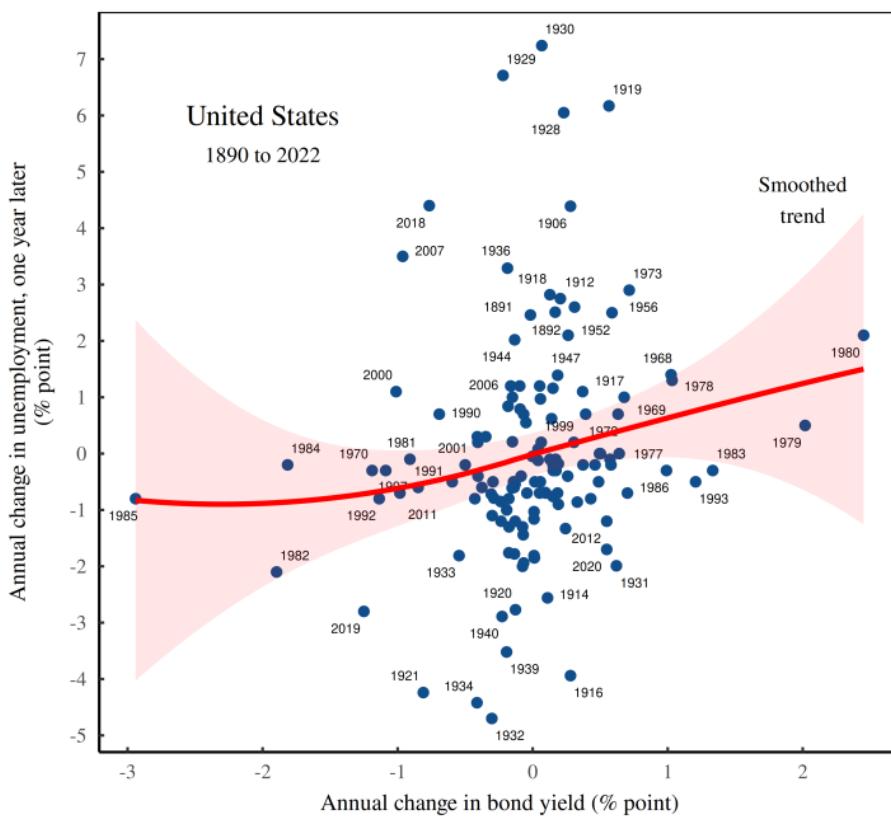
Given economists' penchant for reactionary fads, it seems plausible that the interest-rate-unemployment nexus is not a general truth. Instead, it may have been a theoretical reaction to a transient period in US history.



*Fig: The rise of the interest-rate-unemployment nexus. This figure traces the connection between interest rates and unemployment to a particular moment in US history. Panel A shows the frequency of the phrase 'interest rates and unemployment' in the Google English corpus. (I've included in this measurement*

*(the frequency for the conjugate phrase ‘unemployment and interest rates’.) The phrase exploded in popularity during the 1980s. Around the same time, there was a shift in how US interest rates related to unemployment. Panel B quantifies this shift by plotting the slope of the trailing 30-year regression between unemployment and the US bond yield. When this slope is zero, bond yields don’t respond to unemployment. But when this slope is one, bond yields show a one-to-one response to unemployment.*

When it comes to monetary policy, economists have been taught that the effects come with lags that are ‘long and variable’. So if I don’t do a lag analysis, I’ll get an endless stream of requests to ‘lag the data’. Let me preempt that torture.



*Fig: Changes in the US bond yield predict jumps in next-year’s unemployment. The relation between changes in the US bond yield (horizontal axis) and changes in next-year’s unemployment (vertical axis). The red line shows the smoothed trend. The red shaded region shows the associated uncertainty in the trend, which is significant.*

The caveat here is that the lagged trend is produced in large part by a few outlier years, all of which are in the late 1970s and the early 1980s. It’s dubious to

take a pattern from that decade and pronounce it a ‘general tendency’. Things get worse when we realize that a lagged effect doesn’t mean much on its own. That’s because when we’re dealing with cyclical data, we’ll inevitably find that an observation today predicts an observation later.

In the case of a one year lag, it’s fairly easy to understand what we’ll observe. In the US, unemployment oscillates with a roughly 8-year cycle. In that context, a one year lag represents an eighth of a cycle. If we do the math, we find that an uptick in this year’s unemployment should be followed by another uptick next year. In other words, changes in unemployment this year ought to correlate positively with unemployment changes next year. And indeed they do.

I have to admit that I find these results disappointing. Although I’ve learned to take economists’ pontifications with a boulder of salt, my intuition was that interest rates would connect with unemployment. And yet the evidence suggests otherwise.

That said, there are ways to connect interest income to unemployment — ways that are better supported by evidence. In my next post, I’ll discuss Jonathan Nitzan and Shimshon Bichler’s concept of the ‘maturity of capitalism’, which pits interest income against profit income. It turns out that unlike interest rates, the interest-to-profit income ratio is related to unemployment.

The point is that measurements must take into account the social order that they are quantifying. On that front, if we divide society into the ‘employed’ and the ‘unemployed’, we’re excluding a third category: the shittily employed. As big corporations increasingly turn to ‘flexible’ labor to do their bidding, we’d best pay attention to this third category.

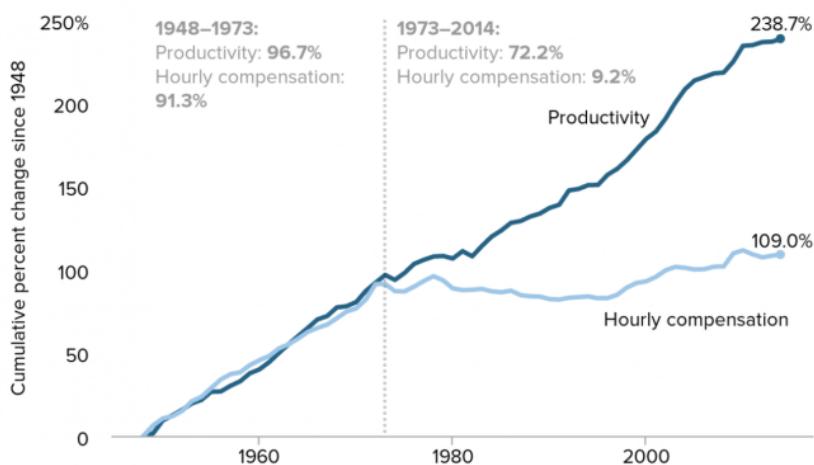
Fix (2023) Interest Rates and Unemployment: An Underwhelming Relation

# 47

## Productivity

### 47.1 Productivity-Pay Gap

Using prices to aggregate ‘output’ leads to bizarre problems. On the one hand, it causes ‘productivity’ to be equivalent to average hourly income. This means that any connection between ‘productivity’ and wages is circular. On the other hand, the same decision causes ‘productivity’ to be ambiguous. Our measure of ‘productivity’ depends on arbitrary choices about how to adjust for price change. As a result, productivity trends (like the one in Figure 1) are riddled with uncertainty.



**Note:** Data are for average hourly compensation of production/nonsupervisory workers in the private sector and net productivity of the total economy. "Net productivity" is the growth of output of goods and services minus depreciation per hour worked.

'Productivity' is used by both major schools of economic thought. Neoclassical economists use productivity to claim that the distribution of income is just. They argue that in a competitive economy, workers get what they produce. Marxists, in contrast, use productivity to claim that the distribution of income is unjust. They argue that in a capitalist economy, workers receive less than they produce (because capitalists extract a surplus).

What's interesting is that these two opposing theories commit the same sin. They define productivity in terms of income. Neoclassical economists do so explicitly, as I've described in this post. Marxists do so implicitly because they haven't developed their own system of national accounts. Instead, Marxists who do empirical work use neoclassical measures of productivity.

The result of this circular definition is that the analysis of productivity is a sleight of hand. 'Productivity' is just income relabelled.

The 'productivity-pay gap' is a textbook example of this relabelling. It claims to show a growing gap between what workers 'produce' and what they get paid. But workers' 'productivity' is actually measured in terms of income — the average hourly income.

[Blair Fix: Debunking Productivity](#)

[Blair Fix: Productivity does not explain income](#)

### **Productive individuals, productive society?**

In the 1990s, geneticist William Muir conducted experiments on chickens to see what would improve egg-laying productivity. In one trial, he did exactly what the eugenicists recommend — he let only the most productive hens reproduce. The results were disastrous. Egg-laying productivity did not increase. It plummeted. Why? Because the resulting breed of hens was psychopathic. Instead of producing eggs, these "über-hens" fought amongst themselves, sometimes to the death.

The reason this experiment did not work is that egg-laying productivity is not an isolated property of the individual hen. It is a joint property of the hen and her social environment.

In Muir's experiment, the most productive hens laid more eggs not because they were innately more productive, but because they suppressed the productivity of less dominant chickens.

By selecting for individual productivity, Muir had inadvertently bred for social dominance. The result was a breed of bully chicken that could not tolerate others.

The lesson here is that in social animals, traits that can be measured among individuals (like productivity) may not actually be traits of the individual. Instead, they are joint traits of both the individual and their social environment. Here is evolutionary biologist David Sloan Wilson reflecting on this fact:

“Muir’s experiments ... challenge what it means for a trait to be regarded as an individual trait. If by ‘individual trait’ we mean a trait that can be measured in an individual, then egg productivity in hens qualifies. You just count the number of eggs that emerge from the hind end of a hen. If by “individual trait” we mean the process that resulted in the trait, then egg productivity in hens does not qualify. Instead, it is a social trait that depends not only on the properties of the individual hen but also on the properties of the hen’s social environment”.

Blair Fix: Human Capital Theory RWER95 (pdf)

## 47.2 IPR Stagnation

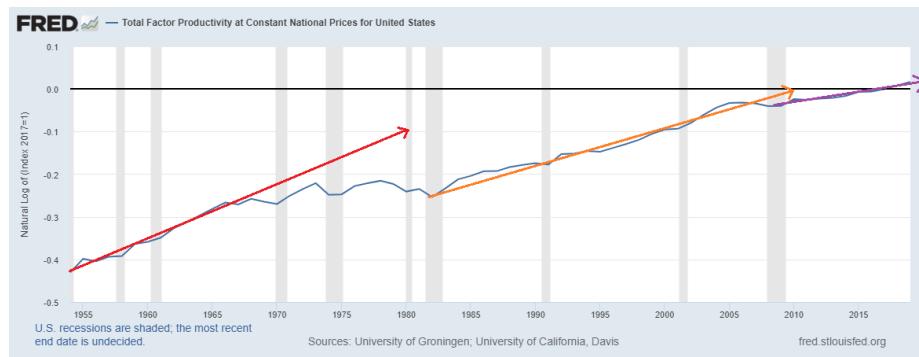
*Schwartz Abstract*

Explanations for slow global growth (secular stagnation) correctly focus on income inequality and wage formation but are incomplete. They ignore the source of wages and fail to ask why a rising profit share has not produced more investment. Older but essential insights on stagnation from Keynes, Schumpeter and Veblen complement orthodox and post-Keynesian analyses to generate a more robust explanation based on the distributional conflict over profit among firms. These thinkers highlight the importance of corporate profit strategy and organizational structure for investment behavior. A politically mediated process of strategic interaction has transformed the old Fordist dual industrial structure into a tripartite structure composed of high profit volume firms with monopolies based on intellectual property rights (IPRs), physical capital-intensive firms protected by an investment barrier to entry, and low profit volume labor-intensive firms. Profit data from Compustat and Orbis show that IPR-based firms have a lower marginal propensity to invest. Other firms with smaller profit volumes forego investment from fear of creating excess capacity in a slow growth environment. High profit firms also tend to pay higher wages, creating income inequality. Changes in antitrust, employment and intellectual property law can remedy this situation.

Schwartz (2021) Global secular stagnation and the rise of intellectual property monopoly (Paywall)

## 47.3 TFP

Each period of productivity growth is bit slower than the last, meaning that the exponential growth rate is slowing down.



Adjusting for the changing utilization of capital and labor the growth rate of “true” TFP has stagnated even more than the above graph would suggest. In other words, we’ve been using our machines and buildings and stuff more intensively, disguising some of the true TFP slowdown.

TFP is not the same thing as technology. The word “technology”, as we commonly understand it, includes stuff like computer chips, car engines, and procedures for making cement. Economists would broaden that definition to include things like business management techniques. But even with that broad definition, there’s plenty of stuff that can affect TFP that most of us would agree does not represent actual technology. For example:

If the government adds a bunch of burdensome regulations or taxes, that reduces TFP.

If people’s education level stops increasing, that lowers TFP growth.

If the population gets older, that can reduce TFP (since older workers are, on average,

If people spend more time goofing off at work, that can reduce measured TFP (since we’re measuring output per hour worked).

If people stop moving from less productive places to more productive places (for example, from rural areas to cities).

If a few big companies become more dominant, that can lower TFP, either via monopoly/market power or by crowding out smaller firms.

If demand shifts from sectors where technology is progressing rapidly (for example, manufacturing) to sectors where it is not (like agriculture).

Basically we’re seeing a whole lot of things happen that tend to reduce TFP growth but that have nothing to do with slowing technological progress! We can invent economically useful stuff just as brilliantly as in the past, but if the above stuff happens, TFP will still slow down.

In fact, in a recent book called “Fully Grown: Why a Stagnant Economy Is a Sign of Success”, the brilliant growth economist Dietrich Vollrath — whose excellent blog you should absolutely read — argues that most of the slowdown in TFP comes from slowing educational attainment, lower geographic mobility and economic dynamism, and the shift from goods to services.

Tyler Cowen's 2011 book *The Great Stagnation* (the most subtle and circumspect of the stagnationist books), he identifies non-technological factors as contributing to the stagnation, and he predicts that both technology and productivity growth will bounce back. Stagnationists would be well-advised to read that book.

Noah Smith



# 48

## Economic Regulation

### 48.1 Climate protection impact on economic growth

*Mudge*

(*This article is part of a series in which DW is debunking myths surrounding climate change. Read also: Part 1 — Is global warming merely a natural cycle? Part 2 — Is half a degree of warming really such a big deal? Part 3 — Is China the main climate change culprit? Part 4 — Climate protection: Can I make a difference?* )

The first major environmental protection rules hark back to the 1970s. Since then, a debate has raged about their potentially damaging impact on economic growth and competitiveness. One train of thought (Dechezleprêtre (2017)) says countries that adhere less stringently to environmental policies have a production and trade advantage over those nations that are taking climate action measures to reduce emissions. The concern in those countries is that their own emission-heavy industries will be put at a competitive disadvantage.

This so-called *pollution haven hypothesis* predicts that if competing companies diverge only regarding the severity of environmental regulations they face, then those that are bound by relatively stricter measures will lose competitiveness.

On the other hand, the so-called *Porter hypothesis* concludes that more stringent climate rules should encourage investment in developing new pollution-saving technologies. If these technologies lead to energy savings, they may help in turn to offset some of the climate protection costs. Then, there is also the issue of how much it might cost if we fail to mitigate climate impacts.

#### Is GDP the only valid indicator?

At first glance, using GDP as a measurement tool is an obvious choice to provide a cost-benefit analysis. The question is to what extent it provides an adequate measure of growth and prosperity.

"It is the most developed indicator. I wouldn't say that we should move away from that, but many of these damages that are associated with climate change are not internalized. This means that we as a global society will probably have costs due to lost biodiversity, for example, which are not directly reflected in the GDP," Wilfried Rickels, director of the Global Commons and Climate Research Center at the Kiel Institute for the World Economy, told DW.

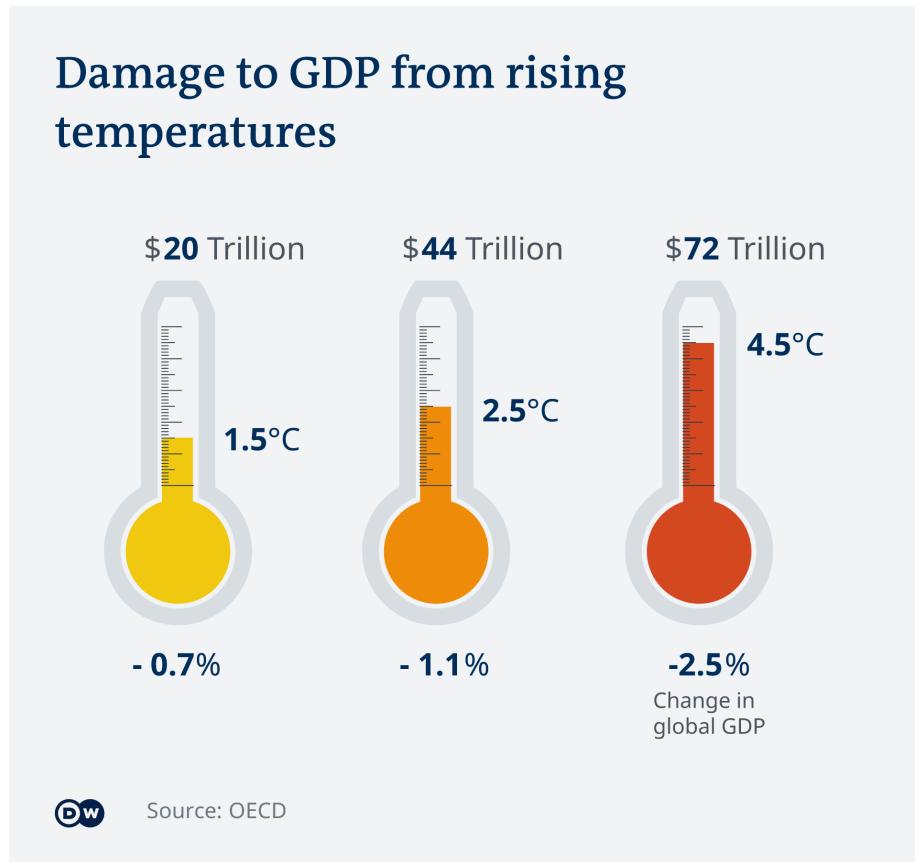


Figure: From OECD - Obviously this is once again Nordhaus unvalid calculations (DH)

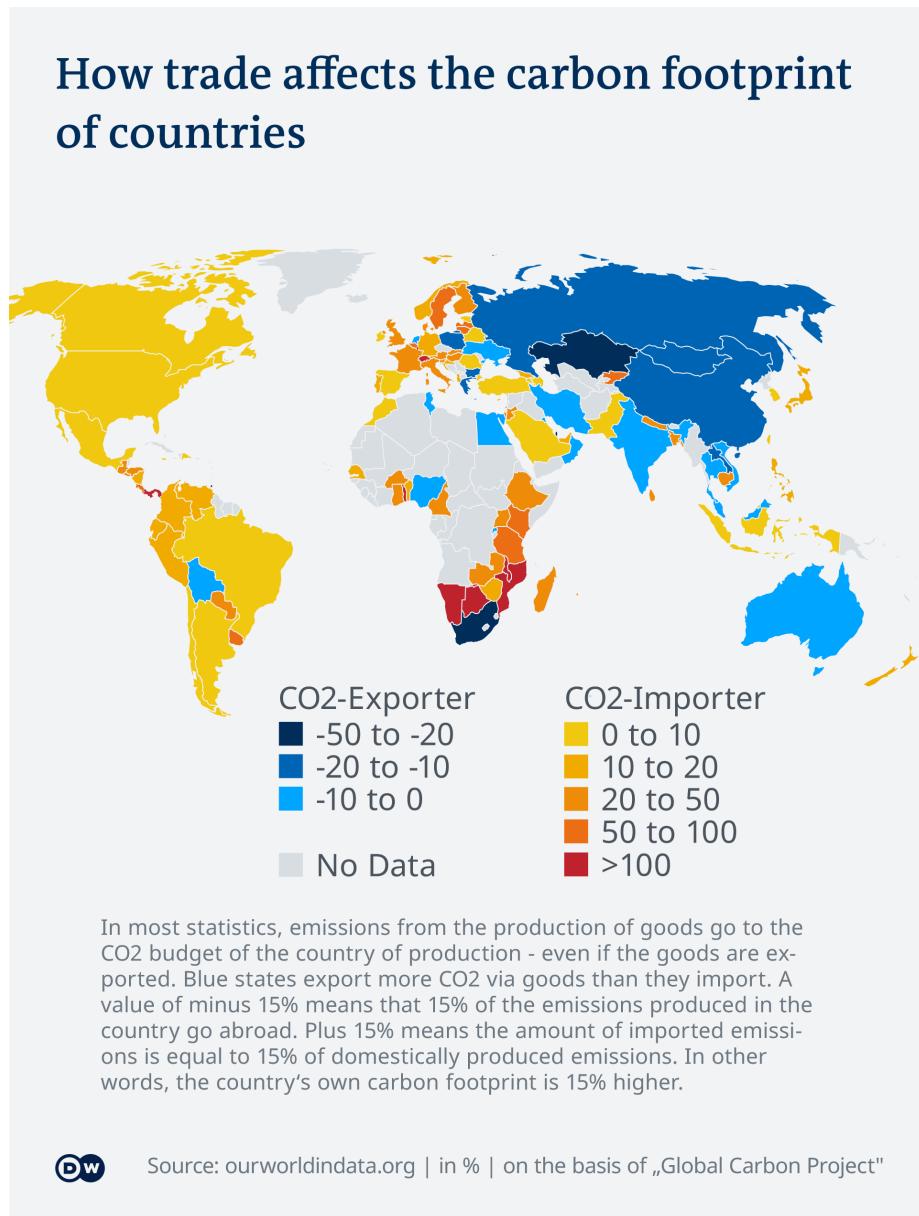
#### Environmental protection itself contributes to economic growth

As modern economies move toward a so-called resource-efficient and circular economy (RE-CE), there are concerns that — in the short term, at least — jobs will be lost across various sectors of the economy and that job creation will be minimal. However, an OECD report notes that it is important to distinguish

between different sectors.

Most jobs over the next two decades are projected to be created within the construction industry, and renewable power generation and services; while manufacturing sectors, agriculture, food production and fossil-fuel based power are expected to record job losses.

The overriding question is how to balance economic growth with cutting carbon emissions, and ultimately, achieving climate neutrality. At this year's World Economic Forum in Davos, Johan Rockström, director of the Potsdam Institute for Climate Impact Research, pointed to that contradiction. "It's difficult to see if the current GDP-based model of economic growth can go hand in hand with rapid cutting of emissions," he said.



Mudge (2021) Does climate protection stifle economic growth? (Deutsche Welle)

*Dechezleprêtre*

Ever since the first major environmental regulations were enacted in the 1970s, there has been much debate about their potential impacts on the competitiveness of affected firms. Businesses and policy makers fear that in a world that is increasingly characterized by the integration of trade and capital flows, large

asymmetries in the stringency of environmental policies could shift pollution-intensive production capacity toward countries or regions with less stringent regulation, altering the spatial distribution of industrial production and the subsequent international trade flows. This has caused concern, particularly among countries that are leading the action against climate change, because their efforts to achieve deep emission reductions could put their own pollution-intensive producers at a competitive disadvantage in the global economy.

There are two different views in the environmental economics literature on the effects of asymmetric policies on the performance of companies competing in the same market: the pollution haven hypothesis and the Porter hypothesis.

The pollution haven hypothesis, which is based on trade theory, predicts that more stringent environmental policies will increase compliance costs and, over time, shift pollution-intensive production toward low abatement cost regions, creating pollution havens and causing policy-induced pollution leakage. This is a particularly troubling problem for global pollutants such as carbon dioxide, because it means that on top of the economic impacts on domestic firms, abatement efforts will be offset to some extent by increasing emissions in other regions.

In contrast, the Porter hypothesis (*Porter and van der Linde (1995) Toward a new conception of the environment–competitiveness relationship. Journal of Economic Perspectives 9(4):97–118*) argues that more stringent environmental policies can actually have a net positive effect on the competitiveness of regulated firms because such policies promote cost-cutting efficiency improvements, which in turn reduce or completely offset regulatory costs, and foster innovation in new technologies that may help firms achieve international technological leadership and expand market share.

Some 20 years ago, in their review of the literature on the competitiveness impacts of environmental regulation in the United States, Jaffe et al. (1995) concluded that “there is relatively little evidence to support the hypothesis that environmental regulations have had a large adverse effect on competitiveness.” Since then, through hundreds of studies that have used ever larger datasets with increasingly fine levels of disaggregation, employing up-to-date econometric techniques, and covering a wider set of countries, this conclusion has only become more robust. This article has reviewed the recent empirical literature on the impacts of environmental regulations on firms’ competitiveness, as measured by trade, industry location, employment, productivity, and innovation. The cost burden of environmental policies has often been found to be very small. The recent evidence shows that taking the lead in implementing ambitious environmental policies can lead to small, statistically significant adverse effects on trade, employment, plant location, and productivity in the short run, particularly in pollution- and energy-intensive sectors. However, the scale of these impacts is small compared with other determinants of trade and investment location choices such as transport costs, proximity to demand, quality of local workers, availability of raw materials, sunk capital costs, and agglomeration. Moreover,

the effects tend to be concentrated on a subset of sectors for which environmental and energy regulatory costs are significant—a small group of basic industrial sectors characterized by very energy-intensive production processes, limited ability to fully pass through pollution abatement costs to consumers (whether due to regulation or international competition), and a lack of innovation and investment capacity to advance new production processes (Sato et al., 2015a). For these subsectors, where pollution leakage and competitiveness issues represent a genuine risk, a critical avenue for future research is to assess and evaluate the various policy options available to prevent adverse impacts on trade and investment without dampening the incentives to develop cleaner processes and products.

This article has also shown that there is strong evidence that environmental regulations induce innovation activity in cleaner technologies. Thus far the benefits from these innovations do not appear to be large enough to outweigh the costs of regulations for the regulated entities. Of course, this does not preclude the ability of environmental regulations to foster the development of global leaders in innovation, but it does suggest that the evidence for the most controversial interpretation of the Porter hypothesis (i.e., that environmental regulations can lead to an increase in firms' competitiveness) is lacking. As regulatory designs and combinations continue to be explored, further research will be needed to identify the combinations of research and development and environmental policies that best encourage innovation in green technologies.

This review raises the question of why the effects of environmental regulations on international industry relocation have been found to be so small and narrow given the strong concerns about competitiveness in public policy circles. One explanation could be that regulated companies have an incentive to overstate the potential competitiveness impacts of regulations as a strategy to lobby against stringent policies by attributing unpopular off-shoring decisions to public policy rather than to underlying economic factors such as the shifting locus of supply and demand in global manufacturing or decreasing transport costs. An alternative explanation for the lack of empirical support for the large pollution haven effects discussed in the literature is that environmental policy is endogenous, i.e., governments strategically set stringency levels to be low (high) where there is a high (low) risk of competitiveness distortions. This argument suggests that competitiveness concerns could trigger a “race to the bottom” in global environmental protection efforts. To avoid such an outcome, further research is needed to accurately measure and monitor the competitiveness effects of environmental regulations to help ensure that policy is based on robust evidence.

Dechezleprêtre (2017) The Impacts of Environmental Regulations on Competitiveness (pdf)

# 49

## Savings

*Stropoli*

While many economists think more saving leads to productive investment, Sufi, Princeton's Atif Mian, and Harvard's Ludwig Straub make a different argument. They find that these savings are largely unproductive, being remade by the financial system into household and government debt. And their research outlines a cycle whereby the savings of the top 1 percent fuel the debt and dissavings of the lower 90 percent, which in turn leads to more savings at the top.

From the 1980s through 2007, the top 1 percent financed a large portion of the overall rise in household debt for the lower 90 percent, according to the researchers. And as the rich have accumulated capital, the less wealthy have accumulated fewer assets, which means they experience less financial stability overall. Thus, the work argues, the savings glut of the rich, and its role in financing unproductive debt and dissavings of the nonrich, leads to instability not only for the less economically privileged but also for the broad economy.

Mian and Sufi argue in 2018 research that a rapid flow of foreign funds into the US triggered a credit-supply expansion that boosted household debt, which they say was a major factor in igniting the financial crisis.

From 1982 to 2016, the glut of the US rich was, on average, 60–75 percent of the size of the global glut. And at times in the 1990s and 2010s, the amount rich Americans put away even exceeded the global glut.

Credit Suisse's 2020 wealth report finds that the US has about 20 million millionaires, 40 percent of the global total. Meanwhile, the Billionaire Census 2020 from Wealth-X, which provides information and insight on the world's wealthiest individuals, finds the US has about 28 percent of the world's billionaires, who hold a 36 percent share of global billionaire wealth. The world now has a record 2,755 billionaires, according to Forbes.

The top 1 percent of households in the US have just as much influence as emerging-market economies in fueling the debt of the bottom 90 percent.

### More savings, less investment

Ideally, all those savings would be channeled into productive investments such as research and development, or practical equipment, or new roads, or even new yachts—investments that would promote growth in the economy. However, from 2000 through 2016, the average annual savings of the top 1 percent exceeded average annual net domestic investment as a percentage of GDP. While the rich saved more, investment in productive assets declined.

Those savings were put to use financing both household and government debt. Between 2000 and 2016, they find that claims on household and government debt account for nearly two-thirds of the rise in asset accumulation of the top 1 percent in the US.

In the 25 years leading up to the 2008–09 financial crisis the top 1 percent financed almost a third of the rise in household debt owed by the bottom 90 percent. In the years since the crisis, and since the housing bubble burst, the savings of the rich have gone more toward government debt

Not all household and government debt is unproductive, of course. More than one entrepreneur has financed a startup on a credit card or with a personal loan. However, much household debt goes toward instruments such as mortgages and home equity loans, which can be used speculatively, in which case they are less productive than, say, investments in manufacturing plants or technology. Thus, the researchers argue that mortgages, while enabling homeownership, can also help perpetuate a cycle of wealth inequality.

The rich are seeking returns on their excess savings because, as Sufi says, many of them “just cannot spend all the money they make.”

The US government, by providing tax breaks on debt interest, and by encouraging banks to lend via debt financing, promotes less-productive investment

Nonfinancial corporations have increased their holdings of money market funds and time deposits by 10 percentage points of national income since 1995.

Since the early 2000s, the amount of corporate saving not invested in new capital has increasingly accumulated as cash.

Say a corporation issues equity to the wealthy, but instead of spending the proceeds on research or equipment, puts that money into a time deposit at a bank, which in turn uses it to fund a mortgage for a less-affluent household. This is how the rich become lenders.

Some politicians, economists, and pundits say that people are borrowing (and consuming) irresponsibly. But banks with all that cash on hand work to expand the credit market and realize returns on the savings glut of the rich. The bottom

90 percent are being convinced to borrow more and more, through lower interest rates, easier credit, and more advertising.

From the 1980s through 2007, the net amount of household debt that the top 1 percent held as a financial asset rose by 15 percentage points of national income, while at the same time the amount of household debt that the bottom 90 percent owed as a liability rose by 40 percentage points. The so-called accumulated dissavings of the bottom 90 percent from 1983 to 2015, relative to the average level from 1973 to 1982, was over twice the national income, the researchers say.

### **The debt trap**

As the savings of the rich go toward the borrowing of the nonrich, there may be a GDP boost in the short run, as it does encourage consumption. But the debt becomes a drag on future demand. The cycle of unproductive debt makes it hard for consumer demand to support full employment in the economy, and it ultimately forces central banks to lower interest rates. While lower rates may strengthen demand for a time, consistently low rates may be problematic. Persistent low demand can foster a high-debt liquidity trap—or debt trap—in which economies are stuck in long periods of sluggish growth.

Stropoli (2021) How the 1 percent's savings buried the middle class in debt

### **Inequality**

Wealth among the superrich has been fueled by a marriage of in-demand skills, globalization, and technology—the combination of which are *allowing businesses to scale up as never before*.

Skills, say many economists, are critical to the modern economy. As the US economy grows, jobs are going unfilled as companies scramble to find skilled people to hire. There's a flip side to this: as certain skills have become scarce, this has raised the amount companies are willing to pay people who have them. The situation has similarly raised the amount of profits skilled company owners can make, and technology and globalization are further magnifying the value of in-demand skills. If this is true, the 0.01 percent are most likely benefiting from what economists call “skill-biased technological change”—the increasing return on certain skills in an economy driven by technology and globalization. Under this well-established theory, a shortage of in-demand skills raises the value of those skills in rapidly expanding markets, and new technology helps some workers’ productivity grow much more than others’, exacerbating inequality.

In the Information Age, the change has been particularly pronounced. “In business, you can use technology to do things you couldn’t do 30 years ago,” says Steve Kaplan. “You can scale your business using technology, and you can use people in India and China and all over the world—you couldn’t do that as effectively 30 years ago.” This, he argues, has been spectacularly positive for poorer people in developing countries. In 1990, the World Bank estimated that roughly 35 percent of the world lived in extreme poverty. Today, less than 11 percent of the world’s population is so impoverished.

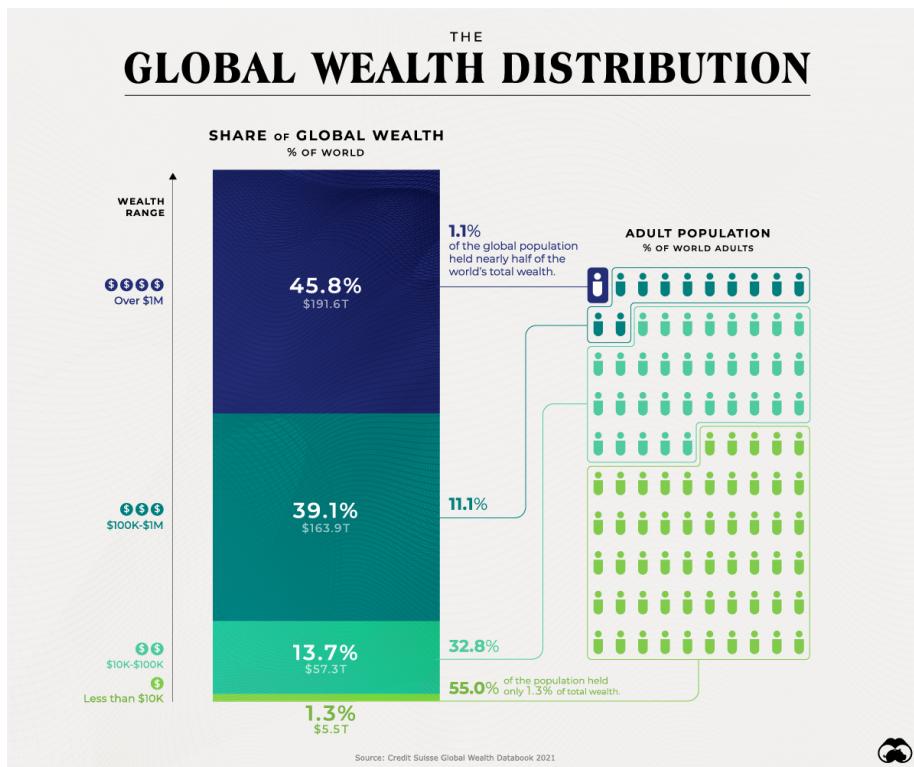
And it has been good for wealthy residents of developed countries. For them, the result has taken the form of the “superstar” or “winner-take-all” phenomenon, first identified in a landmark 1981 paper by the late Sherwin Rosen, who taught at the University of Chicago. “In certain kinds of economic activity there is concentration of output among a few individuals,” wrote Rosen. “Relatively small numbers of people earn enormous amounts of money and dominate the activities in which they engage.”

Technology allows a hedge fund to be able to manage \$20 billion and invest it,” says Steve Kaplan. “I don’t think people had the systems and information to do that 20 to 30 years ago. Now they have the systems and the information to do that. That technological change is here and is not going away. If anything, it’s getting stronger.”

Gold (2021) The 000.1 Pct

50

# Wealth





# 51

## Climate Economics

### 51.1 A Blocking Neoclassical Framework

*Brookes and Wagner*

With its fixation on equilibrium thinking and an exclusive focus on market factors that can be precisely measured, the neoclassical orthodoxy in economics is fundamentally unequipped to deal with today's biggest problems. Change within the discipline is underway, but it cannot come fast enough.

The economics discipline has failed to understand the climate crisis – let alone provide effective policy solutions for it – because most economists tend to divide problems into small, manageable pieces. Rational people, they are wont to say, think at the margin. What matters is not the average or totality of one's actions but rather the very next step, weighed against the immediate alternatives. Such thinking is indeed rational for small discrete problems. Compartmentalization is necessary for managing competing demands on one's time and attention. But marginal thinking is inadequate for an all-consuming problem touching every aspect of society. Economists also tend to equate rationality with precision. The discipline's power over public discourse and policymaking lies in its implicit claim that those who cannot compute precise benefits and costs are somehow irrational. This allows economists – and their models – to ignore pervasive climate risks and uncertainties, including the possibility of climatic tipping points and societal responses to them. And when one considers economists' fixation with equilibrium models, the mismatch between the climate challenge and the discipline's current tools becomes too glaring to ignore. Yes, a return to equilibrium – getting “back to normal” – is an all-too-human preference. But it is precisely the opposite of what is needed – rapidly phasing out fossil fuels – to stabilize the world's climate. These limitations are reflected in benefit-cost analyses of cutting emissions of carbon dioxide and other greenhouse gases. The

traditional thinking suggests a go-slow path for cutting CO<sub>2</sub>. The logic seems compelling: the cost of damage caused by climate change, after all, is incurred in the future, while the costs of climate action occur today. The Nobel prize-winning verdict is that we should delay necessary investment in a low-carbon economy to avoid hurting the current high-carbon economy.

The very structure of academic economics all but guarantees that marginal thinking continues to dominate. The most effective way to introduce new ideas into the peer-reviewed academic literature is to follow something akin to an 80/20-rule: stick to the established script for the most part; but try to push the envelope by probing one dubious assumption at a time. Needless to say, this makes it extremely difficult to change the overall frame of reference, even when those who helped establish the standard view are looking well beyond it themselves.

Because equilibrium thinking underpins the traditional climate-economic models that were developed in the 1990s, these models assume that there are tradeoffs between climate action and economic growth. They imagine a world where the economy simply glides along a Panglossian path of progress. Climate policy might still be worthwhile, but only if we are willing to accept costs that will throw the economy off its chosen path. Against the backdrop of this traditional view, recent pronouncements by the International Monetary Fund and the International Energy Agency are nothing short of revolutionary. Both institutions have now concluded that ambitious climate action leads to higher growth and more jobs even in the near term. The logic is straightforward: climate policies create many more jobs in clean-energy sectors than are lost in fossil-fuel sectors, reminding us that investment is the flipside of cost. That is why the proposal for a \$2 trillion infrastructure package in the United States could be expected to spur higher net economic activity and employment. Perhaps more surprising is the finding that carbon pricing alone appears to reduce emissions without hurting jobs or overall economic growth. The problem with carbon taxes or emissions trading is that real-world policies are not reducing emissions fast enough and therefore will need to be buttressed by regulation.

The framework of neoclassical economics is still blocking progress. The discipline is long overdue for its own tipping point toward new modes of thinking commensurate with the climate challenge.

Brookes and Wagner (2021) Economics needs a Climate Revolution

## 51.2 Long-term Economic effects of Climate Change

*Kahn Abstract*

We study the long-term impact of climate change on economic activity across countries, using a stochast

ic growth model where labour productivity is affected by country-specific climate variables—defined as deviations of temperature and precipitation from their historical norms. Using a panel data set of 174 countries over the years 1960 to 2014, we find that per-capita real output growth is adversely affected by persistent changes in the temperature above or below its historical norm, but we do not obtain any statistically significant effects for changes in precipitation. Our counterfactual analysis suggests that at a persistent increase in average global temperature by  $0.04^{\circ}\text{C}$  per year, in the absence of mitigation policies, reduces world real GDP per capita by 7.22 percent by 2100. On the other hand, abiding by the Paris Agreement, thereby limiting the temperature increase to  $0.01^{\circ}\text{C}$  per annum, reduces the loss substantially to 1.07 percent. These effects vary significantly across countries. We also provide supplementary evidence using data on a sample of 48 U.S. states between 1963 and 2016, and show that climate change has a long-lasting adverse impact on real output in various states and economic sectors, and on labor productivity and employment.

#### *Kahn Memo*

By using deviations of climate variables from their respective historical norms, while allowing for nonlinearity, we *avoid the econometric pitfalls associated with the use of trended variables*, such as temperature, in output growth equations. As it is well known, and is also documented in our paper, temperature has been trending upward strongly in almost all countries in the world, and its use as a regressor in a growth regression can lead to spurious estimates.

To measure the damage caused by climate change, economists have sought to quantify how aggregate economic growth is being affected by rising temperatures and changes in rainfall patterns; see a recent survey by Dell et al. (2014)

The literature which attempts to quantify the effects of climate change (temperature, precipitation, storms, and other aspects of the weather) on economic performance (agricultural production, labour productivity, commodity prices, health, conflict, and economic growth) is relatively recent and mainly concerned with *short-run* effects

Moreover, there are a number of grounds on which the econometric evidence of the effects of climate change on growth may be questioned. Firstly, the literature relies primarily on the cross-sectional approach and as such does not take into account the time dimension of the data (i.e., assumes that the observed relationship across countries holds over time as well) and is also subject to the

endogeneity (reverse causality) problem given the possible feedback effects from changes in output growth onto the climate variable.

Secondly, the fixed effects (FE) estimators used in more recent panel-data studies implicitly assume that climate variables are strictly exogenous, and thus rule out any reverse causality from economic growth to rising average temperatures.

In his computable general equilibrium work, Nordhaus accounts for the fact that faster economic activity increases the stock of greenhouse gas (GHG) emissions and thereby the average temperature. At the same time, rising average temperature could reduce real economic activity. This equilibrium approach has important implications for the econometric specification of climate change–economic growth relationship. In fact, recent studies on climate science provide strong evidence that the main cause of contemporary global warming is the release of greenhouse gases to the atmosphere by human activities.

Consequently, when estimating the impact of climate change on economic growth, temperature ( $T_{it}$ ) may not be considered as strictly exogenous, but merely weakly exogenous/predetermined to income growth; in other words economic growth in the past might have feedback effects on future temperature. While it is well known that the FE estimator suffers from small-T bias in dynamic panels with  $N$  (the cross-section dimension) larger than  $T$  (the time series dimension). This bias exists regardless of whether the lags of the dependent variable are included or not, so long as one or more regressor is not strictly exogenous. In such cases, inference based on the standard FE estimator will be invalid and can result in large size distortions unless  $N=T \neq 0$ , as  $N; T \neq 1$  jointly. Therefore, caution must be exercised when interpreting the results from studies that use the standard FE estimators in the climate change–economic growth literature given that  $N$  is often larger than  $T$ . Thirdly, econometric specifications of the climate change–macroeconomic relation are often written in terms of real GDP per capita growth and the level of temperature,  $T_{it}$ , and in some cases also  $T_{it}^2$ ; see, for instance, Dell et al. (2012) and Burke et al. (2015). But if  $T_{it}$  is trended, which is the case in almost all countries in the world (see Section 3.1), inclusion of  $T_{it}$  in the regression will induce a quadratic trend in equilibrium log per capita output (or equivalently a linear trend in per capita output growth) which is not desirable and can bias the estimates of the growth–climate change equation. Finally, another major drawback of this literature is that the econometric specifications of the climate change–growth relation are generally not derived from or based on a theoretical growth model. Either an ad hoc approach is used, where real income growth is regressed on a number of arbitrarily-chosen variables, or a theoretical model is developed but not put to a rigorous empirical test.

We contribute to the climate change–economic growth literature along the following dimensions. Firstly, we extend the stochastic single-country growth models of Merton (1975), Brock and Mirman (1972), and Binder and Pesaran (1999) to  $N$  countries sharing a common technology but different climate condi-

tions. Our theoretical model postulates that labour productivity in each country is affected by a common technological factor and country-specific climate variables, which we take to be average temperature,  $T_{it}$ , and precipitation,  $P_{it}$ , in addition to other country-specific idiosyncratic shocks. As long as  $T_{it}$  and  $P_{it}$  remain close to their respective historical norms (regarded as technologically neutral), they are not expected to affect labour productivity. However, if climate variables deviate from their historical norms, the effects on labour productivity could be positive or negative, depending on the region under consideration. For example, in a historically cold region, a rise in temperature above its historical norm might result in higher labour productivity, whilst for a dry region, a fall in precipitation below its historical norms is likely to have adverse effects on labour productivity. 2 Secondly, contrary to much of the literature which is mainly concerned with short-term growth effects, we explicitly model and test the long-run growth effects of persistent increases in temperature. Thirdly, we use the half-panel Jackknife FE (HPJ-FE) estimator proposed in Chudik et al. (2018) to deal with the possible bias and size distortion of the commonly-used FE estimator (given that  $T_{it}$  is weakly exogenous). When the time dimension of the panel is moderate relative to  $N$ , the HPJ-FE estimator effectively corrects the Nickel-type bias if regressors are weakly exogenous, and is robust to possible feedback effects from aggregate economic activity to the climate variables.

Our results suggest that a persistent change in the climate has a long-term negative effect on per capita GDP growth.

Our empirical findings apply equally to poor or rich, and hot or cold countries.

We show that an increase in average global temperature of 0.04°C per year—corresponding to the Representative Concentration Pathway (RCP) 8.5 scenario (see Figure 1), which assumes higher greenhouse gas emissions in the absence of mitigation policies—reduces world's real GDP per capita by 7.22 percent by 2100. Limiting the increase to 0.01°C per annum, which corresponds to the December 2015 Paris Agreement, reduces the output loss substantially to 1.07 percent.

To put our results into perspective, the conclusions one might draw from most of the existing climate change-macroeconomy literature are the following: (i) when a poor (hot) country is 1°C warmer than usual, its income growth falls by 1–2 percentage points in the short- to medium-term; (ii) when a rich (temperate) country is 1°C warmer than usual, there is little impact on its economic activity; and (iii) the GDP effect of increases in average temperatures (with or without adaptation and/or mitigation policies) is relatively small—a few percent decline in the level of GDP per capita over the next century (see, Figure 2). In contrast, our counterfactual estimates suggest that all regions (cold or hot, and rich or poor) would experience a relatively large fall in GDP per capita by 2100 in the absence of climate change policies (i.e., the RCP 8.5 scenario). However, the size of these income effects varies across countries depending on the projected paths of temperatures.

Burke et al. (2015) consider an alternative panel specification that adds quadratic climate variables to the equation and detect: (i) non-linearity in the relationship; (ii) differential impact on rich versus poor countries; and (iii) noisy medium-term growth effects— their higher lag order (between 1 and 5) estimates reported in Supplementary Table S2, show that only 3 out of 18 estimates are statistically significant. Overall, apart from the econometric shortcomings of existing studies, robust evidence for the long-run growth effects of climate change are nonexistent in the literature. However, our results show that an increase in temperature above its historical norm is associated with lower economic growth in the long run— suggesting that the welfare effects of climate change are significantly underestimated in the literature. Therefore, our findings call for a more forceful policy response to climate change.

Kahn (2019) LONG-TERM MACROECONOMIC EFFECTS OF CLIMATE CHANGE: A CROSS-COUNTRY ANALYSIS (pdf)

*Dell Abstract*

A rapidly growing body of research applies panel methods to examine how temperature, precipitation, and windstorms influence economic outcomes. These studies focus on changes in weather realizations over time within a given spatial area and demonstrate impacts on agricultural output, industrial output, labor productivity, energy demand, health, conflict, and economic growth, among other outcomes. By harnessing exogenous variation over time within a given spatial unit, these studies help credibly identify (i) the breadth of channels linking weather and the economy, (ii) heterogeneous treatment effects across different types of locations, and (iii) nonlinear effects of weather variables. This paper reviews the new literature with two purposes. First, we summarize recent work, providing a guide to its methodologies, datasets, and findings. Second, we consider applications of the new literature, including insights for the “damage function” within models that seek to assess the potential economic effects of future climate change.

*Dell Memo*

The difficulty in identifying causative effects from cross-sectional evidence has posed substantial and long-standing challenges for understanding the historical, contemporary, and future economic consequences of climate and climate change.

In the last few years, there has been a wave of new empirical research that takes a different approach. These new studies use panel methodologies, exploiting high-frequency (e.g., year-to-year) changes in temperature, precipitation, and other climatic variables to identify these variables’ economic effects. As nomenclature, this new literature uses “weather variation” to describe shorter-run temporal variation. The word climate is reserved for the distribution of outcomes, which may be summarized by averages over several decades, while weather describes a particular realization from that distribution and can provide substantial variability.

The primary advantage of the new literature is *identification*. By exploiting exogenous variation in weather outcomes over time within a given spatial area, these methods can causatively identify effects of temperature, precipitation, and windstorm variation on numerous outcomes, including agricultural output, energy demand, labor productivity, mortality, industrial output, exports, conflict, migration, and economic growth. This literature has thus provided a host of new results about the ways in which the realizations of temperature, precipitation, storms, and other aspects of the weather affect the economy.

This literature has important implications for the “damage function” in climate change models. The opportunity here is to bring causative identification to the damage functions, elucidating the set of important climate–economy channels and their functional forms. The challenge lies in bridging from the evidentiary basis of short-run weather effects to thinking about longer-run effects of changes in the distribution of weather, which may be either larger (e.g., due to intensification effects) or smaller (e.g., due to adaptation) than the short-run impacts. While certain climate change aspects are difficult to assess, we examine a number of empirical methodologies that can help bridge toward longer-run effects while maintaining careful identification.

climate studies often seek to estimate the contemporaneous effect of temperature on economic activity for the purpose of assessing the potential impacts of forecasted temperature changes over the next several decades. The cross-sectional relationship, which represents a very long-run equilibrium, may incorporate processes that are too slow to accurately inform the time scale of interest, or it may include historical processes (such as colonialism) that will not repeat themselves in modern times.

To the extent that one is interested in isolating the impact of climatic variables such as temperature—apart from the many other factors that they are correlated with and have influenced over the very long run—a different approach is to use longitudinal data to investigate the effects of weather shocks. This approach, which is the focus of this review, has emerged in recent years and emphasizes variation over time within a given spatial entity.

The literature uses a nomenclature of “weather variation” for shorter-run temporal variation, as opposed to “climate variation,” where the word climate is used to describe the distribution of outcomes while weather refers to a particular realization from that distribution.

A related issue is the inclusion of lags of the dependent variable,  $y_{it}$ . Including these lags biases coefficient estimates in short panel models,<sup>4</sup> yet excluding the lagged dependent variable may also bias the estimates if it is an important part of the data-generating process. While what comprises a “short” panel will depend on the data-generating process, Monte Carlo experiments suggest that the bias can be nonnegligible with panel lengths of  $T = 10$  or even  $T = 15$ .

A further implementation question involves the appropriate functional form for the weather variables. One common approach measures  $C_{it}$  in “levels” (e.g.,

degrees Celsius for temperature or millimeters for precipitation). In the panel set up, the identification thus comes from deviations in levels from the mean.<sup>7</sup> Another common approach, aimed at revealing nonlinear effects, considers the frequencies at which the weather realizations fall into different bins.

A different approach emphasizes “anomalies,” where the weather variable is calculated as its level difference from the within-spatial-area mean and divided by the within-spatial-area standard deviation. The first part—the difference in mean—is already captured in a broad sense by the panel model. The second part—scaling by the standard deviation—takes a particular view of the underlying climate–economy model where level changes matter not in an absolute sense but in proportion to an area’s usual variation.

Alternatively, outcome-specific approaches may be preferred where existing research provides guidance. For example, knowledge of biological processes in agriculture suggest refined temperature measures such as “degree-days” for crop growth, possibly with crop-specific thresholds.

As a general rule, imposing specific functional forms on the data, such as crop degree-days, is useful to the extent that one has confidence in the specific model of the process that translates weather to economic outcomes. The more agnostic about the model, the more general the researcher would like to be about the functional form.

There are two notable interpretative issues with the panel models that, while not calling into question the experimental validity of the regression design, do raise questions about their external validity for processes such as global warming. One interpretive challenge is whether and how the effects of medium- or long-run changes in climatic variables will differ from the effects of short-run fluctuations. A second issue is that panel models, in focusing on idiosyncratic local variation, also neutralize broader variation that may be of potential interest, including general equilibrium effects that spill across spatial borders or are global in nature, like effects on commodity prices.

#### *Data*

There are currently four principal types of weather data: ground station data, gridded data, satellite data, and reanalysis data. The most basic type of data are from ground stations, which typically directly observe temperature, precipitation, and other weather variables such as wind speed and direction, humidity, and barometric pressure. Gridded data provide more complete coverage by interpolating station information over a grid. Satellite data use satellite-based readings to infer various weather variables. Finally, reanalysis data combine information from ground stations, satellites, weather balloons, and other inputs with a climate model to estimate weather variables across a grid.

Different interpolation schemes can produce different estimates, particularly in short time periods and particularly for precipitation. Precipitation has a far greater spatial variation than temperature, especially in rugged areas, and thus

is more difficult to interpolate.

While satellite data can provide important weather information for areas with a limited ground network, satellite data are not necessarily a panacea. Satellites were launched relatively recently, so their data does not extend back nearly as far historically as other datasets. Furthermore, an individual ground station is more accurate than the satellite data for that particular location, in part because satellites do not directly measure temperature or precipitation, but rather make inferences from electromagnetic reflectivity in various wavelength bands. Lastly, a satellite-based series is not drawn from a single satellite, but rather from a series of satellites. Sensors have changed subtly over the years and, within a particular satellite, corrections are needed due to subtle changes in the satellite's orbit over time and other factors.

The key difference between reanalysis and gridded data is that, rather than use a statistical procedure to interpolate between observations, a climate model is used.

One approach is to aggregate spatially; that is, to overlay administrative or other boundaries with the gridded weather dataset and take a simple area-weighted average of weather variables within the administrative unit, which can be done easily using GIS software. However, this approach will lead large areas with little economic activity and sparse populations (such as deserts, rain forests, or the Arctic) to dominate the weather averages of large spatial units such as the United States, Russia, and Brazil. A second approach is, therefore, to aggregate using a fixed set of population weights, so that the relevant concept is the average weather experienced by a person in the administrative area, not the average weather experienced by a place.

Overall, the studies discussed in this section document that temperature, precipitation, and extreme weather events exert economically meaningful and statistically significant influences on a variety of economic outcomes. These impacts illustrate the multifaceted nature of the weather–economy relationship, with numerous applications for understanding historical, present, and future economic outcomes and possible policy responses. For example, the effects of weather variables on mortality rates, labor productivity, energy demand, and agricultural output can inform investments and policy design around public health, air-conditioning, energy infrastructure, and agricultural technologies. Moreover, these studies can help inform classic issues of economic development, especially the role of geographic features in influencing development paths. Finally, these analyses may inform estimates of the economic costs of future climatic change. The possibility of future climatic change has been a primary motive for the recent, rapid growth of this literature.

### *Results*

Cross-country empirical analyses show a strong negative relationship between hot climates and income per capita.

Panel studies exploit the exogeneity of cross-time weather variation, allowing for causative identification.

In a world sample from 1950 to 2003, Dell, Jones, and Olken (2012) examine how annual variation in temperature and precipitation affects per capita income. They show that being 1°C warmer in a given year reduces per capita income by 1.4 percent, but only in poor countries. Moreover, estimating a model with lags of temperature, they find that this large effect is not reversed once the temperature shock is over, suggesting that temperature is affecting growth rates, not just income levels. Growth effects, which compound over time, have potentially first-order consequences for the scale of economic damages over the longer run, greatly exceeding level effects on income, and are thus an important area for further modeling and research.

While the production function is often calibrated through the use of experimental data, it has been criticized for not realistically modeling real farmer behavior in real settings. For example, many studies do not allow farmers to adopt new crops when the temperature input into the production function changes, nor do they allow farmers to switch their cultivated land to livestock or nonfarm use. To address these concerns, Mendelsohn, Nordhaus, and Shaw (1994) developed a second approach, which they called the Ricardian approach, that instead used cross-sectional regressions with land values to recover the net impacts of climate on agricultural productivity. By analyzing farm land prices as a function of climate and a host of other characteristics, they estimated that the impacts of climate change would be much smaller than those estimated by the production function approach and might even be positive.

In estimating a cross-sectional relationship like equation (2) for irrigated areas, which transport water from other locations, the localized climate is not the key determinant of production.

Understanding nonlinearities becomes important when considering the impact of global climate change because a right-shift in the distribution of average temperature causes a disproportionate increase in the number of very hot days.

The possibility of adaptation was a major argument for the approach of Mendelsohn, Nordhaus, and Shaw (1994), since presumably, changes in land values would incorporate future adaptation effects.

Modern lab experiments have investigated the impact of temperature on productivity. Subjects are typically randomly assigned to rooms of varying temperatures and asked to perform cognitive and physical tasks. Examples of tasks shown to respond adversely to hot temperatures in laboratory settings include estimation of time, vigilance, and higher cognitive functions, such as mental arithmetic and simulated flight.

Observational and experimental studies also show a strong relationship between temperature and the productivity of factory, call center, and office workers, as well as students. Within the range of temperatures from 22–29°C, each addi-

tional  $^{\circ}\text{C}$  is associated with a reduction of about 1.8 percent in labor productivity. The relationship is complex and find that other aspects (e.g., humidity, amount of outdoor air, carbon dioxide levels) have complex interactions with temperature. A meta-analysis of these studies concludes that increasing temperature from 23 to  $30^{\circ}\text{C}$  reduces productivity by about 9 percent.

Industrial output using aggregated data center approximately on a 2 percent output loss per  $1^{\circ}\text{C}$ .

Large effects of windstorms on industrial production. Effects of precipitation on industrial output appear slight, although only one study looks at extremely heavy precipitation and in that case finds modest negative effects.

#### *Energy*

The literature has looked extensively at how climatic variables, in particular temperature, influence energy consumption. This relationship, which has received renewed attention in light of potential climate change, has long been important for the design of electricity systems, where demand varies with climate and weather. Understanding temperature effects matters for the energy consequences per se and for potential feedback loops, incorporated into some climatic models, where energy demand influences greenhouse gas emissions, which in turn affects future energy demand.

A clear U-shape relationship between energy demand and temperature, with an extra day below  $10^{\circ}\text{F}$  or above  $90^{\circ}\text{F}$  raising annual energy demand by 0.3–0.4 percent.

These panel-data papers, in using temperature bins, depart from a prior practice of using “heating degree days” (HDD) and “cooling degree days” (CDD), which count the number of days below and above a threshold temperature, with each day weighted by its temperature difference from the threshold. This degree-days approach misses the convexity found in the nonparametric approach, where extreme temperatures provoke much stronger energy demand increases. The convexity of the U-shape appears important both in getting the energy demand estimation correct and in light of climate change models, which show an increasing number of very hot days. Partly for this reason, Deschênes and Greenstone (2011) and Auffhammer and Aroonruengsawat (2011) find that the net effect of warming over the twenty-first century is likely to increase energy demand substantially, *ceteris paribus*, with these studies estimating 11 percent and 3 percent demand increases respectively.

#### *Trade and Innovation*

Trade can, in principle, dampen or exacerbate local effects of productivity losses. Another potentially first-order adaptation mechanism is innovation.

The unusual identification opportunity provided by weather shocks has allowed a rigorous analysis of weather–economy linkages, and implications for breadth, heterogeneity, and functional forms. While much work remains in developing a

detailed understanding of the underlying mechanisms, especially for macroeconomic and political economy outcomes, the new literature shows that weather variation has substantive effects in contemporary periods. This begins to suggest policy targets, whether the goal is preventing substantial economic damages or protecting public health and security.

*From short to long run: Econometrics*

While temperature changes over the next thirty years will plausibly be within this range (recall the IPCC middle estimates were between 1.8–3.1°C by 2100), the ninety-fifth percentile estimate is warming of 7°C by 2100. If the impacts of climatic variables are linear throughout this range, then extrapolation is not an issue *per se*. However, if there are nonlinearities that are different from those operating within historical experience, one cannot directly extrapolate from equation (3) to climate scenarios far outside this range.

This issue suggests a limited capacity for panel models to provide quantitative estimates of damages from extreme warming.

These issues highlight that, even though panel models of the form of equation (3) correctly identify the causal effect of weather shocks on contemporaneous economic outcomes, they may not estimate the structural equation of interest for understanding the likely effects of future global climate change. Moreover, even leaving aside the potential of catastrophic climate scenarios, such as rapid sea-level rise or the release of methane from melting permafrost that could greatly increase global temperature, the panel estimates are neither obviously an upper bound nor a lower bound for the effect of climate change. If the adaptation force dominates, then the effects of weather shocks will tend to be larger than the effects of climate change; if the intensification force dominates, then the effects of weather shocks will tend to be smaller than the effects of climate change.

Longer-difference estimates are perhaps the closest empirical analogue to the structural equation of interest for climate change.

To the extent that adaptation requires forward-looking investments, adaptation choices will depend not only on the underlying damage functions and adaptation possibilities, but also on agents' expectations. Responses will depend on whether agents both were aware of the change in average temperature, and whether they perceived it to be a permanent change or just an accumulation of idiosyncratic shocks.

The challenge is that economies are changing and the longer the time difference taken in (8), the further back in time the analysis goes (by necessity), and the further removed from present-day economic conditions the analysis becomes. To the extent that different economies presented very different standards of living, technologies, and institutions through the twentieth century, one may still make headway by examining historical heterogeneous treatment effects along various dimensions of economic development. On the other hand, the future presum-

ably promotes new technologies and other features that may pull economies outside the range of historical experiences, calling for caution in drawing sharp conclusions from increasingly historical studies.

Long-run studies illustrate that factor reallocation may be an important mechanism.

#### *IAMs*

Our focus is on the damage function, the component of IAMs that specifies how increased temperatures affect economic activity.

IAMs used for economic policy analysis typically include four broad components: 1) a model projecting the path for greenhouse gas (GHG) emissions; 2) a model mapping GHG emissions into climatic change; 3) a damage function that calculates the economic costs of climatic change, and; 4) a social welfare function for aggregating damages over time and potentially across space.

All IAMs must make a wide variety of modeling choices, with large uncertainties remaining across each component.

The possibility of positive feedback loops implies that modeled climate change predictions are right-skewed; in other words, there are “fat tail” probabilities for massive climatic change in the next century.

IAMs must specify a social welfare function that discounts the future path of consumption.

The concavity of the utility function. This property influences not only how one weighs future versus current generations, but also how one weighs rich versus poor economies at a single point in time.

Different IAMs model the climate-damage function in somewhat different ways. For example, the DICE/RICE models use a Cobb-Douglas production function with capital and labor as inputs, multiplied by TFP, which grows at a constant, exogenously specified rate. Output is then reduced by the climate-damage function. For example, in the DICE model, the damage function is

$$D(T) = \frac{1}{1 + P_i} T + P_i - 2T^2$$

DICE calibrates the parameters to match cross-sectional estimates of climate damages reviewed in Tol (2009).

In the FUND model, rather than specify an aggregate damage function directly, climate damages are calculated at the region-by-sector level and aggregated up; that is, FUND posits separate models for agriculture, forestry, energy consumption, and health (deaths from infectious, cardiovascular, and respiratory disease), while also considering water resources, extreme storm damage, sea level rise, and the value for ecosystems, with potentially separate regional parameters for each of these models.

An important challenge with the current damage functions is that, for the most part, they do not incorporate the type of rigorous empirical evidence on climate damages reviewed here. In a recent review of IAMs, when discussing the calibration of the  $D(T)$  function, Pindyck (2013) writes “the choice of values for these parameters is essentially guesswork. The usual approach is to select values such that  $[D(T)]$  for  $T$  in the range of  $2^{\circ}\text{C}$  to  $4^{\circ}\text{C}$  is consistent with common wisdom regarding the damages that are likely to occur for small to moderate increases in temperature. . . . The bottom line here is that the damage functions used in most IAMs are completely made up, with no theoretical or empirical foundation.”

The implications of the econometric evidence discussed here can be thought of in two respects: how we model and calibrate the climate-damage function at a point in time, and how the climate-damage function evolves over time.

A key modeling choice for the damage function is whether climate affects the level of output or the growth path of output. The main IAMs assume that the impact of climate is on the level of output only with the growth of total-factor productivity continuing exogenously. Because growth effects, even small ones, will ultimately dominate even large-level effects, ruling out growth effects substantially limits the possible economic damages these models allow.

An alternative way of specifying the damage function is to allow climate to affect the long-run growth rate directly. Understanding the functional form through which climate affects economic output is critical. While it is hard to know definitively the correct functional form for the loss function, even small impacts on productivity growth could, over time, swamp effects on the level of output.

Building IAMs is a challenging exercise with enormous uncertainty.

We are optimistic that the damage function can be substantially informed by the recent wave of new empirical research, which has begun to provide key insights.

Integrating across the many studies reviewed, several broad themes emerge.

First, there is a wide range of channels through which weather shocks affect economic outcomes. Shocks, especially temperature, affect agricultural output, industrial output, energy demand, labor productivity, health, conflict, political stability, and economic growth. Labor productivity effects alone may suggest potentially economywide mechanisms. Moreover, the magnitudes of the effects are often substantive. An interesting linkage appears across studies of labor productivity, industrial output, and economic growth, where estimates converge around a 1–2 percent loss per  $1^{\circ}\text{C}$  in poor countries.

Second, the panel studies provide an emerging set of key insights about functional forms. Effects are often not simple linear functions independent of context. High sensitivity to extreme temperatures, but little or no sensitivity to temperature changes within moderate temperature ranges. International and

internal trade effects, including studies of how integrated markets both mute and transmit shocks.

Panel methodologies can also study medium-run and longer-run changes directly. Keeping in mind that countries have warmed substantially on average in the last several decades, with substantial variance within and across countries, there is ample capacity to study medium-run changes. The recent warming rate is also very similar to that predicted by many climate models through at least the middle of the current century. Noting that climate change is not about a permanent climate shock, but rather about a stochastic warming process along an upward trend, recent historical experience, which has occurred on such a stochastic warming trajectory, provides a highly relevant setting to understand warming effects.

Dell (2014) What Do We Learn from the Weather? The New Climate–Economy Literature (pdf)

## 51.3 Carbon Tax

*Roberts*

Carbon taxes are an almost perfectly terrible policy from the perspective of political economy. They make costs visible to everyone, while the benefits are diffuse and indirect. They create many enemies, but have almost no support outside the climate movement itself.

### 51.3.1 Fee and Dividend

More to the point, because there have been so few fee-and-dividend policies implemented in the real world, there's been very little field testing of the public's actual response to it.

A new paper in the journal Nature Climate Change by political scientists Matto Mildenberger look at public opinion in the places where carbon fee-and-dividend policies have been implemented.

It turns out there are only two.

Switzerland established a rebate program in 2008. The carbon tax reached 96 Swiss francs (about \$105) per tonne in 2018; about two-thirds of the revenue is rebated on a per-capita basis, with everyone (including children) receiving an equal share.

Canada established a rebate program in 2019 as part of its national carbon-pricing strategy. So far, the scheme covers four of 10 provinces, with more than half of the national population. The price was initially set at 20 Canadian dollars (about \$16 U.S.) a tonne, rising to CA\$50 by 2022; recently the government released a new schedule that would target CA\$170 by 2030.

The refund, or Climate Action Incentive Payment, is based on the number of adults and children in the household, with a 10 percent boost for rural households. It is highly progressive; 80 percent of households get more back than they pay.

The Nature Climate Change paper looks at public opinion in both countries. In Canada, it draws on a longitudinal study, which surveyed the same residents — “from five provinces, two subject to the federal carbon tax (Saskatchewan and Ontario), one with provincial emissions trading (Quebec), and two with provincial carbon taxes (British Columbia and Alberta)” — five times from February 2019 through May 2020, during which time the scheme was proposed, debated, passed, and implemented.

In Switzerland, the paper draws on a survey of 1,050 Swiss residents in December 2019. Only 12 percent of Swiss respondents know that part of the carbon revenue is refunded; 85 percent did not know they’d gotten a refund at all. Canadians remain confused and in many cases ignorant about carbon refunds.

You might think, well, the problem is how these countries administer their refunds. In Canada, it’s a line on your tax return. In Switzerland, it’s a discount on your health insurance premiums. Both are clearly marked, but lots of people don’t exactly scrutinize those documents and keep track of every line item.

In short, the available evidence suggests that carbon refunds don’t do much to reshape public opinion on carbon taxes, even among voters with accurate information about the refund they receive.

Roberts (2022) Do dividends make carbon taxes more popular? Apparently not

## 51.4 Finnish Carbon Tax

### *Mideksa Abstract*

Finland introduced the planet’s first carbon tax in 1990 to experiment with, to most economists, the best policy to reverse carbon emissions. I estimate the causal effect of taxing carbon on Finnish emissions using the Synthetic Control Approach (Abadie, 2021). The results suggest that taxing carbon reduces emissions by big margins. Finnish emissions are 16% lower in 1995, 25% lower in 2000, and 30% lower in 2004 than emissions in the counterfactual consistent with carbon taxes whose value increasing by 20 fold in 1990 - 2005. The estimates suggest that the carbon tax’s abatement elasticity is about 9%.

### *Mideksa Memo*

Despite the conceptual foundation behind using a carbon tax to reverse carbon emissions being strong, its empirical foundation remains arguably weaker.

The supporting evidence for the effectiveness of taxing carbon is missing, first, because few countries have taxed carbon: even fewer empirical studies of the

causal effect on emissions.

Besides, in the countries that have taxed carbon, the policy-induced data generating process has been too complex to lend itself to causal identification.

### Syntetic Control Approach

What is the causal effect on CO<sub>2</sub> emissions of the Finnish taxes on carbon? One can think about this question and identify the causal effect by conducting a randomized control trial: some regions, chosen randomly, tax carbon while the remaining regions serve as a control group. Yet, countries tax carbon in all regions let alone with randomization. One thus needs a second-best alternative to randomization: the synthetic control approach to estimate the causal effect of the Finnish carbon tax since 1990.

The synthetic control method adopts a data-driven approach in choosing the best comparison unit and allows falsification tests in assessing its sensitivity

In estimating the effect of the Finnish carbon tax using synthetic control, I focus on emissions from the transportation sector for the following reasons. First, there is a problem of ruined-control in the countries without a carbon tax. The problem arises when Finland imposes the carbon tax, some inputs can be imported from (or exported to) other countries. In other words, the aggregate emissions in nations without a carbon tax could be affected by the Finnish carbon tax when such countries trade with Finland. This is a concrete problem, for example, when it comes to per capita emissions, which is a contaminated measure for a small open economy like Finland. However, transportation services are internationally non-tradable, the ruined-control effect due to international trade is limited.

The structure of energy production and use in transport activities is similar across countries. This eases the task of constructing a valid comparison unit to Finland from the set of other countries.

I focus on the transport sector due to the availability of data for predictors that allow comparability across countries.

The estimated gap between the actual and the counterfactual emissions implies that the carbon tax reduces emissions considerably. Finnish emissions are 16% lower in 1995, 25% lower in 2000, and 31% lower in 2005 relative to the counterfactual. Rising impact over time goes in line with the increasing intensity of the CO<sub>2</sub> tax per ton of CO<sub>2</sub> over time (i.e., increased by 20 fold in the treatment period). The estimated emissions reductions came from stabilizing the Finnish emissions at the 1990 level relative to sharply rising emissions in the countries lacking a carbon tax. The estimated emissions reductions are consistent with the decline in Finnish gasoline, and diesel, consumption after 1990. Moreover, Finnish passenger transport activities and the number of vehicles have decreased to a new trend after 1990.

I estimate the carbon tax elasticity of emissions reductions directly by using

the real carbon tax data and its estimated impact. The geometric mean of the annual carbon tax elasticity of emissions reduction values is  $-9\%$ .

The countries in the donor pool adopt arguably similar transportation technologies as Finland. Limiting the donor pool to countries whose emissions are driven by a similar structural process as that of Finland serves as a reasonable potential comparison unit.

The counterfactual trajectory of emissions emerges as a convex combination of emissions of six countries. These countries, with corresponding weight in a bracket, are the United Kingdom (43.20%), Turkey (18.40%), New Zealand (15.90%), Luxembourg (10.20%), Switzerland (9.40%), and the United States of America (2.90%).

A useful parameter to summarize the effect of carbon tax is elasticity. Since the number of observations is very small, the OLS based estimation of elasticity is sensitive and its application is conceptually questionable.

The initial values of annual elasticity are higher consistent with abundant possibilities of low-hanging abatement options. While the values of annual elasticity oscillate, the arithmetic and geometric mean values are 0.099 and 0.086 respectively.

People expect taxes to be permanent and long term while variations in fuel prices could be short-term. In response, people adjust both on the intensive and the extensive margins when facing carbon taxes whereas mostly on intensive margins for temporary fluctuations in gasoline prices. Third, carbon taxes carry a signal from a society that urge for reducing carbon emissions, a signal absent in temporary variations in gasoline prices.

The identifying assumption underlying the synthetic control approach is that emissions in synthetic Finland serve as a valid counterfactual. For example, if countries price carbon indirectly through energy and fuel taxes, the identifying assumption calls for a similar evolution of such variables both in Finland and synthetic Finland.

To take into account implicit carbon prices, I exclude countries that have raised their fuels taxes from the donor pool.

I perform a back-dating test by introducing hypothetical carbon taxes in 1986, 1987, and 1988. Besides, I drop one predictor at a time to re-estimate emissions in synthetic Finland.

While one recognizes that the Finnish recession in 1990 – 1993 could have played some role in reducing emissions, it is unclear if the recession is the central explanation for the observed emissions reductions in 1993 – 2005. Similarly, the high elasticity estimates may reflect the low-hanging fruits.

The case for a carbon tax, when compared with auctioned quotas, is far from unanimous. The reservation goes back, at least, to Buchanan (1969, p. 175) – who aimed at contributing the project of “dismantling of the Pigovian tradition

in applied economics, defined here as the emphasis on internalizing externalities through the imposition of corrective taxes and subsidies.”

The current concerns include the difficulty of meeting a given emissions target (Harris and Pizer, 2020) and the ramifications for risk externality (Mideksa, 2020), the political difficulty of imposing a tax and changing it over time (Slemrod and Bakija, 2017), the challenge of enforcing a tax and avoiding evasion in countries with a weak fiscal capacity (Acemoglu, 2005; Besley and Persson, 2009), the ease for allowing exceptions and loopholes and for undermining a tax through subsidies to complementary inputs, and other factors covered in Sterner and Coria (2012) and Stavins (2020). These factors, in addition to carbon leakage, can explain why there was no break in the trend of Finnish industrial CO<sub>2</sub> emissions around 1990.

Focusing on political economy considerations, Brooks and Keohane (2020, p. 20) explain the point as follows. “In general, the environmental community is focused on ensuring emissions reductions, while the regulated industry is focused on limiting costs. The former’s strong preference for such environmental certainty helps to explain why existing market-based climate policies are overwhelmingly quantity-based; the latter’s insistence on some degree of cost certainty helps to explain why these policies generally also include price containment mechanisms.”<sup>10</sup> Emissions target can be unmet due to the uncertainty from business cycles or MIT shocks like pandemics. Other things being the same, carbon taxes deliver higher abatements during recessions and lower abatements during booms, relative to auctioned quotas.

Since economies tend to have more periods of a boom than periods of a recession (e.g., see Figure 2 in Rebelo, 2005), some stakeholders (e.g., environmentalists that Brooks and Keohane (2020) refer to) worry that taxes can fail to meet emissions targets. Nevertheless, the Finnish experience in 1990 – 2005 suggests something else: a well-crafted carbon tax induces meaningful emissions reductions both in booms and recessions in the early phases of decarbonization. Thus, the Finnish experience does not support the idea that carbon taxes are excuses to continue emitting more.

Mideksa (2021) Finnish Carbon Tax (pdf)

## 51.5 Instrument Choice Delays

*Roberts*

The capture of the climate policy debate by carbon-price-obsessed economists in the late 20th century helped send national and international climate policy down a multi-decade cul-de-sac in which very little was accomplished and much precious time was wasted.

Roberts (2021) A rant about economist pundits, and other things, but mostly economist pundits

*Boyd*

Using the case of emissions trading, this Article investigates how the instrument choice debate has impoverished our conception of government and limited our capacity to respond to the climate crisis. The central claim is that the overly abstract theory of instrument choice that has underwritten widespread enthusiasm for emissions trading and other forms of carbon pricing over the last three decades has led to a sharply diminished view of public engagement and government problem solving.

Boyd (2021) The Poverty of Theory: Public Problems, Instrument Choice, and the Climate Emergency

## 51.6 SSPs

*Buhaug Abstract*

The recently developed Shared Socioeconomic Pathways (SSPs) have enabled researchers to explore coupled human–nature dynamics in new and more complex ways. Despite their wide applicability and unquestionable advantage over earlier scenarios, the utility of the SSPs for conducting societal impact assessments is impaired by shortcomings in the underlying economic growth projections. In particular, the assumed economic convergence and absence of major growth disruptions break with historical growth trajectories in the developing world. The consequence is that the SSP portfolio becomes too narrow, with an overly optimistic lower band of growth projections. This is not a trivial concern, since resulting impact assessments are likely to underestimate the full human and material costs of climate change, especially for the poorest and most vulnerable societies. In response, we propose that future quantifications of the SSPs should incorporate the likelihood of growth disruptions, informed by scenarios of the relevant political contexts that historically have been important in curbing growth.

How will climate change shape societies in coming decades, and what steps could be taken to avoid the gravest consequences? The recently developed Shared Socioeconomic Pathways (SSP) framework, which plays an integral role in the ongoing Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment cycle, constitutes the most comprehensive attempt to date to model societal development consistent with different climate change scenarios (O'Neill et al. 2014; Riahi et al. 2017). The SSPs span a range of alternative futures, determined by assumptions about challenges to climate change mitigation and adaptation. Four pathways (SSP1, SSP3–SSP5) capture the four possible combinations of low versus high barriers to adaptation and mitigation, whereas the fifth (SSP2) represents a middle-of-the-road pathway. Central drivers of these challenges include changes in demographic, economic, technological, social, political, and environmental factors.

The SSPs serve two key functions: to provide “a basis for integrated scenarios of emissions and land use” and to facilitate “climate impact, adaptation and vulnerability analyses” (O’Neill et al. 2017, 169). There is some tension between these functions, since the former is determined mostly by the development trajectories of large economies and major greenhouse gas (GHG) emitters, whereas the latter is much more sensitive to future development in low-income countries and the world’s poor. In other words, there is little overlap between the countries that contribute the most to anthropogenic climate change and those that are the most vulnerable to its impacts (Althor et al. 2016). Presently, the SSP framework appears better suited to fulfilling the first task than the second.

In this research note, we show that existing quantifications of the SSPs, despite their wide applicability and unquestionable advantage over earlier scenario exercises, have clear limitations for researchers seeking to conduct societal adaptation and impact assessments because of shortcomings in the economic growth models underlying the SSPs. In particular, the assumption of growth convergence, whereby poorer countries gradually catch up with wealthy economies as long as educational attainment improves, and the related assumption of a future without major growth disruptions break with historical development trajectories. The result is an overly narrow and optimistic range of projected development outcomes. In response, we encourage revising or expanding the SSPs to incorporate growth projections that are sensitive to the underlying political and security contexts. Assumptions about such conditions are already embedded in the narratives that accompany the quantified SSPs (O’Neill et al. 2014, 2017), but presently, they exist in isolation from the growth projections. By bringing the political context explicitly into the quantitative scenarios, the SSP modeling community would help the IPCC get one step closer to achieving its objective: “to provide governments at all levels with scientific information that they can use to develop climate policies.”

#### *Buhaug Memo*

The quantification of the SSPs consists of end-of-century population and urbanization projections, including changes in fertility and education ( Jiang and O’Neill 2017; KC and Lutz 2017), as well as three alternative projections of growth in gross domestic product (GDP), developed by modeling teams at the Organisation for Economic Co-operation and Development (OECD) (Dellink et al. 2017), the International Institute for Applied Systems Analysis (IIASA) (Cuaresma 2017), and the Potsdam Institute for Climate Impact Research (PIK) (Leimbach et al. 2017), respectively. Governance and security developments are not part of the quantitative scenarios. Instead, aggregate descriptions of the regional and global political contexts are embedded in the qualitative storylines that accompany the SSPs.

All three SSP teams modeling future economic growth adopted the augmented Solow growth model. A central feature of the Solow model is the convergence mechanism: that development is associated with diminishing marginal returns on investments, such that it is cheaper and more viable for less advanced

societies to absorb inventions from the technology frontier than for advanced societies to develop new technology. The augmented model assumes that the rate of convergence is conditional on human capital. If the convergence mechanism is a major driving factor of growth, we should observe a steady narrowing of the income gap between developed and developing countries as time progresses, assuming that the populations in developing countries become increasingly educated. In the real world, economic convergence has been much less pronounced, despite significant educational improvements in poor countries.

Despite the historical prevalence of growth disruptions and a good scientific understanding of important structural drivers, the economic growth models in the SSP portfolio abstain from incorporating negative shocks. For most countries, most of the time, this is not a problem, and the augmented Solow model has been shown to perform well in predicting welfare growth for the countries that account for the vast majority of global GDP (Mankiw et al. 1992). For the same reason, the SSPs are well suited to evaluating implications of alternative societal development trajectories for global GHG emissions and climate change mitigation challenges. However, such models tend to return overly optimistic projections in the long term, especially for countries at greater risk of experiencing growth disruptions.

Known barriers to growth, such as resource dependence, war, and lack of good governance structures—all of which are part of the SSP narratives are unaccounted for in the GDP projections. The consequence is that the range of futures provided through the quantified SSP framework becomes too narrow and covers too small of an area of the conceivable probability space due to an overly optimistic lower band of growth projections. Of particular concern is the fact that the countries for which the GDP projections will fit the least well (i.e., developing countries with a history of recurring growth disruptions) are the very same countries where vulnerability to climate change is considered the highest and for whom sound adaptation and impact assessments may be most in demand. [Attempts to use the SSPs] are thus at risk of overestimating future production and security improvements and underestimating the relative cost of choosing a development pathway akin to regional rivalry (SSP3) or inequality (SSP4) over sustainable development (SSP1). Although modelers need high-growth scenarios, and there are reasons to remain optimistic about long-term development in many of today's poor countries, sound and comprehensive impact assessments also require projections that are at least as pessimistic as the recent past.

Buhaug (2019) On Growth Projections in the Shared Socioeconomic Pathways  
(pdf)

## 51.7 Guard Rail Economics

*Stern*

We risk loss of life in the hundreds of millions or billions; because we do not know what the “carrying capacity” of a world of 4 or 5 billion might be. It could be much lower than the 9-10 billion or so expected towards the end of the century. It is hard to understand or put numbers on the potential devastation and agony around the process of loss of life that could be involved. **It is difficult, in particular, to argue that an expected utility approach captures the issues at stake in a plausible way.** In my view, a direct risk-assessment looking across possible consequences and a guard-rail approach is more thoughtful, reasoned, broad-ranging and robust. And it is clearly seen as a reasonable and rational approach by the body-politic.

**A new form of Growth** The necessary rapid change across the whole system, just described, can be a story of growth, indeed the only sustainable story of growth. In the shorter term, the necessary investments can boost demand in a world where planned savings exceed planned investments (with sluggish demand and low real interest rates). In the short and medium term it is full of innovation, investment, discovery, and new ways of doing things. It can be more efficient; and much cleaner. It can create cities where we can move and breathe, and ecosystems which are robust and fruitful. It is potentially a very attractive, different way of doing things, relative to past dirty models, with so many gains across the different dimensions of well-being. But that does not mean that it is easy. It does mean that it is sensible, it does mean that it is attractive, and it is within our grasp. We have to change radically and, particularly, invest and innovate strongly to get there. That is the challenge. But there can be a real payoff in terms of a much better form of growth.

Can it be done? The answer is ‘yes’ and in particular there are four forces at this current moment which are particularly favourable to moving quickly and on scale: low interest rates, rapid technological change (see section 2.4), international understandings coming together (including the UNFCCC, COP21, the Paris agreement of 2015 and more than 100 countries covering 61% of emissions committing to net-zero by mid-century (Black, et al., 2021)), and pressure from the young people of the world to change (for example, Fridays for the Future and strong activity in the universities of the world).

**Investment** Strong, internationally coordinated investment should be at centre stage, right through from recovery from the COVID pandemic to transformational growth and the drive to a net-zero economy. What kind of orders of magnitude of investment do we need to make? To bring through the new ways of doing things and the new technologies required to make that happen, we have to increase investment by around 2-3 percentage points of GDP across the world, relative to the previous decade.

**Policy** These increases in investment, will require strong policy and a positive investment climate, including the functioning of relevant governmental institutions. Further, the many relevant market failures (see section 7b) and the urgency of change indicate the necessity of a whole range of policy instruments. Carbon pricing will be important, but alone it will not be enough. Complement-

tary policies, including city design, regulation and standards, and investments in R&D, will also be needed.

**Finance** Getting the right kind of finance, in the right place, at the right time is not easy. Mobilising private sector finance, at scale, will be critical. But there will also be a need for development finance and concessional finance to support the activities that do not quickly generate strong revenue streams or have high risks. The international financial institutions, especially the multilateral development banks, and including the IMF, have a crucial role to play.

**How economics must change** An assessment of what the current situation demands of us, particularly for this decade, was set out. That requires changing our ways of producing and consuming, rapidly and fundamentally, and creating the investment, innovation, sets of policies, and the finance that could foster and support the change. How can we bring our economics to bear in a way that informs those very real and urgent problems? How can we use economic analysis to tell us as much as it possibly can about why to do this, how to do this, and the methods and policy instruments we should use?

I will focus, in terms of broad analytical approaches, on where we are in the economics discipline on climate change and argue that it is time for change in the economics of climate change and, in some respects, economics generally. Our subject does have much to offer in applying our existing tools and in developing new perspectives and analyses, but we must be innovative and, as a profession, engage much more strongly on this, the biggest issue of our times.

A starting point is the important set of insights of economists Alfred Marshall and Arthur Pigou. At the end of the 19<sup>th</sup> century, Marshall (Marshall, 1890) drew attention to the potential difference between marginal private cost and marginal social cost. Thirty years later, Pigou (Pigou, 1920) argued for a tax, equal to the difference between the marginal private cost and the marginal social cost, to correct for an externality, where that is the source of the difference 11. Around 60 or 70 years ago, Ronald Coase began considering these concepts in a different way, emphasising institutional arrangements (Coase, 1960). He spoke of allocating property rights and establishing markets so that there could be trade in externalities. James Meade - his work 'Trade and Welfare' (Meade, 1955) was a landmark - also wrote very insightfully about the theory of externalities, including integrating externalities into the theory of reform, bringing in distributional issues and looking at general equilibrium in multi-good models. Coming forward further, and looking at applications 30 or so years ago, David Pearce, for example, was writing 'Blueprint for a Green Economy', emphasising how the Pigouvian idea could be implemented (Pearce et al., 1989).

The modelling of climate change began with Bill Nordhaus' important and admirable paper 'To slow or not to slow?', published in the Economic Journal in 1991 (Nordhaus, 1991) and Bill Cline published his book 'The Economics of Global Warming' in 1992 (Cline, 1992).

Nordhaus's question, recognising that there could be potential dangers from

climate change and that emissions arose from activities around producing and consuming, was ‘should we grow a little less fast than we might have envisaged before we thought about climate change?’ He proceeded in a sensible way, taking an emerging problem and applying the standard tools of economics: first the Pigouvian story of marginal social costs, marginal private costs, and taxing for the externality; second on growth, he used the framework of a standard exogenous growth model and considered the impact of climate change largely in terms of small perturbations around the underlying growth path(s). That was a sensible early contribution for the economics of climate change.

Over the following 10-15 years, it became more and more clear that **climate change is not a marginal problem**. We are dealing with a challenge involving huge potential disruptions, which requires very radical changes in our production systems and ways of consuming. That simply cannot be picked up by assuming a fairly standard underlying model of exogenous growth and, within that model, portraying climate change in terms of marginal damages of just a few percent of GDP. Nordhaus’ DICE model launched a major literature on integrated assessment models (IAMs), and their scope has been expanded. But the basic underlying features of optimisation of explicit, calibrated social welfare functions, underlying exogenous growth and aggregation (usually to one good) impose severe limitation on their ability to illuminate two basic questions.

The *first* is how to approach analytically the challenge of managing immense risk, which could involve loss of life on a massive scale. The *second* is how to chart and guide a response to this challenge which will involve fundamental structural change across a whole complex economy. These two issues are at the core of economic policy on climate. The basic structure of IAMs, I shall argue, even with the many advances and mutations that have been offered, is not of a form which can tackle these two questions in any satisfactory way.

**There is a problem in the profession**, which goes beyond the way IAMs are structured and specified, associated with an inability or unwillingness to move much beyond the static Pigouvian or 20 th century approach to externalities in analysing the challenges of climate change. Many discussions of policy suggest that “economic theory says” that policy should be overwhelmingly about a **carbon price**.

That “theory says” that the carbon price is the most effective route is simply wrong and involves a number of mistakes.

The first mistake is that there is a whole collection of market failures and market absences of great relevance beyond the greenhouse gas externality (see section 7). The second is that under the temperature target or guardrail approach (see section1), the choice of carbon prices is focused on its role, in combination with other policies, in incentivising paths which achieve the overall target (such as net-zero emissions by mid-century to fit with the temperature target) with as much economic advantage as possible. Such prices are not simply the marginal social cost as in Pigou (see discussion of Stern- Stiglitz Commission below, this

section). Third, where the risks of moving too slowly are potentially very large and there are increasing returns to scale and fixed costs in key industries, then regulations can help reduce uncertainty and bring down costs (e.g. Weitzman, 1974). Fourth, many consumers, producers, cities, and countries, recognise the obligation to act, and are not blinkered, narrow optimisers with a view of utility focused only on their own consumption. Fifth, much of the challenge of action is how to promote collaboration and act together. This poses a whole set of important questions around institutions and actions for mutual support. This is an immense challenge concerning risk, values, dynamics and collaboration, and **the narrow Pigouvian model, useful though it is, is very far from the whole story.**

**Failure of IAMs** There is an underlying one-good growth model where emissions depend on output, accumulated emissions cause temperature increase and climate change, and emissions can be reduced by incurring costs. However, much of this literature, which has dominated so much work on the economics of climate change, has been misleading and biased against strong action, because climate damage specifications are implausibly low and costs of action implausibly high, and subject to diminishing returns.

Most standard IAMs also embody diminishing returns to scale and increasing marginal costs of action to reduce emissions, plus modest rates of technical progress (relative to those experienced in the last decade or so). These features are very problematic because we have already seen how important increasing returns to scale and very rapid change in technology are in this context.

By embodying diminishing returns and modest technical progress, the IAMs systematically overstate the costs of climate action. Further, they distort the theory of policy which is much more complex when we have increasing returns to scale; particularly in the context of risk. Standard optimising policy models which focus on “marginal cost equals marginal benefit” are far more tractable with diminishing returns and increasing marginal costs to action, but by choosing model assumptions primarily for tractability and convenience, we risk severely disturbing the policy discussion at issue.

There are **deeper problems** with the general approach of maximising a social welfare function (for example, based on expected utility) in the presence of extreme risk, which cannot be corrected by adjusting functions and parameters. Standard utility or welfare functions at the heart of the IAMs cannot capture adequately the nature and scale of the risks from climate change. Impacts which can involve deaths of billions are not easily captured in the standard social welfare functions, which we used in most IAMs (and more broadly), involving aggregation of individual utility functions. Indeed, as Weitzman argued (Weitzman, 2009, 2012) standard approaches quickly run into problems of utility functions going to minus infinity. There can be arbitrary “fixes”, for example by putting bounds on utility, but it is an indication that the model has lost touch with the problem.

Just as with the social welfare function aspect of IAMs, there is a deeper question on the production side of the modelling. The policy challenge, as we have seen, involves generating rapid and major change in key complex systems, including energy, transport, cities and land, over a very short period. **Simple “cost” functions** for emissions reductions, even if made more realistic, do not get to grips with the real policy challenges of how to make these changes.

We are in a world with many market imperfections, with major risks, requiring fundamental systemic change, and where optimisation is difficult to define, let alone achieve.

There is no serious ethical argument in favour of pure-time **discounting**.

There is little point in looking for ethical values relevant to social discounting in capital markets, because capital markets: (i) do not reflect ethical social decisions; (ii) they embody expectations and views about risk that are hard to identify; and (iii) they involve many imperfections. Nevertheless, one often seems to hear the mistaken argument that social preferences can be derived from these markets.

**Economic analyses of climate change** must first capture *extreme risk*, including possible large-scale and unforeseeable consequences. Second, they should recognise that many key markets have *critically important failures* (beyond that of the GHG externality), that crucial markets may be absent, and that there are limits on the ability of government to “correct” these market failures or absences. Third, they should embody *rapid technical and systemic change*, often in very large and complex systems such as cities, energy, transport, and land use, and allow for increasing returns to scale. Fourth, they should examine rapid changes in (endogenously determined) *beliefs and preferences*; and fifth, take into account *distributive impacts* and risks, both at a moment in time and over time, and including those associated with structural change. All of this will unavoidably involve explicit analysis and discussion of *value judgements*. These components, or sets of questions, are difficult to incorporate in standard integrated assessment modelling, but are at the core of the issues around understanding policy towards climate change. We must deepen our economic analysis to incorporate them. We should also recognise that questions embodied in, or similar to, these components arise in many other parts of economics, where major risks and fundamental change are at the core of the challenge under examination.

Given that governments are made up of complex compromises and coalitions, are limited in information and capabilities, and are not necessarily long lasting, we must recognise in our analysis that there are limits on their ability or willingness to “correct” for market failures and absent markets. Governments cannot fully commit to future actions in a credible way.

The GHG failure is top of our list of market failures. And carbon pricing has a critical role to play in tackling that market failure. However, we can see, from thinking about different aspects of market and government failures,

that the policy question is much richer than carbon pricing alone. Regulatory policies, alongside carbon pricing, could be more efficient and effective than carbon pricing alone.

The need for new approaches to economic analysis of climate change raises an enormously rich research agenda. At the same time, action on scale is urgent.

The necessary transformation of the economy relies critically on changing key systems: energy, cities, transport, land use. These large and complex systems cannot be changed by fiddling with just one parameter, a whole set of policies will be required to foster change. For example, you would not sensibly attempt to redesign a city to reduce congestion and pollution just via a carbon price.

Most elements of economics come into the challenge of climate change. It is time for change in economics.

Stern (2021) A time for action on climate change and a time for change in economics (pdf)

## 51.8 Tipping Points

*Dietz*

Dietz (2021) Economic impacts of tipping points in the climate system (pdf) SI (pdf)(pdf/Dietz\_2021\_Economic\_Tipping\_SI.pdf)

## 51.9 Structural Reforms

*Braun on Draghi's 'Reform Thesis'*

Draghi was a structural reformer avant la lettre: He uses the term “reform” exactly as it would come to be used in “structural reforms”. Except that the concept didn’t exist at the time.

Draghi’s thesis fully articulates the theory that came to bring us structural reforms: A planner opting for short-run stimulus will never reach the optimal long-run path. By contrast, enforcing optimum long-run policies today will *not* have negative short-run consequences.

Noting that “the common finding is a positive relationship between real wages and employment”, Draghi seeks to refute that finding, describing it an artifact of faulty methodological choices.

Structural reformers *must* reject the idea of a positive wage-employment relationship because SRs are supposed to boost employment precisely via lower real wages.

Braun - Twitter Thread on Mario Draghi’s Thesis

*Tooze on Draghi/Yellen new assignments*

It would be absurd to blame either Draghi or Yellen personally for the sequence of shifts and shocks that has destabilized capitalist democracies since the 1990s or the crisis of confidence these have triggered among centrist liberals. But as people of huge influence and as representatives of a class of experts who have ruled the roost for the last 30 years, they can hardly plead innocence either. It was on their watch that growth slowed, inequality between social classes and regions became ever deeper, and the risk of inflation tipped into that of deflation. It was on their watch that the financial system was allowed to become a flywheel of mass destruction. It was on their watch that the risks of climate change and pandemic threats went unaddressed.

If broad-based growth cannot be restarted, the implications are alarming.

Whereas the market revolutionaries of the 1970s and '80s were radicals, squashing the last bastions of the old left and bulldozing organized labor out of the way, Draghi and Yellen came to the fore in the 1990s as managers of what is now known as the Great Moderation.

Inheritors of the market revolution, committed to managing and improving the status quo, Draghi's and Yellen's march through the institutions has been glorious, but their careers have also been defined by constant adjustment to political and economic shocks that they did not foresee and could not control. These shocks have driven Yellen and Draghi to explore the political and economic boundaries of technocratic power.

At MIT and Yale in the 1970s, they imbibed what was known as the neoclassical synthesis. The central idea was that though the microeconomics of markets were important, markets would function properly only so long as the macroeconomic environment was set correctly. Keynesianism and market economics were not opposites but complements.

In the 1980s, Yellen played an important part in shaping the further development of the neoclassical synthesis known as New Keynesian economics. Working alongside the likes of Joseph Stiglitz and George Akerlof, she mapped how labor market imperfections could give rise to macroeconomic problems. Those rigidities in wages and prices, in turn, also enabled macroeconomic policy to work. It was because markets were slow to adjust that unexpected movements in interest rates, taxes, and government spending could have real effects.

Draghi's work at MIT was less intellectually generative than Yellen's. But his dissertation is nevertheless revealing. It includes a chapter in which he describes how planners trying to manage an economy subject to short-run fluctuation are more successful if they focus on long-run goals. Long-range strategy, regardless of short-term cost, will do better than a hectic effort to optimize at every moment.

Though they owe little to the Chicago school, it does not follow that Draghi and Yellen were not exponents of neoliberalism. On the contrary: They were strong advocates of markets. Competition and properly designed incentives were the

recipe for productivity and growth.

In the world economy, they favored the free capital movement and flexible exchange rates that defined the so-called Washington Consensus of the 1990s. It was Rudiger Dornbusch, the pope of international macroeconomics at MIT and one of Draghi's chief mentors, who described the project of his generation as being the taming of "democratic money." In the wake of the collapse of the Bretton Woods financial order and the U.S. dollar's gold peg, the chief enemies of good economic governance were shortsighted trade unions pushing for higher wages and vote-chasing politicians. Once trade unions were curbed and politicians confined to their proper tasks, Friedmanite monetarists hoped that prices could be stabilized by mechanical monetary rules.

But by the early 1980s, that had proved naive. For the MIT crowd, what keeping money safe from democracy amounted to was placing it under the control of competent experts credibly committed to providing markets with the stable framework they needed. The independent central bank was their institutional bastion.

The global financial order developed by economic elites—from the 19th-century gold standard to the gold-pegged dollar of the Bretton Woods system to the worldwide preoccupation with independent central banks after Bretton Woods dissolved—has always involved imposing constraints on policymakers. In the 1980s, devices such as exchange rate pegs were all the rage in Asia as well as Europe for signaling self-discipline to financial markets.

For all their inside status and expertise, neither Yellen nor Draghi gave any public sign of anticipating the crisis that was to come. The same was true for the vast majority of their cohort, whether MIT or Chicago. The scale of the systemic risk posed by the financial system of the advanced economies simply did not register until it was too late.

The consistent failure to deliver adequate fiscal policy responses to the crisis after 2008 went against all the preconceptions of 1970s MIT-style macroeconomics.

Where were the spendthrift politicians when you needed them? The fiscal undershoot by the Obama administration could perhaps be explained by miscalculation and Republican partisanship. But the fact that a centrist majority in the heart of Europe, faced with dangerous populist challenges from the left and right, would choose to die on the hill of budget balance was not part of the plan.

It was up to the ECB to act. In 2015, to the horror of German conservatives, Draghi finally launched a QE program. This was a technical economic measure. But it had spectacular political effects. It enabled the European Council to play hardball with the radical left-wing government in Greece without causing the bond markets to panic. One might say it marked the Americanization of the ECB.

Seven years on from the collapse of Lehman Brothers, a majority on the Fed

board was swinging toward tightening. The point was not so much that the U.S. economy needed restraining as that they were deeply uncomfortable with interest rates remaining at zero. It stoked speculation in financial markets and gave the Fed nowhere to go if it needed to counter a downturn. Negative interest rates along the lines adopted by Japan were not something that the Fed wanted to contemplate.

The basic framework of 1970s macroeconomics that framed Draghi and Yellen's training and outlook, like that of the rest of their cohort, was that properly structured markets would take care of growth. Well-regulated financial systems were stable. The chief priority for economists was to educate and restrain politicians to ensure that inflation remained in check and public debts were sustainable.

Financial instability is a mortal risk. For now, it is being held at bay. But the world saw as recently as March 2020 how rapidly even the largest financial market—the market for U.S. Treasurys—can be destabilized. To tame that risk, the Fed and the ECB, under Yellen's and Draghi's non-economist successors—Jerome Powell and Christine Lagarde, respectively—have adopted an astonishingly undogmatic and expansive approach to stabilization.

The Italian political class is abdicating in favor of a retired, unelected official in his 70s.

Faced with a decisive historical challenge—restarting growth after decades of stagnation—Italy's political class has chosen to delegate executive power to someone who has never been elected to office. It is the ultimate victory of technocracy but also a do-or-die challenge.

The truly strategic challenge facing progressive politics in the United States as in Europe is to find a new model of inclusive and environmentally sustainable economic growth

In the 1990s, you didn't need to be a naive exponent of the post-Cold War end-of-history argument to think that the direction of travel for global politics was clear. The future belonged to globalization and more-or-less regulated markets. The pace was set by the United States. That enabled technocratic governments to be organized around a division between immediate action and long-term payoff. That was the trade-off that Draghi evaluated in his MIT Ph.D. in the 1970s. The drama of Draghi and Yellen's final act is that for both of them, and not just for personal reasons, the trade-off is no longer so clear-cut. If the short-term politics fail, the long-term game may not be winnable at all. "Whatever it takes" has never meant more than it does today.

Tooze (2021) Draghi/Yellen - Can they control what comes next?

### 51.9.1 Structural Transformation in the Global South

*Yadu*

There is an increasing realization that the nature and pattern of structural transformation that unfolded in the global North might not be replicable in the global South.

The possibilities of attainment of a North-style structural transformation remains bleak in the contemporary global South. This is majorly because the socio-economic and political context which facilitated the process of structural transformation of the economies in the global North is **no longer available to the global South**. The process in the North was, to a large extent, fostered by colonialism which allowed these economies to undertake expropriation and extraction of resources, without much concern for ecological limits, as well as to transfer a proportion of their population to the newly found lands in the temperate regions. Given the significant changes in the structure of capitalism now as compared to the earlier phase, it is worthwhile to investigate the possibilities of the global South experiencing the envisaged path of structural transformation.

There is a need to re-examine the narrative of structural transformation as a universal phenomenon which is expected to unfold in a linear way across time and space. The received wisdom in development economics largely neglects the political and historical roots of capitalist development, and remains rather incomprehensive in its understanding of the contemporary nature of transformation taking place in the South due its fixation of gaze from a North-centric lens. Analyzing the particular nature of the processes of development specific to the South brings its own set of challenges that need to be understood in their own subjective context. The way forward is to break away from the North-centric notions of progress and change, and reverse the gaze, to formulate a framework that reflects on the structural conditions and the realities of the global South from their vantage point.

Yadu (2023) Structural Transformation: Then and Now

## 51.10 Industrial Policy

### 51.10.1 Import Substitution

#### *Irwin Abstract*

In the 1950s, many economists believed that import substitution – policies to restrict imports of manufactured goods – was the best trade strategy to promote industrialization and economic growth in developing countries. By the mid-1960s, there was widespread disenchantment with the results of such policies, even among its proponents. This paper traces the rise and fall of import substitution as a development idea. Perhaps surprisingly, early advocates of import substitution were quite cautious in their support for the policy and were also among the first to question it based on evidence derived from country experiences.

Irwin (2020) THE RISE AND FALL OF IMPORT SUBSTITUTION (pdf) (pdf)

*Smith on India*

Why did import substitution fail? Chang and Studwell's answer would probably be that making things for the domestic market doesn't force companies to increase their productivity. It doesn't help them discover their comparative advantage relative to foreign companies. It doesn't push them to develop new products. It doesn't give them much of an incentive, or even much of an opportunity, to absorb foreign technologies. The domestic market is safe, familiar, and uncompetitive, and it's often possible to dominate it through political cronyism rather than through brutal technological competition.

Smith (2023) Can India industrialize?

### 51.10.2 Export-led Growth

*Ha-Joon Chang*

Industrial policy can work – sometimes spectacularly well – although it can also fail – sometimes miserably.

Picking on my emphasis on the importance of export performance as a performance indicator, I then talked about the critical importance of export policy, which requires not just free trade but a mixture of free trade, export promotion, and infant industry protection.

The debate, have focused too much on “grand” things like the Big Push, when much of real-life industrial policy has been about “boring” things, like getting the production scale right and providing export marketing services.

Appreciate how critical export is for the success of industrial policy, while [also] appreciate how export success also requires industrial policy.

Ha-Joon Chang (2009) Industrial Policy: Can We Go Beyond an Unproductive Confrontation? (pdf)

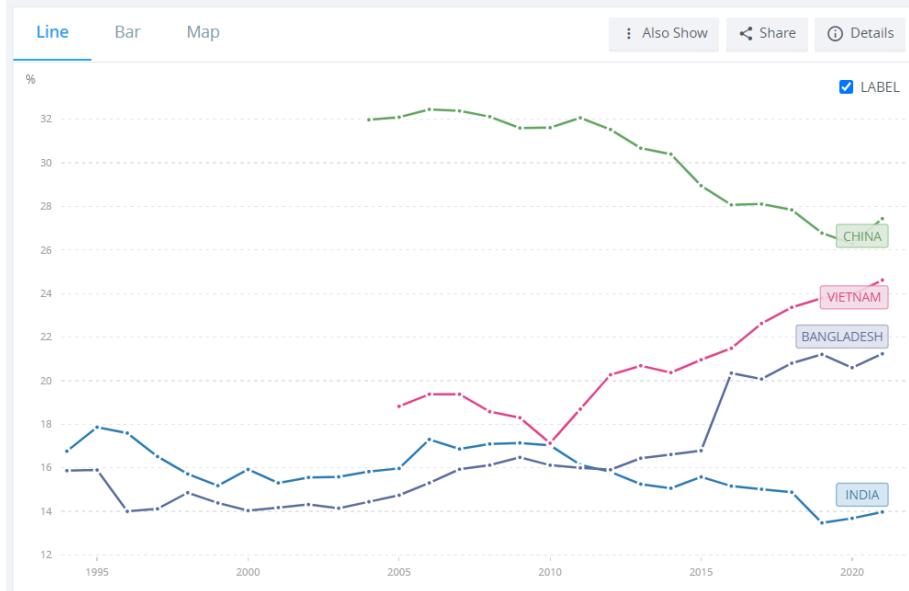
*Smith on India*

India lags in manufacturing but does OK on exports The stereotype of India's economy is that it relies on services more than on manufacturing. That's actually pretty accurate; manufacturing is a smaller percent of the economy than Bangladesh or Vietnam, and the trend line is headed in the opposite direction:

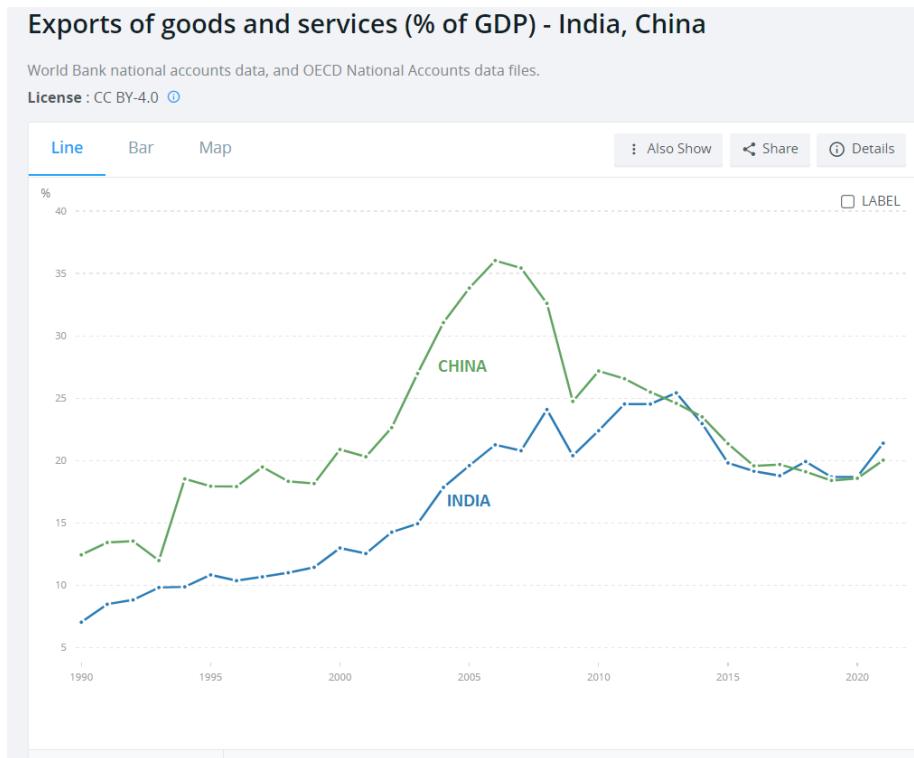
### Manufacturing, value added (% of GDP) - India, China, Bangladesh, Vietnam

World Bank national accounts data, and OECD National Accounts data files.

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But according to what I've been calling the "Chang-Studwell" theory of development — based on the book How Asia Works, any of Ha-Joon Chang's books, and this IMF paper — what matters most is not manufacturing per se, but exports. And I don't mean "net exports", i.e. trade surpluses vs. trade deficits — I simply mean the amount of stuff a country sells overseas. The basic idea is that exporting forces companies to raise their productivity levels and learn foreign technologies (by hiring foreigners, by maintaining overseas offices, or just by stealing intellectual property). In this theory, manufacturing is important simply because manufactured goods are easy to export, and because manufacturing industries have opportunities for rapid productivity growth.



And India actually does a pretty good job exporting — about as good as China, and as good or better than China in the 1990s.

Not much labor-intensive manufacturing in exports. Labor-intensive manufacturing is useful for generating employment, for moving poor people from farms to cities, and — at least, if you believe Ha-Joon Chang — for developing a widespread culture of manufacturing.

### 51.10.3 Service-led development

India's exports of services are 60% as large as its exports of goods. The thing about services is, we don't really know how well they contribute to development. Services have only really been exportable en masse for a short amount of time, thanks to the advent of the internet, so there isn't a long record of countries that exported a bunch of services.

Development runs on agglomeration effects — producers, suppliers, and customers all wanting to locate near each other — and services don't require nearly the same supply chains that manufacturing does. This means we might expect to see services generate a smaller local multiplier effect (sometimes called an “external multiplier”), leading to less urbanization and product diversification.

Harder to improve productivity in services than in manufacturing.

For service exports that are basically just local services beamed overseas by the magic of the internet — for example, India's famous call centers — there probably isn't as much room for rapid technological upgrading.

If you were an electronics maker or a carmaker in Singapore or South Korea or Poland back when those countries were poor, you just didn't have a huge safe domestic market to hide in. But if you're an Indian manufacturer right now, even though India is still poor, the domestic market is still so big that there's less incentive to take the icy plunge into the international waters. If you think this theory is right, then India will need to work especially hard to push its companies to make things for the world instead of just for India.

Fortunately, the Modi administration may have (belatedly) gotten this message. Last year he announced a new slogan: "Make for the world." Presumably this means a shift from production incentives to export incentives.

Smith (2023) Can India industrialize?

?

Cherif (2019) The Return of Industrial Policy (pdf)

#### 51.10.4 FDI Regulation

*Chang Abstract*

Based on a historical survey of the experiences of the USA, the EU member states and the East Asian economies, the paper argues that during their early stages of development, now- developed countries systematically discriminated between domestic and foreign investors in their industrial policy. They have used a range of instruments to build up national industry. They included: limits on ownership; performance requirements on exports, technology transfer or local procurement; insistence on joint ventures with local firms; and barriers to 'brownfield investments' through mergers and acquisitions. On the basis of this, the paper argues that a multilateral investment agreement (MIA) at the WTO, founded on principle of national treatment, is likely to harm the developing countries' prospects for development. Our historical survey shows that, only when domestic industry has reached a certain level of sophistication, complexity, and competitiveness do the benefits of non-discrimination and liberalisation appear to outweigh the costs. As a result, countries generally move towards a greater degree of non- discrimination and liberalisation as they develop. In that sense, contrary to the claims of the demandeurs of the MIA non-discrimination is better seen as an outcome of development, not a cause

Chang (2003) Regulation of FDI in historical perspective (pdf)

#### 51.10.5 FDI

*Smith on Chang/Studwell*

At this point, let's take a moment to talk about why Ha-Joon Chang and some other industrial policy fans think that FDI is not the basis of a sound development strategy. Chang has gone to great lengths to show that today's rich countries — the U.S., Japan, and so on — restricted or even banned FDI during their early stages of development. But that doesn't tell us why it's bad, or even if it's bad; the rich countries could have succeeded in spite of this policy. Part of Chang's distaste for FDI comes from the fact that a lot of it is actually just foreign companies acquiring local ones, rather than building new factories; this could result in the foreign companies stunting the growth of the local ones, whereas if they had remained independent they could have risen to become competitors. Also, some FDI goes into real estate, which often just pumps up property values unhelpfully and may set economies up for bubbles and crashes.

But another reason the industrialists are suspicious of FDI is that even "green-field" FDI — i.e., when a foreign company comes in and builds its own factory in your country — might crowd out domestic companies. If all the good engineers and managers go to work for foreign companies, it could starve local startups of the resources they need to grow. And since foreign companies are likely to reserve the highest-value-added parts of the supply chain (design, high-tech, branding, marketing, etc.) for their home countries, having a manufacturing sector dominated by these multinationals could prevent a company from developing its own globally competitive brands and technologies — like an apprentice whose master will never let him learn his most secret tricks of the trade.

Poland and Malaysia may now be running into this problem.

McKinsey cites Poland's need to develop or acquire strong brands in order to catch up with West Europe. The failure of Malaysia's attempt to build domestic champions is worrying.

And yet I see two responses to this. The first is: Do we really care? Poland and Malaysia may not be as rich as Germany or Korea, but they've definitely escaped poverty. Countries like Bangladesh or Vietnam or Ghana or even Mexico would kill to have a per capita GDP of \$30,000. That's about the GDP of the U.S. in the early 1980s. Is it really fair to call that level of development a "middle income trap"? If you're a poor country, and you have a reliable, dependable way of getting as rich as the U.S. was in the early 1980s, dammit, you take it. You don't worry about whether that strategy will eventually make it harder to get as rich as the U.S. of 2023.

Because developing the South Korean way, by building a bunch of world-beating high-tech manufacturing companies from scratch, is incredibly hard. An FDI-centric strategy, on the other hand, is simple and straightforward, almost cookie-cutter — you give all your people a high school education, you build some roads and electric power lines and sewage lines, you designate some Special Economic Zones, and you give foreign companies big tax incentives and investment incentives and regulatory incentives to come in and hire your plentiful low-wage workers to make electronics and automotive goods and other complex products

for export. Voila! No need to build the next Samsung or the next Hyundai; the existing Samsung and Hyundai will do nicely.

This is a bit similar in spirit to the way Tennessee, Kentucky, and Alabama lured U.S. automakers away from high-wage unionized northern states with the promise of cheaper non-union labor. You don't see Tennessee or those other states becoming home to the new Detroit; all the big car brands are still headquartered elsewhere. Eventually this strategy ran out of gas, but it worked for a while.

(Comments:) In the context of the EU, I feel like Poland has been helped a lot by keeping its own currency instead of adopting the Euro.

Smith (2023) Poland/Malaysia FDI growth model

## 51.11 TechFare

*Bhagat*

Big Tech has long thrived on regulatory evasion and the exploitation of legal grey areas.

In this literature, then, the tendency is to assume that it is an absence of state intervention that has underpinned the technology industry's growing economic (and political) power. With our conception of techfare, however, we aim to push beyond these explorations of how Big Tech evades state control. Instead of focusing on state absences, we set out to highlight an equally significant dynamic: how the technology industry has become deeply entwined with the activities of the neoliberal state.

As is well known, neoliberalism has yielded specific forms of state intervention to discipline and normalize the surplus population and to regulate social insecurity. Filling the void left by the retrenchment of social and welfare spending, these forms include Jamie Peck's workfare, Susanne Soederberg's debtfare, and Loïc Wacquant's prisonfare. As the technology industry has inserted itself more deeply into consumer credit markets and surveillance activities, it has augmented both debtfare (which normalizes and encourages reliance on private sources of credit to augment wages and regulate social insecurity) and prisonfare (which criminalizes poverty through policies that extend the reach of the police, courts, jails, and prisons). And, as the two vignettes below show, it has done so in ways that not only support the ongoing efforts of the neoliberal state, but that also underpin the growth and profitability of Big Tech itself.

The penetration of Big Tech into the realm of consumer finance has clear parallels with what Gabor and Brooks (2017) call the fintech-philanthropy-development nexus. Gabor and Brooks argue that fintech has accelerated the financial inclusion of the poor and enhanced financial institutions' ability 'to bank the unbanked. Big Tech, too, is adopting these logics of financial inclu-

sion: the technology giants have vast stores of user data and trusting consumer bases that have allowed them to extend financial services globally. For instance, the total alternative credit model—a combination of fintech and lending by Big Tech companies—reached \$800 billion in 2019. In Asia, Africa, and Latin America the presence of Big Tech credit grew rapidly, coinciding with the decline of fintech credit volumes due to market regulation in China.

Our snapshots surrounding consumer finance and surveillance act as central examples of arenas where techfare augments extant modes of neoliberal regulation in the face of social insecurity. In aligning with debtfare, we are interested in how the vacuum left by welfare retrenchment and the decline of traditional financial actors has paved the way for Big Tech to become a player in consumer finance through new innovations on payday loans, credit cards, and other lending services that explicitly target low-income earners. In relation to prisonfare, we also highlight how Big Tech profits off of surveillance by extending the carceral state to the level of the neighbourhood and the household. Facial recognition is often seen as a public safety tool. But its potential to erode privacy and criminalize vast numbers of people while generating both revenue and data for Big Tech is an important direction for future research.

Bhagat (2021) The Techfare State: The ‘New’ Face of Neoliberal State Regulation

## 51.12 Market-based Development Finance in Crisis

*Toozé*

To treat the news from Ghana [On debt default des. 2022] as “just another predictable crisis”, is to trivialize and to fail to grasp the significance of the current moment.

Ghana is an important African success story. In recent times it has been the site of sustained efforts to improve labour practices and the terms of trade for peasant cocoa farmers. In 2020 its stress-free elections contrasted favorably to the democratic anxiety in the United States. Ghana has been praised for its efforts to extend health insurance to 70 percent of the population, topped up with cash benefits for the poorest. Accra boasts a vibrant fashion and design culture. The interior is touted as destination for adventurous trekking tourists.

An ample flow of money was key to this success story. And not just the volume of funding mattered, but how it flowed.

Up to the Millennium, the main form of lending to Africa was concessional bilateral lending by Paris Club members. That ended in the early 2000s with the Heavily Indebted Poor Countries Initiative backed by the International Monetary Fund and World Bank. That wrote down a huge slice of unpayable debt.

In the aftermath, new bilateral concessional lending by the Paris group of creditor countries was reduced to a trickle. Instead, led by the United States they have provided support above all in the form of grants and development assistance. This is less encumbering than concessional loans, but it is also restricted in volume. In a substantial economy like Ghana, let alone an economy the size of Nigeria, grants and development assistance are unlikely ever to achieve transformational scale.

Meanwhile, lending by the World Bank and other Multilateral Development Banks has provided a relatively steady flow of funding. But the big new player in the development finance scene is China. At its peak in 2017 Chinese development lending was larger than that of the World Bank. China's large-scale funding met much suspicion and has now run out of steam. Much of it has had to be renegotiated with stressed borrowers. Which leaves the question. What is the development vision that "the West" actually offers to the developing world? Over the last twenty years, insofar as the West has had a model of development funding, it has been one of public-private partnership: develop the financial infrastructure of borrowing countries so as to enable them to attract funds from private lenders on global markets.

Since 2008 the surge in non-Chinese private lending dwarfs all other funding flows to Africa. In part it was driven by genuine development on the part of the borrowers. But, in the era of quantitative easing, it was also impelled by the search for yield in frontier markets. As QE is replaced by QT and interest rates in the US rise sharply, that funding model that is now in question.

The Ghana crisis matters beyond its immediate impact, because it was the poster child for this model of private finance.

The situation in Ghana is bad, but it is by no means alone. Whereas in 2008 the African continent was largely insulated from the shock of the global banking crisis, it is now, as a result of being more integrated into the global economy, feeling the pinch from global movements in prices and interest rates.

When the headlines announce that Ethiopia, Kenya and Ghana are all in trouble, that could be read as a series of national stories. But it is more than that. General narratives are fashioned out of particular cases and over the last 15 years Kenya, Ethiopia and Ghana have been amongst the most important success stories of the African continent. The current rash of crises puts that entire narrative in play.

What every vision of sustainable development implies, is a giant transformation in political economy, a combined social and political transformation, centered on capital markets and the tax state. At other times and in other places, this might have been seen as the blueprint for a bourgeois revolution. Such a revolution entails the development of property right and markets, but public finances too are a critical arena of transformation and struggle.

[Tooze (2022) Chartbook #181: Finance and the polycrisis (6): Africa's debt crisis](<https://adamtooze.substack.com/p/finance-and-the-polycrisis-6-africas>)

## 51.13 How Asia Works

*Smith on Studwell*

I like How Asia Works because it tells a coherent story about how countries get rich. Basically, Studwell says it's a three-step process:

1. Land reform: Forcibly buy up tenant farms from landlords and give it to the tenants; this increases farm productivity per unit of land area, gives rural people more to do, provides small farmers with some startup capital should they choose to sell their farms and move to town, and pushes landlords themselves to move to cities and use their talents to start more productive businesses.
2. Export discipline: Push companies to export instead of just selling domestically. Cut off support to companies that try to export and fail. This will push companies to increase productivity in order to compete in world markets, especially by learning foreign technology.
3. Financial control: Push banks to support exporters instead of putting their money into real estate bubbles and the like.

It's very difficult to test whether this model really works, or whether the successful development of countries like South Korea and Taiwan was due to something else. We can look at evidence for pieces of the theory — for example, the idea that small farms tend to be more productive than medium-sized ones seems fairly well-supported in the data, and there's also some evidence that pushing companies to export does cause them to raise their productivity.

But Studwell's model is so complex that it's hard to test all the pieces together. And if you need all the pieces in place — for example, if export promotion doesn't work without the "discipline" of winding up failing firms, or if land reform fails if you don't allow farmers to sell their land, or if export discipline itself doesn't work without land reform — then testing the pieces individually won't give us the answers we want.

Because it's so hard to test, the theory serves less as a tried-and-true policy prescription and more as a launching point for ideas about how to manage a developing economy

**Smith on Krugman, Fujita and Venables' *The Spatial Economy***

We might start to wonder if successful development policies simply determine countries' place in a queue. My longtime readers will also know that in addition to How Asia Works, I love Krugman, Fujita, and Venables' *The Spatial Economy*. And in the final section of that (highly technical) book, the authors

turn what was a humble theory of urbanization into a grand theory of global development. And the upshot of that grand theory is that countries have to basically wait in line to get rich. There's just no way for them to all hop on the rapid industrialization train all at once. Better policy can let you cut to the front of the line, but then the countries you cut in front of are out of luck.

This is a highly stylized, pretty speculative theory, which is even harder to prove than Studwell's. But it kinda-sorta fits the observed pattern in Asia — first Japan and Hong Kong and Singapore grew quickly, then Taiwan and South Korea, then China, now Vietnam and Indonesia. Malaysia and Thailand got a head start on China but then slowed down after the financial crisis of '97, while China accelerated — perhaps because China “cut in line” in front of the Southeast Asian tigers. But now, with China slowing down, perhaps Malaysia is back at the front of the line.

Anyway, this would be a depressing, fatalistic sort of world, where development is a zero-sum-game in the short term. Hopefully it's not true — I'd much rather believe in a Studwellian world where the right smart growth policies can boost lots of countries at once. But we may never know which is right.

Noah Smith on joe Studwell

*Smith on Chang and Studwell*

We don't really know how economic development happens, and to put too much faith in the Chang/Studwell story would be unwise.

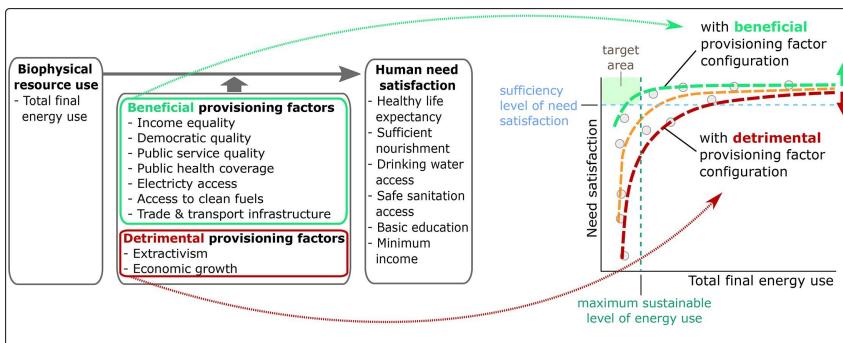
Smith (2021) Jamaica is doing OK Could it do better than OK?

## 51.14 Social Provisioning of Needs

*Vogel Abstract*

Meeting human needs at sustainable levels of energy use is fundamental for avoiding catastrophic climate change and securing the well-being of all people. In the current political-economic regime, no country does so. Here, we assess which socio-economic conditions might enable societies to satisfy human needs at low energy use, to reconcile human well-being with climate mitigation. Using a novel analytical framework alongside a novel multivariate regression-based moderation approach and data for 106 countries, we analyse how the relationship between energy use and six dimensions of human need satisfaction varies with a wide range of socio-economic factors relevant to the provisioning of goods and services ('provisioning factors'). We find that factors such as public service quality, income equality, democracy, and electricity access are associated with higher need satisfaction and lower energy requirements ('beneficial provisioning factors'). Conversely, extractivism and economic growth beyond moderate levels of affluence are associated with lower need satisfaction and greater energy requirements ('detrimental provisioning factors'). Our results suggest that im-

proving beneficial provisioning factors and abandoning detrimental ones could enable countries to provide sufficient need satisfaction at much lower, ecologically sustainable levels of energy use. However, as key pillars of the required changes in provisioning run contrary to the dominant political-economic regime, a broader transformation of the economic system may be required to prioritise, and organise provisioning for, the satisfaction of human needs at low energy use.



#### Vogel Memo

Our analytical framework conceptualises the provisioning of human needs satisfaction in an Ends–Means spectrum. Our framework considers energy use as a means, and need satisfaction as an end, with provisioning factors as intermediaries that moderate the relationship between means and ends. We thus operationalise O’Neill et al.’s (2018) framework by reducing the sphere of biophysical resource use to energy use (for analytical focus), and reducing the sphere of human well-being to human need satisfaction (for analytical coherence). Our operationalisation of human need satisfaction follows Doyal and Gough’s (1991) Theory of Human Need, reflecting a eudaimonic understanding of well-being as enabled by the satisfaction of human needs, which can be evaluated based on objective measures.

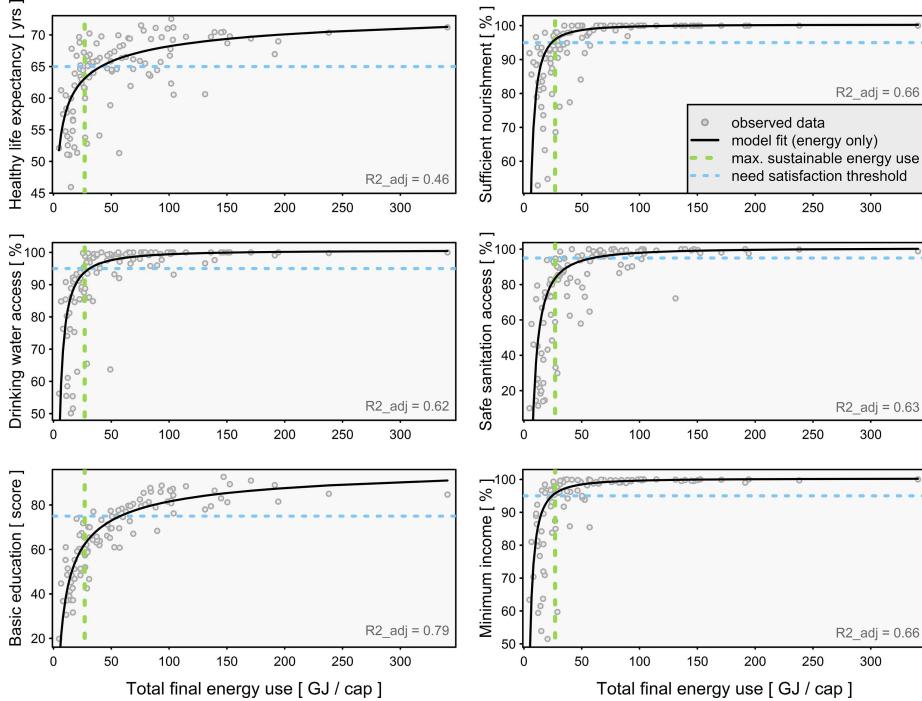
Only 29 countries (28%) in our sample reach sufficient levels in all need satisfaction dimensions assessed here (health, nutrition, drinking water access, safe sanitation, education, minimum income). Each of these need-satisfying countries uses at least double, many even quadruple, the 27 GJ/cap deemed the maximum level of energy use that could be globally rendered sustainable. Our bivariate regression analysis confirms that while energy use is significantly correlated with need satisfaction, high levels of energy use seem neither necessary nor particularly beneficial for need satisfaction. Whereas at low levels of energy use, need satisfaction steeply increases with energy use, need satisfaction improvements with additional energy use quickly diminish at moderate levels of energy use and virtually vanish at high levels of energy use.

High energy use alone is not sufficient to meet human needs. At low to moderate levels of energy use, there is a large spread in observed need satisfaction

outcomes, which cannot be explained by energy use alone.

Need satisfaction outcomes are statistically better explained when a relevant provisioning factor is included as an intermediary that moderates the relationship between need satisfaction and energy use. Across multiple dimensions of human need, the relationship between need satisfaction and energy use varies significantly and systematically with the configuration of certain provisioning factors.

We distinguish three types of provisioning factors. *Beneficial provisioning factors* are associated with socio-ecologically beneficial performance (higher achievements in, and lower energy requirements of, human need satisfaction). Countries with high values of a beneficial provisioning factor tend to achieve higher levels of need satisfaction at a given level of energy use, and tend to reach a particular level of need satisfaction with lower levels of energy use, compared to countries with median values of the provisioning factor. *Detrimental provisioning factors* are associated with socio-ecologically detrimental performance (lower achievement in, and greater energy requirements of, human need satisfaction). Countries with high values of a detrimental provisioning factor tend to exhibit lower need satisfaction at a given level of energy use, and tend to reach a particular level of need satisfaction only at higher levels of energy use, compared to countries with median values of the provisioning factor. Lastly, non-significant provisioning factors do not show significant interactions with the relationship between energy use and need satisfaction.



*Figure: Most human needs are currently not sufficiently met within sustainable levels of energy use. Cross-country relationships between different need satisfaction variables ( $y$ ) and total final energy use ( $x$ ) are shown as black lines, with data shown as grey dots. The green dashed line illustrates the 27 GJ/cap deemed the maximum level of energy use that can globally be rendered sustainable. Thresholds for sufficient need satisfaction are shown by the dotted blue lines.  $R^2_{adj}$  is the coefficient of determination, adjusted for the number of predictors.*

Vogel (2021) Socio-economic conditions for satisfying human needs at low energy use: An international analysis of social provisioning (pdf)

## 51.15 MFD - Maximizing Finance for Development

*Gabor*

The World Bank video explains the process — formally termed the Cascade Approach — for turning everything into an asset class. The Cascade Approach offers a sequence of steps to diagnose why global investors are reluctant to finance development projects: first, identify reforms (regulatory or other policies) that improve the risk-return profile; if reforms are insufficient, then identify subsidies and guarantees to de-risk the project; if reforms, subsidies, and guarantees are still not enough, then opt for a fully public solution. This is a blueprint for promoting shadow markets in which bankable projects can be transformed into liquid securities ready for global institutional investors.

To achieve this, the mfd agenda envisages creating three new markets where they are currently missing: derivative, repo, and securitization markets. Foreign investors will need derivative markets where they can hedge currency risk if they are to hold local currency bonds, and repo markets where they can finance those securities in local currency. Furthermore, the World Bank will promote the development of securitization markets that can transform loans into tradable securities, thus leveraging its own limited resources.

The MFD agenda thus reimagines international development interventions as opportunities for global finance. Through multilateral development banks, global (shadow) banks will be able to influence, if not altogether shape, the terms on which poor countries join the global supply of securities.

Poor countries will have less room to define what is a “bankable” project and will have to accept large infrastructure projects at the expense of smaller projects with more developmental potential. The World Bank will lead the efforts to design the “de-risking”/subsidies measures that will seek to protect global investors from political risk, or the demand risk associated with privatized public services.

As Jim Yong Kim, the World Bank's president put it in 2018: "We have to start by asking routinely whether private capital, rather than government funding or donor aid, can finance a project. If the conditions are not right for private investment, we need to work with our partners to de-risk projects, sectors, and entire countries." But the World Bank should also be asking who pays for de-risking.

The answer is uncomfortable. Poor countries will bear the costs of de-risking, guaranteeing private financial profits. Middle-income countries with a rising middle class will be pressured into adopting the US model of private pensions in order to create local institutional investors. The tendency toward concentration in the asset-management sector (to exploit economies of scale and scope) may result in US-based asset managers absorbing the funds of poor countries' institutional investors, and making allocative decisions on a global level.

This celebration of the opportunities that financial globalization creates for poor countries is strangely quiet on its downsides. This is not for lack of research. Elsewhere, the IMF recognizes that financial globalization has generated a global financial cycle: securities and equity markets across the world, capital flows and credit cycles increasingly move together, all in the shadow of the US dollar. The global financial cycle confronts poor countries with a dilemma, named after the French economist Hélène Rey: there can be either free institutional flows into securities markets or monetary policy independence.

The MFD agenda — development aid is dead, long live private finance! — will make it more difficult for poor countries to choose monetary-policy autonomy and actively manage capital flows. In choosing to surrender to the rhythms of the global financial cycle, poor countries surrender their ability to influence domestic credit conditions, and therefore, autonomous growth strategies.

In this reengineering of financial systems in the Global South, the space for alternative development strategies shrinks further. Public resources have to be dedicated to de-risking "developmental" assets, to identifying "bankable" developmental projects that can easily be transformed into tradable assets, to mopping up the costs of the financial crisis inevitable with this more fragile model, all the while dismantling the financial infrastructure that might support a developmental state (including developmental banking by state-owned banks).

Gabor (2018) Why Shadow Banking Is Bigger Than Ever

## 51.16 Universal Basic Prosperity

*Percy Abstract*

Technical development of economies leads to a conflict between the rising cost of collective needs and motivation. Without increases in welfare efficiency, safety is reduced. Reduced safety causes participation decay, creates a tax trap, results in lost productivity, incentivizes environmental destruction, and leads to

financial instability. Developed societies will have to deliver effective safety efficiently, as a precursor to addressing other problems. Effective satisfaction of safety needs at a cost that does not erode motivation would revive participation, foster reciprocity, boost productivity, license environmental sustainability, and enable financial stability. Mal-adaptation to resource pressures in developed societies has caused macro instability across social, economic, and environmental dimensions. A conflict in developed societies, between social safety and motivated opportunity, has been unfolding for a century, and intractable for the last 40 years. Problems of insecure livelihoods, unstable finance, and environmental destruction are outcomes of failed attempts to resolve that conflict. To resolve those problems and prevent decline, developed societies will need to strengthen reciprocity in their tax systems, so that they can increase the efficacy and efficiency of their welfare systems. This paper sets out to first clarify the roles of safety, opportunity, and participation, and the binding function of reciprocity in their arrangement. It then reviews the path of taxation in developed societies as they progressed from industrial economies to technically advanced economies over the 20th century. It demonstrates how attempts to suppress taxation, while preserving development status, are connected to insecure livelihoods, unstable finance, climate destruction, and weakened reciprocity. The last section proposes options for establishing strong reciprocity by reforming tax, fiscal and welfare arrangements, to align with achieving universal basic prosperity in the 21st century. The National Contributions report, released as an adjunct report, details tax reform proposals for the UK that conform with the proposals in this paper.

*Percy Memo*

### **Finance eroding collective safety**

Many of the features of today's advanced societies are consequences of the strategies adopted by developed countries, most aggressively by the UK and US from the 1980s onwards, in an attempt to reconcile safety costs with revenues from taxation. Instead of increasing the efficiency of their safety provision, advanced societies elected to prioritise opportunity over safety. Responsibilities for safety were pushed back to individuals where possible, and the extent of collective safety curtailed where not. To enrich the economy, production shifted to societies where costs could be externalised; where safety costs were lower, and where unsustainable resources could be exploited as much as possible.

Attempts to live with and justify a safety gap over the last 40 years have failed, and created additional barriers to prosperity. Individuals cannot create their own safety, so the net provision of safety has fallen. That has led to a decline in specialisation and stagnant productivity.

Over the last 40 years, finance has been handed the poisoned chalice of responsibility for social safety. In its attempts to conform to that responsibility, it has contorted its workings so much that it is ineffective in its proper role of allocating capital to productive needs. Instead, it is supporting the destruction

of global commons, while dependent on public guarantees. Finance is now both powerful and crippled, at once the tentpole for the system and the poster child for instability.

### Savings as private safety

When a society transfers responsibility for safety back to its constituent members, their only option, outside unreliable familial ties, is to accumulate assets that offer the possibility of being converted into safety when needed. But: safety represented in financial assets is unreliable.

Transferring responsibility for safety out of the collective and to the individual, and therefore out of taxation, does not reduce the cost, the need, or the conflict between safety and opportunity. Participation is stifled when this inherent contradiction is not openly addressed. The conflict between safety and opportunity becomes embedded as ‘the way it is’, rather than a problem to be solved. One side argues for compensation to include safety, and the other side argues for compensation to mirror opportunity.

*The result of a policy to transfer safety to individuals is a dramatic increase in the volume of savings in the society. The quantity of savings that needs to be stored will tend to push up the value of assets, push down interest rates on debt, and increase demand for risky investments .*

Partly because there are so many savings chasing investments, and partly because of implicit guarantees against losses, the returns on risky investments fall. This leads to even riskier investments becoming part of people’s savings. This process continues until all savings include unrecognised losses. When an event happens that would threaten to force the recognition of losses, because the implications for the loss of safety are so politically significant, governments are forced to rescue the value of the assets. When those rescues use public resources to shore up the value of private assets, the losses are passed, unrecognised, from private liability to a social liability.

Safety is not a transferable quality. The responsibility for safety rests permanently and unavoidably with the only entity capable of providing it: the society. No other entity or individual can replicate the qualities of a society, so it is inevitable that any attempts to transfer safety eventually fail, and the responsibility returns to society. The public guarantee exists, whether it is overtly and consciously acknowledged or not.

The larger the quantity of savings, the cheaper debt becomes as savings compete for it, and the larger it grows.

The reliance on maintaining a specific set of economic conditions to prevent large-scale destruction of financial values, which would destabilise the basis on which societies have proposed to establish social safety, is the textbook definition of instability.

*Growth does not increase resources for safety needs in a technically developed*

society because safety needs rise with growth. To grow, a technically developed society has to become more specialised, not less. As we've established, broader specialisation drives up safety needs as a share of production

The cessation of exploitative practices presents an existential threat to developed societies.

If growth, which has been slowing, eventually stops, the implications for financial values are dire. Assessing the scale of the phantom value incorporated in today's asset prices is not possible because "there is no way to distinguish between real income and profits or bezzle-boosted income and profits" (Bezzle: see below)

Key is: Closing the safety gap using only sustainable resources.

Until societies take responsibility for their own safety, they will underperform while remaining dependent on increasingly unstable financial systems and on exploiting global commons.

A state of universal basic prosperity, in which safety, opportunity, and participation are cherished equally, is achievable with relatively minor adjustments, especially when compared to awaiting the breakdown of the financial system or the environment.

Percy (2021) Universal Basic Prosperity: Sustainable prosperity for the 21st century (pdf)

#### *Bezzle*

*The **bezzle**, a word coined in the 1950s by a Canadian-American economist, is the temporary gap between the perceived value of a portfolio of assets and its long-term economic value. Economies at times systematically create bezzle, unleashing substantial economic consequences that economists have rarely understood or discussed.*

In a famous passage from his book *The Great Crash 1929*, John Kenneth Galbraith introduced the term bezzle, an important concept that should be far better known among economists than it is. The word is derived from embezzlement, which Galbraith called "the most interesting of crimes." As he observed:

Alone among the various forms of larceny [embezzlement] has a time parameter. Weeks, months or years may elapse between the commission of the crime and its discovery. (This is a period, incidentally, when the embezzler has his gain and the man who has been embezzled, oddly enough, feels no loss. There is a net increase in psychic wealth.) At any given time there exists an inventory of undiscovered embezzlement in—or more precisely not in—the country's business and banks.

Certain periods, Galbraith further noted, are conducive to the creation of bezzle, and at particular times this inflated sense of value is more likely to be unleashed, giving it a systematic quality:

This inventory—it should perhaps be called the *bezzle*—amounts at any moment to many millions of dollars. It also varies in size with the business cycle. In good times, people are relaxed, trusting, and money is plentiful. But even though money is plentiful, there are always many people who need more. Under these circumstances, the rate of embezzlement grows, the rate of discovery falls off, and the bezzle increases rapidly. In depression, all this is reversed. Money is watched with a narrow, suspicious eye. The man who handles it is assumed to be dishonest until he proves himself otherwise. Audits are penetrating and meticulous. Commercial morality is enormously improved. The bezzle shrinks.

Galbraith recognized, in other words, that there could be a temporary difference between the actual economic value of a portfolio of assets and its reported market value, especially during periods of irrational exuberance. When that happens, Galbraith pointed out, “there is a net increase in psychic wealth.”

Pettis (2021) Why the Bezzle Matters to the Economy

## 51.17 Micro-Regions

*McKinsey*

Granular dataset offers a dramatically different view of human development around the world, uncovering the true depth and breadth of progress in places previously obscured by country averages.

**Microregions that account for half of the GDP generated globally from 2000 to 2019**



Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by McKinsey & Company.  
Regions ranked in descending order by level increase in GDP per km<sup>2</sup> (GDP per km<sup>2</sup> in 2019 minus GDP per km<sup>2</sup> in 2000).  
Growth is defined as the net increase in GDP produced by a given region from 2000 to 2019.

McKinsey & Company

McKinsey (2022) Pixels make the picture: A guided tour through the granular

world

## 51.18 The New Washington Consensus

*Michael Roberts*

Last month, the US National Security Advisor, Jake Sullivan, outlined the international economic policy of the US administration. This was a pivotal speech, because Sullivan explained what is called the New Washington Consensus on US foreign policy.

The original Washington Consensus was a set of ten economic policy prescriptions considered to constitute the “standard” reform package promoted for crisis-wracked developing countries by Washington, D.C.-based institutions such as the IMF, World Bank and the US Treasury. The term was first used in 1989 by English economist John Williamson. The prescriptions encompassed free-market promoting policies such as trade and finance ‘liberalisation’ and privatisation of state assets. They also entailed fiscal and monetary policies intended to minimise fiscal deficits and public spending. It was the neoclassical policy model applied to the world and imposed on poor countries by US imperialism and its allied institutions. The key was ‘free trade’ without tariffs and other barriers, free flow of capital and minimal regulation – a model that specifically benefited the hegemonic position of the US.

But things have changed since the 1990s – in particular, the rise of China as a rival economic power globally; and the failure of the neoliberal, neoclassical international economic model to deliver economic growth and reduce inequality among nations and within nations. Particularly since the end of the Great Recession in 2009 and the Long Depression of the 2010s, the US and other leading advanced capitalist economies have been stuttering. ‘Globalisation’, based on fast rising trade and capital flows, has stagnated and even reversed. Global warming has increased the risk of environmental and economic catastrophe. The threat to the hegemony of the US dollar has grown. A new ‘consensus’ was needed.

The rise of China with a government and economy not bowing to the wishes of the US is a red flag for US strategists. The World Bank figures below speak for themselves. The US share of global GDP rose from 25% to 30% between 1980 and 2000, but in the first two decades of the 21st century it fell back to below 25%. In those two decades, China’s share rose from under 4% to over 17% – ie quadrupling. The share for other G7 countries—Japan, Italy, UK, Germany, France, Canada—fell sharply, while developing countries (excluding China) have stagnated as a share of global GDP, their share changing with commodity prices and debt crises.

The New Washington Consensus aims to sustain the hegemony of US capital and its junior allies with a new approach. Sullivan: “In the face of compounding

crises—economic stagnation, political polarization, and the climate emergency—a new reconstruction agenda is required.” The US must sustain its hegemony, said Sullivan, but “hegemony, however, is not the ability to prevail—that’s dominance—but the willingness of others to follow (under constraint), and the capacity to set agendas.” In other words, the US will set the new agenda and its junior partners will follow – an alliance of the willing. Those who don’t follow can face the consequences.

But what is this new consensus? Free trade and capital flows and no government intervention is to be replaced with an ‘industrial strategy’ where governments intervene to subsidise and tax capitalist companies so that national objectives are met. There will be more trade and capital controls, more public investment and more taxation of the rich. Underneath these themes is that, in 2020s and beyond, it will be every nation for itself – no global pacts, but regional and bilateral agreements; no free movement, but nationally controlled capital and labour. And around that, new military alliances to impose this new consensus.

This change is not new in the history of capitalism. Whenever a country becomes dominant economically on an international scale, it wants free trade and free markets for its goods and services; but when it starts to lose its relative position, it wants to change to more protectionist and nationalist solutions.

Within the New Washington Consensus is an attempt by mainstream economics to introduce what is being called ‘modern supply-side economics’ (MSSE). ‘Supply-side economics’ was a neoclassical approach put up as opposition to Keynesian economics, which argued that all that was needed for growth was the macroeconomic fiscal and monetary measures to ensure sufficient ‘aggregate demand’ in an economy and all would be well. The supply-siders disliked the implication that governments should intervene in the economy, arguing that macro-management would not work but merely ‘distort’ market forces. In this they were right, as the 1970s onwards experience showed.

The supply-side alternative was to concentrate on boosting productivity and trade, ie supply, not demand. However, the supply-siders were totally opposed to government intervention in supply as well. The market, corporations and banks could do the job of sustaining economic growth and real incomes, if left alone. That too has proved false.

So now, within the New Washington Consensus, we have ‘modern supply-side economics’. This was outlined by the current US Treasury Secretary and former Federal Reserve chair, Janet Yellen in a speech to the Stanford Institute for Economic Policy Research. Yellen is the ultimate New Keynesian, arguing for both aggregate demand policies and supply-side measures.

Yellen explained: “the term “modern supply side economics” describes the Biden Administration’s economic growth strategy, and I’ll contrast it with Keynesian and traditional supply-side approaches.” She continued: “What we are really comparing our new approach against is traditional “supply side economics,” which also seeks to expand the economy’s potential output, but through ag-

gressive deregulation paired with tax cuts designed to promote private capital investment.”

So what’s different? “Modern supply side economics, in contrast, prioritizes labor supply, human capital, public infrastructure, R&D, and investments in a sustainable environment. These focus areas are all aimed at increasing economic growth and addressing longer-term structural problems, particularly inequality”

Yellen dismisses the old approach: “Our new approach is far more promising than the old supply side economics, which I see as having been a failed strategy for increasing growth. Significant tax cuts on capital have not achieved their promised gains. And deregulation has a similarly poor track record in general and with respect to environmental policies—especially so with respect to curbing CO<sub>2</sub> emissions.” Indeed.

And Yellen notes what we have discussed on this blog many times. “Over the last decade, U.S. labor productivity growth averaged a mere 1.1 percent—roughly half that during the previous fifty years. This has contributed to slow growth in wages and compensation, with especially slow historical gains for workers at the bottom of the wage distribution.”

Yellen directs her audience of mainstream economists to the nature of modern supply side economics. “A country’s long-term growth potential depends on the size of its labor force, the productivity of its workers, the renewability of its resources, and the stability of its political systems. Modern supply side economics seeks to spur economic growth by both boosting labor supply and raising productivity, while reducing inequality and environmental damage. Essentially, we aren’t just focused on achieving a high top-line growth number that is unsustainable—we are instead aiming for growth that is inclusive and green.” So MSSE-side economics aims to solve the fault-lines in capitalism in the 21st century.

How is this to be done? Basically, by government subsidies to industry, not by owning and controlling key supply-side sectors. As she put it: “the Biden Administration’s economic strategy embraces, rather than rejects, collaboration with the private sector through a combination of improved market-based incentives and direct spending based on empirically proven strategies. For example, a package of incentives and rebates for clean energy, electric vehicles, and decarbonization will incentivize companies to make these critical investments.” And by taxing corporations both nationally and through international agreements to stop tax-haven avoidance and other corporate tax avoidance tricks.

In my view, ‘incentives’ and ‘tax regulations’ will not deliver supply-side success any more than the neoclassical SSE version, because the existing structure of capitalist production and investment will remain broadly untouched. Modern supply-side economics looks to private investment to solve economic problems with government to ‘steer’ such investment in the right direction. But the existing structure depends on the profitability of capital. Indeed, taxing corporations

and government regulation is more likely to lower profitability more than any incentives and government subsidies will raise it.

Modern supply economics and the New Washington Consensus combine both domestic and international economic policy for the major capitalist economies in an alliance of the willing. But this new economic model offers nothing to those countries facing rising debt levels and servicing costs that are driving many into default and depression.

Debt cancellation is not on the agenda of the New Washington Consensus. Moreover, as Adam Tooze put it recently that “Yellen sought to demarcate boundaries for healthy competition and co-operation, but left no doubt that national security trumps every other consideration in Washington today.” Modern supply-side economics and the New Washington Consensus are models, not for better economies and environment for the world, but for a new global strategy to sustain US capitalism at home and US imperialism abroad.

Roberts (2023) Modern Supply Economics and The New Washington Consensus

## 51.19 Rostow

*Benjamin Selwyn on Rostow*

**Economist Walt Rostow advanced an influential development theory while working as an adviser to the Kennedy and Johnson administrations. Rostow’s advocacy of murderous violence in Vietnam flowed directly from his theory of how to promote capitalist growth.**

Commonsense notions of development associate it with capitalist modernization. Such notions assume that cumulative economic growth enables poor countries to become more like rich ones.

To facilitate such growth, policymakers, international institutions, and many academics urge poor countries and their populations to adopt modern ways of thought and action, dispensing with familial or communal loyalties and embracing the benefits of capitalist markets and impersonal bureaucracies.

Those who adopt this perspective insist that such modernization will be beneficial for developing societies in the long run, even though there will always be those who lose out and seek to resist the process. However, since the benefits of economic growth and cultural change outweigh the losses, it is legitimate to forcefully suppress such opposition.

No thinker was more influential in theorizing and popularizing such notions of development underpinned by violent coercion than Walt Whitman Rostow (1916–2003).

A core element of Walt Rostow’s theory involved the advocacy of mass violence to eliminate opposition to his vision of development.

It was in his advisory positions that Rostow popularized his notion of development and went on to justify murderous US military escalation in Vietnam. Most academic treatments of Rostow disassociate these two moments of his career, either by ignoring his role in the Vietnam War or by portraying it as incidental to his theoretical views. In reality, a core element of his theory involved the advocacy of mass violence to eliminate opposition to his vision of development.

His book *The Stages of Economic Growth: A Non-Communist Manifesto*, first published in 1960, caught the imagination of those who favored the capitalist development of poor countries. Rostow's skill was to conceptually associate development with capitalist modernization. From this starting point, any threat to capitalist modernization could be seen as a threat to development as such.

Most of the discussion about Rostow's development theory overlooks the fact that it was predicated upon mass violence. For Rostow, pro-capitalist elites in poor countries should ally with the United States to physically eliminate threats to capitalist modernization. His role in escalating the US war on Vietnam flowed logically from his development theory. As historian David Milne put it: "Rostow was not the sole reason why America bombed North Vietnam, but his contribution was of fundamental importance."

In *The Stages of Economic Growth*, Rostow sought to answer two overlapping questions. Firstly, how could newly independent states in the emerging post-colonial context transform their economies to become like the United States, the most developed country at that time? Secondly, how could newly established postcolonial elites eliminate the threat posed by Communist movements to capitalist modernization? Rostow insisted that all countries could pass through five stages of economic growth, culminating in a US-style age of high mass-consumption." In order to do so, they would need to adopt the correct, pro-capitalist cultural orientation as well as an anti-communist political-economic commitment, under military guidance from national elites in concert with the United States.

As Rostow put it:

It is possible to identify all societies, in their economic dimensions, as lying within one of five categories: the traditional society, the preconditions for take-off, the take-off, the drive to maturity, and the age of high mass-consumption.

For Rostow, economic change was "the consequence of political and social as well as narrowly economic forces." It was the combination of economic growth with the transformation of ideas and norms — from "traditional" to "modern" — that would propel countries through these stages. Crucially, he argued that the modernizing impulse tended to come from outside traditional society — in his own words, "not endogenously but from some external intrusion by more advanced societies."

This emphasis on the external impulse to modernize enabled Rostow to identify

the United States as the key ally for the elites of developing nations in two important ways. Firstly, it would assist them in their attempts to attract foreign investment and technological transfers and integrate their economies into global markets. Secondly, the world's hegemonic state would forge necessary alliances with the new national elites as they sought to eliminate the Communist menace to capitalist modernization. "According to Rostow, communism was a 'disease of the transition,' with communists playing the role of 'scavengers' in the modernization process." Coalitions of postcolonial elites and the US military should be "prepared to deal with the enemies" of capitalist modernization.

The German-born sociologist Andre Gunder Frank was a contemporary of Rostow's who wrote about development from a radically different perspective. He offered a scathing summary of Rostow's intellectual agenda and his work for the Kennedy and Johnson administrations:

As to the efficacy of the policy recommended by Rostow, it speaks for itself: no country, once underdeveloped, ever managed to develop by Rostow's stages. Is that why Rostow is now trying to help the people of Vietnam, the Congo, the Dominican Republic, and other underdeveloped countries to overcome the empirical, theoretical, and policy shortcomings of his manifestly non-communist intellectual aid to economic development and cultural change by bombs, napalm, chemical and biological weapons, and military occupation?

Rostow advocated mass killing to promote American-style capitalism. However, the way that universities have taught and disseminated his work has often concealed this reality. As one of the most influential theorists of capitalist development, Rostow is an outstanding example of how ruthless violence underpins capitalist development, both in theory and practice.

Selwyn (2023) Walt Rostow's development theory shows that capitalism relies on brutal violence

# 52

## Economic Measurements

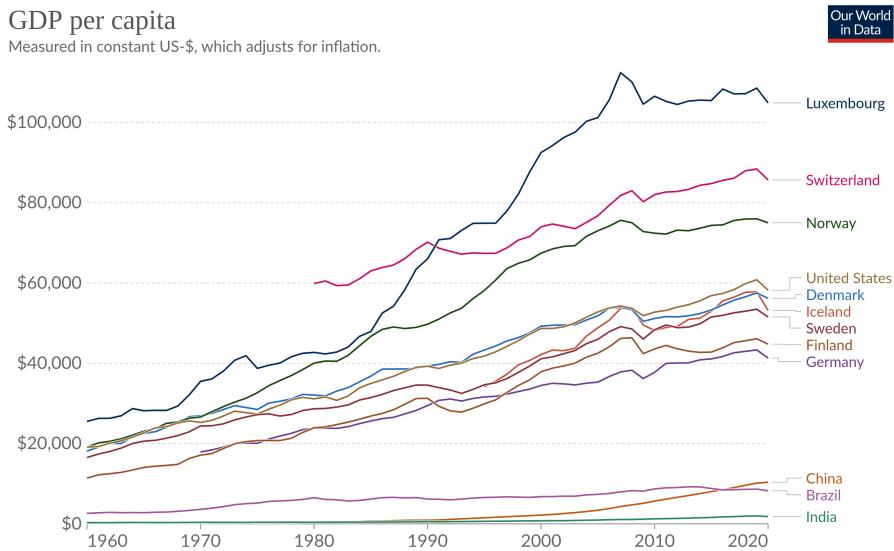


Fig: Todays policy implies every country's goal is to become a Luxembourg!



GDP is insufficient as a measure to capture what is essential about the economy.

All of GDP is not created equal. Some output in the economy is more important, more fundamental to how the economy functions than other output.

Simply put, Russia makes more of the stuff that is used to make other stuff. Think about this with respect to energy. Russia produces around 40 per cent of Europe's natural gas, a key commodity used in electricity and heat generation. Can a service sector business remain open without access to this energy? Obviously not. A high street retailer, for example, would not be able to function without electricity. Now put the shoe on the other foot: can an energy provider continue to produce energy if all the high street retailers closed their doors? Of course. Pilkington (2022) The West's self-defeating sanctions

## 52.1 Our BESDA economy

### 52.1.1 GDP and EBITDA

While the deficiencies of GDP as a measure have been well known, less emphasized has been the fact that every single financial statement with which we build GDP exhibits the same deficiency of being a limited barometer of value. Ironically, the main users of these financial statements, in the business and financial sectors, are wise to the incompleteness of certain metrics within financial statements, but act in a way that indicates they are oblivious – or perhaps just willing to overlook – the incompleteness of financial statements writ large. To explain,

consider that GDP exhibits clear parallels with the profit metric of EBITDA (earnings before interest, taxes, depreciation and amortization). Though there are technical differences of formulation, GDP and EBITDA both represent partial measures of “wealth creation” disembedded from a fuller conception of value. However, while financiers are wise to the deficiencies of EBITDA, they have not acknowledged that the same pattern of incompleteness reappears at the level of the overall financial statement – and then at the yet higher level of GDP. With the “DA”, EBITDA conveys the profitability of a company as if it would never again have to spend a dollar on keeping its factories, equipment, property and software in good repair and up to date. In other words, EBITDA excludes the cost of maintaining in good condition the whole infrastructure upon which a company depends! It is the homeowner’s fantasy of how wealthy they would be if they never had to fix or repair anything in their house ever again.

EBITDA came to prominence during the leveraged buyout (LBO) boom of the 1980s. As Moody’s recounted in 2000: “LBO sponsors and bankers have promoted the use of EBITDA for its obvious image benefits. EBITDA creates the appearance of stronger interest coverage and lower financial leverage.” As a general rule, beware profit metrics promising image benefits. Forbes was blunter still: “EBITDA is essentially a tool that shows what a company

would look like if it wasn’t actually that company.” EBITDA is now clearly recognized as a “wool-over-your-eyes” measure, such that accounting authorities deny it official status. It is a “non-GAAP” metric – not a Generally Accepted Accounting Principle. Its ongoing ubiquity – besides being trivially easy to calculate – is because it masks the fact that a business may be overleveraged – that it may have borrowed against its future more than it can ever repay.

GDP is a “wool-over-all-of-our-eyes” metric for the same reason that it excludes the full cost of maintaining in good condition the social and ecological infrastructure upon which the whole economy depends. In steering society by GDP, we are effectively managing the planet on an EBITDA basis. GDP is not just a benignly incomplete measure of wealth, it is the tool with which we are conning ourselves.

Businesspeople – and homeowners - know how these stories end. Eventually the under-investment in infrastructure catches up with you. Of course, by then, you hope to have passed the asset – and the problem – on to someone else. This is feasible, if not best form, where the asset is not the whole planet. The deception works for as long as you can get away with the under-investment and the factories and software hold up. Buffet’s partner, Charlie Munger, is characteristically more forthright on the topic: “I think that, every time you see the phrase ‘EBITDA earnings’, you should substitute the phrase ‘bullshit earnings.’” By analogy, GDP is “bullshit wealth”. That we have been able to enjoy the comforts of its deception without mishap for so long is simply because it was introduced against higher levels of social and ecological infrastructure that we have not yet completely run down. The under-investment is only now becoming apparent.

### 52.1.2 A BESDA economy

Long-term or ESG (environmental, social and governance) investors may protest that they understand all this but that their own investment process insulates them from such blinkered thinking. (“We don’t use EBITDA”). Yet the point is that the whole financial system is operating on a “before ecological and social depreciation and amortization” basis – call it BESDA, perhaps. So, every single financial metric on the Bloomberg screen is a BESDA metric – profits- BESDA, earnings per share-BESDA, return on capital-BESDA, return on equity-BESDA, etc. The millions of financial numbers processed daily by our increasingly automated markets – which, in turn, steer our economy and drag our culture along behind, ripping up nature in its wake – are all BESDA numbers. It might not only be EBITDA with which we are conning ourselves, but every financial number in the book. They all represent different degrees of disembedded value, some of which we have unmasked, some of which we have not. We have a sustainability challenge because the entire financial system repeats the problems of the discredited EBITDA metric at the level of the whole economy. This is the invisible conceptual cage we have wrapped around our decision-making and from within which the ESG movement is frantically trying to make a difference. Alas, given the incompleteness of our markets, the ESG movement increasingly resembles a hopeful grafting of good intentions onto an unchallenged accounting reality that remains the largely intact source of our problems. This is the root cause of our collective “greenish” in which we are hoping that well-intended efforts to make the world more sustainable are much closer to achieving the necessary change than they really are

#### TRUECOST

Trucost, the sustainable consulting firm, estimated in 2013 that large swathes of primary industry – including agriculture and energy companies – would simply not be profitable if they had to pay the full costs of their 14 environmental damage. In 2011, the American Economic Review, published similar work showing that the solid waste combustion, sewage treatment and oil- and coal-fired power production industries generated air pollution damages – air pollution alone – that were greater than 15 than their economic value added (EVA). On this fuller accounting perspective, these are effectively EVS – economic value subtracted – industries.

Duncan Austin: Pigou and the dropped stitch of economics RWER95 (pdf)

## 52.2 GDP

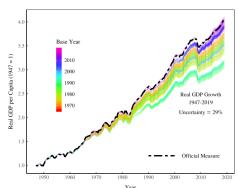
For measurement to be accurate, the units must be stable. Unlike natural scientists, however, economists are not in the business of carefully defining units using universal physical constants. Economists instead use prices, a social construct, as their unit of analysis.

The problem is that prices are unstable units of measurement. Relative prices between commodities vary wildly over time. This instability means that prices fail the only requirement of a good unit — to be uniform over time.

Instead of reporting the severe uncertainty in ‘real’ GDP, governments report a single official value. This value hides a myriad of subjective decisions that are used to ‘correct’ for unstable prices.

Instead of wasting time with a useless quantity that reveals nothing profound about the world, we should seek new pluralistic methods for understanding aggregate economic activity.

Price instability translates into uncertainty in the growth of ‘real GDP’. While the US government reports only one official measure of ‘real’ GDP, it quietly maintains a database of ‘vintage’ GDP estimates. These are estimates calculated with different base years. Using this ‘vintage’ data, we can quantify the uncertainty in the growth of ‘real’ GDP caused by unstable prices.



Notice that the official measure of US ‘real’ GDP is at the upper end of the range of uncertainty. We doubt this is a coincidence. In fact, it is common for national governments to boost GDP growth by changing the base year. India recently showed a small increase in GDP growth by choosing a new base year. While this boost was small, it can sometimes be spectacularly large. Nigeria, for instance, recently changed its base year from 1990 to 2010. As a result, real GDP doubled, making Nigeria the largest economy in Africa. Base-year changes have led to similar boosts to GDP growth in Ghana, Kenya, Tanzania, Uganda and Zambia.

The NIPA Handbook, the US Bureau of Economic Analysis notes:

The fundamental problem confronting the efforts to adjust GDP and other aggregates for inflation is that there is not a single inflation number but rather a wide spectrum of goods and services with prices that are changing relative to one another over time. The index numbers for the individual components can be combined statistically to form an aggregate index, but the method of aggregation that is used affects the movements of the resulting index.

### Ambiguous

The growth of ‘real’ GDP is fundamentally uncertain. Or perhaps a better word is ambiguous.

Mainstream economists reach a very different conclusion. Their response is to simultaneously admit that calculating ‘real’ GDP requires arbitrary choices, but then to report a single value as though it was the ‘truth’.

### **ChainWeighting**

The US government currently calculates ‘real’ GDP by adjusting nominal GDP with an aggregate index formed through the multiplication of successive Fisher indexes in adjacent time periods. In popular parlance, this method is called ‘chain-weighting’. Rather than choose a single base year in which to fix prices, chain-weighting uses a technique that resembles a rolling base year. The method is meant to simulate the effect of changing prices and spending patterns over time. This method was adopted in the mid-1990s. The official justification was that structural changes in the US economy, especially rapidly falling computer prices, compelled the government to end the fixed base year method.

GDP treats everything with a price as contributing positively to society. Again, this comes down to the assumption that all prices reveal utility. If machine guns sell for the same price as MRI machines, neoclassical theory tells us that both contribute the same utility to society.

In response to such absurdities, ecological economists have developed alternative indicators that subtract the value of social ‘bads’ from the value of social ‘goods’. While well-motivated, this approach still assumes that we can aggregate the ‘real’ value of ‘goods’ and ‘bads’. But because prices are unstable, this aggregate is still ill-defined.

‘Real’ GDP is a regressive measure of social progress. Not only is it ill-defined and based on flawed premises, it equates market value with social welfare. This justifies the income of the powerful.

### **Alternatives**

The key, we believe, is to separate the study of economic distribution from the study of economic scale. The former is the appropriate domain of prices. The latter is best measured using biophysical units.

#### *Prices: Distribution*

We believe it is important to distinguish between economic *distribution* and economic *scale*. ‘Real’ GDP assumes that prices can be used to measure economic scale. In contrast, we assume that prices do nothing of the sort. Prices are a tool for distributing resources. The proper place for prices, then, is for understanding economic distribution.

#### *Scale: Energy*

To measure the scale of the economy, we think it is appropriate to focus on energy. Physicist Eric Chaisson argues that energy is the universal currency of science. By measuring economic scale using energy, we put economics in line with the rest of science. And if we are concerned with sustainability, there is no

better starting point than to focus on energy use. After all, the profligate use of fossil fuels under a capitalist economy is the primary driver of climate change.

Energy has many forms as it flows through society. One possibility is to focus on primary energy consumption, and see how this relates to changes in social structure. Another possibility is to measure ‘useful work’ — the consumption of end-use energy. Still another possibility is to measure the aggregate flow rate, which is a measure of all annual energy conversions in an economic system.

The study of economic growth, which should focus on biophysical flows.

Continuing to use ‘real’ GDP as a measure of social progress implicitly accepts a theory (neoclassical economics) that has long been used as an ideological justification for capitalist power.

Fix GDP

### 52.2.1 GDP Revisions

*Assa Abstract*

What are the implications of changes in measurement standards of GDP for global convergence debates? What are the political economy implications? To answer the former question, we examine the changes in national accounting standards from the early 1990s. Revisions to the System of National Accounts (SNA) – the international standard for constructing GDP – include several major changes to how production is measured, including the reclassification of financial intermediation services, R&D, and weapons systems as productive activities – all areas in which countries in the West have had an advantage in recent decades. In addition, there has been an increase in the proportion of imputations in the 1993 and 2008 revisions, which privileges the economic structures of the West. Overall, we find that these changes have had the effect of boosting the GDP of the West relative to the rest of the world and thus to an underestimation of global convergence compared to previous measures of GDP. To answer the second question, the paper unpacks the political economy implications of national accounting standards favouring Western economies along several axes, including the impacts on voting shares in international institutions, domestic policy incentives and epistemological debates about sustainable development.

Assa and Kvangraven (2021) Measurement for Convergence Debates and the Political Economy of Development

*Assa Abstract*

Over the last half century, a large literature has developed on both the nature and the drivers of uneven development. While different methodologies and theoretical approaches to the issue of convergence abound, the use of GDP growth as a measure of economic growth has, remarkably, gone unquestioned. This paper reviews the convergence debates to date, and examines what the changes to the System of National Accounts (SNA) - the international standard

for constructing macroeconomic indicators such as GDP - imply for assessing economic convergence. The 1993 and 2008 revisions to the SNA include several major changes to how production is measured - including the reclassification of financial intermediation services, R&D, weapons systems and owner-occupied dwellings as productive activities - all areas in which developed countries have had an advantage in recent decades. We argue that these changes to the production boundary constitute a form of 'kicking away the ladder,' i.e. redefining the yardstick of development to fit the new strengths of developed economies. We analyze data series for a range of countries concurrently available under the 1968 SNA, 1993 SNA and 2008 SNA standards. The earlier measure shows a larger and faster convergence of most countries in 'the Rest' with those of 'the West'. Going a step further, we build on Basu and Foley's (2013) Measured Value-Added concept as a proxy of 'Core GDP'. This indicator omits any sector for which value-added is imputed based on net incomes, in the absence of an independent measure of output. This allows us to examine more countries and a longer, more consistent time series than concurrent SNA data, but the conclusions are the same - developing countries have caught up more in Core-GDP terms than the contemporary imputation-heavy measure of GDP would suggest. These findings suggest that the current measure of GDP has become decoupled from core employment-generating activities, and is therefore a misleading measure of growth in an economy. Furthermore, it is inconsistent with the understanding the Sustainable Development Goals of inclusive and sustainable growth. Finally, the paper considers the political economy implications of the changes in GDP methodology, such as the justification of voting shares in international financial institutions, epistemological consequences, and domestic political economy considerations.

Assa and Kvangraven (2018) Imputing Away the Ladder: Implications of Changes in National Accounting Standards for Assessing Inter-country Inequalities (pdf)

#### *Kvangraven*

Economic growth was first measured by governments in the 17th century. In the modern era, the United Nations took over responsibility for measuring output in 1953, and was joined in 1993 by the World Bank, IMF, OECD and EU. They all feed into decisions about the international measurement rules, which are taken by the UN inter-secretariat working group on national accounts (ISWGNA), and all countries are meant to comply. This reflects a gradual move away from national governments controlling the statistics to financial institutions having a larger say.

Both in 1993 and again in 2008, the so-called "production boundary", which determines what is included in GDP, was broadened by the ISWGNA to include many activities that were hitherto excluded or at most seen as intermediate inputs.

Thanks to these reforms, financial intermediation, research and development,

and the production of weapons all began to be counted within GDP data across the world. For example, in 1993 the income banks earned on interest from lending to households was included in GDP for the first time. And then in 2008, even bank money that had nothing to do with intermediation services began to be included.

Since western countries such as the UK and US have specialised in these activities in recent decades – the US is first in weapons and second in financial services and R&D, while the UK leads on financial services – the changes have disproportionately benefited their GDP numbers.

Kvangraven in The Conversation

### 52.2.2 GDP Alternatives

*Coyle*

How should we measure economic success? Criticisms of conventional indicators, particularly gross domestic product, have abounded for years, if not decades. Environmentalists have long pointed out that GDP omits the depletion of natural assets, as well as negative externalities such as global warming. And its failure to capture unpaid but undoubtedly valuable work in the home is another glaring omission. But better alternatives may soon be at hand.

In 2009, a commission led by Joseph Stiglitz, Amartya Sen, and Jean-Paul Fitoussi spurred efforts to find alternative ways to gauge economic progress by recommending a “dashboard” of indicators. Since then, economists and statisticians, working alongside natural scientists, have put considerable effort into developing rigorous wealth-based prosperity metrics, particularly concerning natural assets. The core idea is to create a comprehensive national balance sheet to demonstrate that economic progress today is illusory when it comes at the expense of future living standards.

In an important milestone in March of this year, the United Nations approved a statistical standard relating to the services that nature provides to the economy. That followed the UK Treasury’s publication of a review by the University of Cambridge’s Partha Dasgupta setting out how to integrate nature in general, and biodiversity in particular, into economic analysis. With the consequences of climate change starting to become all too apparent, any meaningful concept of economic success in the future will surely include sustainability.

The next steps in this statistical endeavor will be to incorporate measures of social capital, reflecting the ability of communities or countries to act collectively, and to extend measurement of the household sector. The COVID-19 pandemic has highlighted how crucial this unpaid work is to a country’s economic health. For example, the US Bureau of Labor Statistics intends to develop a more comprehensive concept of living standards that includes the value of such activity.

But many advocate thinking about economic success and failure in terms of

well-being, a broader and fuzzier concept. The idea that policy decisions should focus on what ultimately matters in people's lives is intuitively appealing. And a number of governments, from New Zealand to Scotland, have recently adopted explicit well-being policy frameworks.

Public policy based on well-being thus still lacks a theoretical underpinning. One recent UK study, co-produced by researchers and people experiencing poverty, found that while basic material needs including health were important to well-being, autonomy and a sense of purpose mattered just as much. The top-down aggregate indicators devised by social scientists and statisticians cannot capture such findings.

Keep in mind that the concept of well-being is much richer than most other economic indicators. Importantly, the comprehensive wealth and well-being approaches outlined here are complementary: the assets measured by the former provide the means to achieve the latter. Indeed, New Zealand's policy framework makes this link explicit. What is exciting about these alternative approaches to assessing and measuring the economic success of a community or country is the amount of practical progress already made in defining concepts, creating metrics, and building expert consensus about the direction policymaking should take. Ditching GDP as the main gauge of prosperity was always impossible in the absence of broad agreement about what the alternative might be. And it will take many more years of work at the statistical coalface to develop a framework as sophisticated and well-embedded as GDP and related economic indicators. But the direction of change is clear, and the impetus to bring it about is powerful.

Coyle (2021) GDP's Days Are Numbered

### 52.3 SNA

*Milanovic*

How should GDP account for the use of exhaustible resources, or should it include net income from financial services and insurance?

(For a nice book on GDP measurement, see Diane Coyle's *GDP: A Brief, but Affectionate History*; for a tough review of the book, see Moshe Syrquin's long essay.)

When the System of National accounts (SNA) and GDP in its more or less current version were defined, Simon Kuznets thought that transportation services should be considered an intermediate good and not included in value added. This was not accepted even if Kuznets' logic was impeccable: if you use bus, metro, or your own car to go to work, depreciation of the car and the expense of gas etc. have to be deducted from your wage. Travelling to work is a means, not a goal. Kuznets' argument reappears rather unexpectedly today with the "explosion" of online work during and after the pandemic. Online work reduces

the travel cost but since we have decided that transportation to and from workplace should be counted as value added, less of commuting traffic lowers GDP. We thus have a paradoxical situation that what is clearly an improvement in the welfare of workers is counted as a reduction of GDP.

### SNA vs SMB

There was a very important difference between the System of National Accounts and the System of Material Balances used in centrally-planned economies. The difference was due to what was considered to be the goal of economic activity. SMB excludes all activities that result in non-material output: government administration, education and health services. Gross output in centrally-planned economies was thus systematically lower than when expressed in the SNA. The difference was estimated at between 10 and 15 percent, and in some cases even 20 percent.

On the other hand, given that productivity growth is slower in education and health than in the production of material goods, underestimation of gross output in socialist countries was combined with an overestimation of the rate of growth. We thus had, judged from the standpoint of SNA, two opposite biases in centrally-planned economies: lower level of output, but its higher rate of growth.

The SMB claimed to have been based on Marx's view of productive labor, but this is not obvious because we do not know what exactly was seen by Marx to be the goal of economic activity in socialism. Marx believed that "productivity" (and thus the goal) is a historic concept, defined from a systemic point of view. In a capitalist system, productive is the worker who produces surplus value for the capitalist. This is the origin of Marx's famous example of the opera singer who is a productive worker if he is hired by a capitalist, but not when he works for himself. Productivity of labor is not, according to Marx, deducted from labor being embodied in goods as opposed to services (as held by the SMB) but from labor's contribution to what is the goal of economic activity in a given system. Under capitalism, it is profit. So if the opera singer generates profit for the impresario who hired him, he is a productive worker. Similarly, if the goal was to provide net income for the elite as Physiocrats thought, and if the only source from which this can be extracted is agriculture, the correctly defined net product is indeed as they defined it.

What we call value added or useful output in one system is not necessarily the same as what we call useful output in the other. It depends on what the ruling ideology tells us is the reason why we engage in economic activity at all.

Milanovic (2023) Net economic output in history: Why we work? Ideology behind economic accounting



# 53

## Economic Modelling

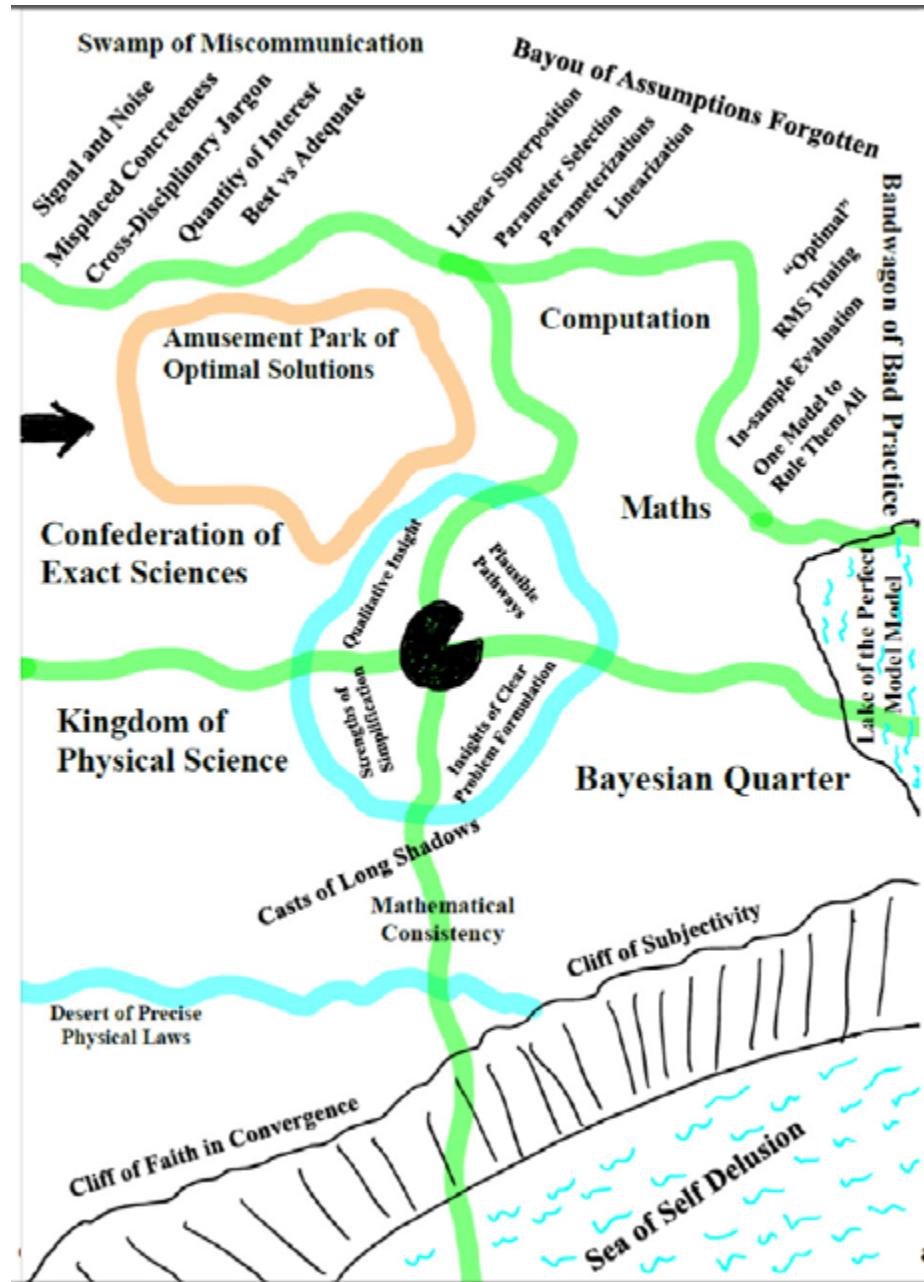
All models are wrong but some are useful.

It takes a model to beat a model.

### 53.1 Model-land

*Thompson Abstract*

Both mathematical modelling and simulation methods in general have contributed greatly to understanding, insight and forecasting in many fields including macroeconomics. Nevertheless, we must remain careful to distinguish model-land and model-land quantities from the real world. Decisions taken in the real world are more robust when informed by estimation of real-world quantities with transparent uncertainty quantification, than when based on “optimal” model-land quantities obtained from simulations of imperfect models optimized, perhaps optimal, in model-land. The authors present a short guide to some of the temptations and pitfalls of model-land, some directions towards the exit, and two ways to escape. Their aim is to improve decision support by providing relevant, adequate information regarding the real-world target of interest, or making it clear why today’s model models are not up to that task for the particular target of interest.



Thompson (2019) Escape from Model-land (pdf)

## 53.2 End of Theory

*Bookstaber*

The End of Theory: Financial Crises, the Failure of Economics, and the Sweep of Human Interaction

Our economy may have recovered from the Great Recession—but not our economics. In The End of Theory, Richard Bookstaber discusses why the human condition and the radical uncertainty of our world renders the standard economic model—and the theory behind it—useless for dealing with financial crises. What model should replace it? None. At least not any version we've been using for the past two hundred years. Instead, Bookstaber argues for a new approach called agent-based economics, one that takes as a starting point the fact that we are humans, not the optimizing automatons that standard economics assumes we are.

Bookstaber's groundbreaking paradigm promises to do a far better job at preventing crises and managing those that break out. As he explains, our varied memories and imaginations color our economic behavior in unexpected hues. Agent-based modeling embraces these nuances by avoiding the mechanistic, unrealistic structure of our current economic approach. Bookstaber tackles issues such as radical uncertainty, when circumstances take place beyond our anticipation, and emergence, when innocent, everyday interactions combine to create sudden chaos. Starting with the realization that future crises cannot be predicted by the past, he proposes an approach that recognizes the human narrative while addressing market realities.

Sweeping aside the historic failure of twentieth-century economics, The End of Theory offers a novel and innovative perspective, along with a more realistic and human framework, to help prevent today's financial system from blowing up again.

Bookstaber (Book Page)

## 53.3 Jackson-Victor

**The “new normal”: Hyper-Capitalism, Proto-Socialism, and Post-Pandemic Recovery**

*Jackson Abstract*

Post-pandemic recovery must address the systemic inequality that has been revealed by the coronavirus crisis. The roots of this inequality predate the pandemic and even the global financial crisis. They lie rather in the uneasy relationship between labor and capital under conditions of declining economic growth, such as those who have prevailed in advanced economies for almost half a century. This paper explores the dynamics of that relationship using a simple stock-flow consistent (SFC) macroeconomic model of a closed economy.

It examines in particular the role of two key factors—the savings rate and the substitutability (elasticity of substitution) between labor and capital—on the severity of systemic inequality under conditions of declining growth. The paper goes on to test the efficacy of three redistributive measures—a graduated income tax, a tax on capital and a universal basic income—under two distinct structural scenarios for an economy with a declining growth rate. We find that none of these measures is sufficient to control structural inequality when institutions aggressively favor capital over labor (hyper-capitalism). Taken in combination, however, under conditions more favorable to wage labor (proto-socialism), these same measures have the potential to eliminate inequality, almost entirely, even as the growth rate declines.

*Jackson Memo*

The two key structural factors, which determine the evolution of inequality under a declining growth rate, are (1) the savings rate and (2) the elasticity of substitution between labor and capital. Depending on the configuration of these factors, two radically different futures may emerge. Under one future, which we have described here as “hyper-capitalism” (Scenario 1), a constant savings rate and high substitutability between capital and labor lead to accelerating inequality, even under a progressive combination of redistributive measures. Under another kind of future, which we describe as proto-socialism (Scenario 2), a declining savings rate and low substitutability between capital and labor, lead to declining inequality, which in combination with progressive redistributive policies, have the potential to eliminate inequality almost completely.

Hyper-capitalism is likely to emerge in a world where labor is increasingly (and easily) substituted with capital and the interests of the owners of capital are privileged over the rights of workers. These privileges encourage capitalists to continue to save even as the growth rate declines, leading to a rising capital to output ratio and an escalating inequality. Such a scenario could, for example, accompany a world in which an aggressive drive towards automation or the implementation of artificial intelligence (AI) by monopolistic companies removes the need for wage labor across large swathes of the economy. Failure to protect the livelihoods of the immiserated work force facilitates continued savings and investment by asset owners. By the same token, it concentrates incomes (and wealth) increasingly in a minority of the population, leading to the kinds of dystopian trends in inequality illustrated in Scenario 1. Proto-socialism on the other hand aims for strong institutions to protect the rights of workers, introduce a job guarantee, and establish an adequate minimum wage. Such interventions slow down the substitution of capital for labor. Attempts by capitalists to maintain a constant savings rate under these conditions lead (Figure 3a) to a dramatic collapse in the rate of return on investment, and a partial reversal in the relative fortunes of workers and capitalists. Faced with the prospect of declining rates of return, these conditions are more likely to lead to a decline in the rate of savings (Scenario 2) and a reduction in the capital intensity of the economy, features that will reinforce a more equal distribution

of incomes. In short, proto-socialism is likely to involve a transition away from resource-intensive mass production processes and toward the evolution of an economy of quality and service (Jackson, 2017). It might well also involve institutional innovations which better represent the interests of workers in the management of firms (Ferrera, 2017), better distribute the rewards of innovation to the populace (Varoufakis, 2016) and allow government to operate as an “employer of last resort” (Minsky, 1986). It will not have passed unnoticed that the sectors that emerge stronger under proto-socialism are precisely the labor-intensive sectors associated with care, distribution and maintenance—the frontline services of the pandemic—described at the beginning of this paper. Other labor-intensive sectors such as those associated with crafts, creativity, and community-based recreation and leisure (Jackson, 2021) are also likely to flourish under these conditions. Proto-socialism, in other words, could provide a robust basis for a post-pandemic recovery—even under conditions of low-growth.

Jackson (2021) Confronting inequality in the “new normal” : Hyper-capitalism, proto-socialism, and post-pandemic recover (pdf)

Thanks to ? and Peter Victor. This paper is crucial to challenging the assumption, represented in the IPCC’s existing scenarios, that slower growth rates mean rising inequality. It all depends on policy, and the power of labour vis-à-vis capital. (Jason Hickel)

## 53.4 Eurogreen Model

### Feasible alternatives to green growth

*Abstract D’Alessandro*

Climate change and increasing income inequality have emerged as twin threats to contemporary standards of living, peace and democracy. These two problems are usually tackled separately in the policy agenda. A new breed of radical proposals have been advanced to manage a fair low-carbon transition. In this spirit, we develop a dynamic macrosimulation model to investigate the long-term effects of three scenarios: green growth, policies for social equity, and degrowth. The green growth scenario, based on technological progress and environmental policies, achieves a significant reduction in greenhouse gas emissions at the cost of increasing income inequality and unemployment. The policies for social equity scenario adds direct labour market interventions that result in an environmental performance similar to green growth while improving social conditions at the cost of increasing public deficit. The degrowth scenario further adds a reduction in consumption and exports, and achieves a greater reduction in emissions and inequality with higher public deficit, despite the introduction of a wealth tax. We argue that new radical social policies can combine social prosperity and low-carbon emissions and are economically and politically feasible.

D'Alessandro (2020) Feasible alternatives to green growth (Paywall) SI (pdf)

*D'Alessandro Presentation*

### **Green Growth**

The main response to the global challenges posed by climate change are currently based on Green Growth policy proposals, namely:

- mainstream and institutional paradigm focused on technological optimism;
- market-oriented view: trickle-down effect should improve welfare and job creation;
- one-size-fits-all solution: GDP growth

Critiques to the ability of market mechanisms and innovations to:

- foster material decoupling (Wiedmann, 2015)
- meet planetary boundaries (Steffen, 2015, O'Neill, 2018)
- avoid critical transitions (Scheffer, 2012)
- ensure social justice: within-country inequality (Piketty, 2014)
- overcoming the rebound effect: % RES and CO2 per capita

### **Green Deal**

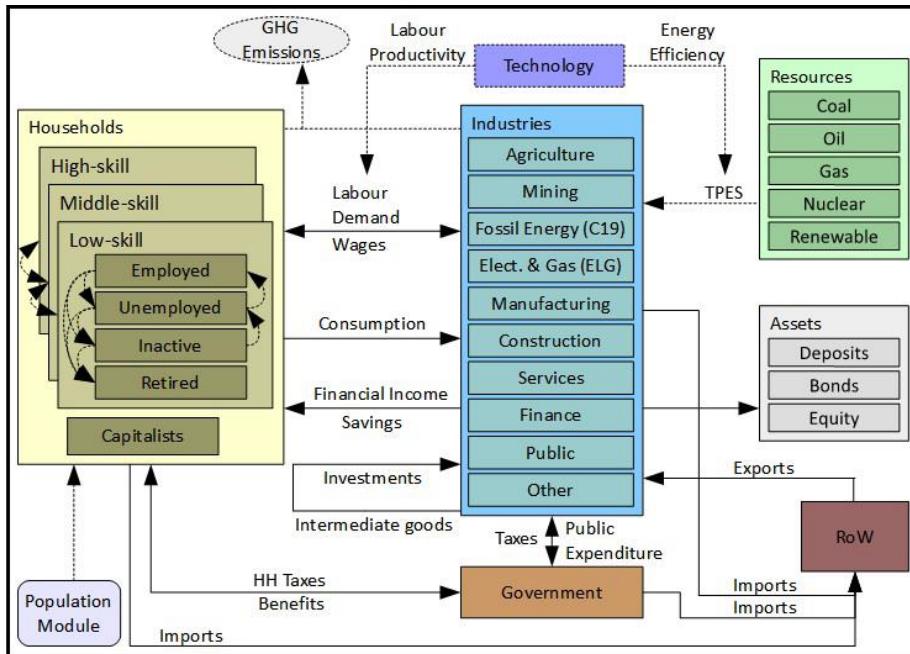
Recognizes the need to address inequality and environmental issues in a unified perspective combining social policies with green growth measures

### **Post-Growth**

Advocates that continuous economic growth and ecological sustainability are incompatible: down-shift of economic scale. Social policies becomes essential to face inequality

### **EUROGREEN**

A macrosimulation model tailored to compare the long-run effects, synergies and trade-off of these three alternative narratives.



#### Indicators

GHG emissions with respect to 1990. Targets:  $-40\%$  in 2030 and  $-80\%$  in 2050 • Gini coefficient for income inequality: from 0% (no ineq.) to 100% (max ineq.). Computed over 13 groups (3 skill by 4 work status + capitalists) including incomes from labour, financial assets and wealth • Deficit/GDP: fiscal sustainability • GDP growth • Unemployment: total and by skill • Energy Mix: shift in source composition in electric power generation and TPES.

#### Discussion

- Our results suggest that there are no win-win solutions • Similar reductions in emissions can result in radically different social consequences in terms of income distribution, employment, and fiscal stability. • Green Growth Paradox The effectiveness of GHG reductions depends on the failure to promote GDP growth.
- Techno-scepticism: Environmental policies alone fails to deliver the advocated improvements in employment and income distribution • Radical social policies (JG and WTR) can combine social prosperity and low-carbon emissions • Lower aggregate demand helps emission target achievement

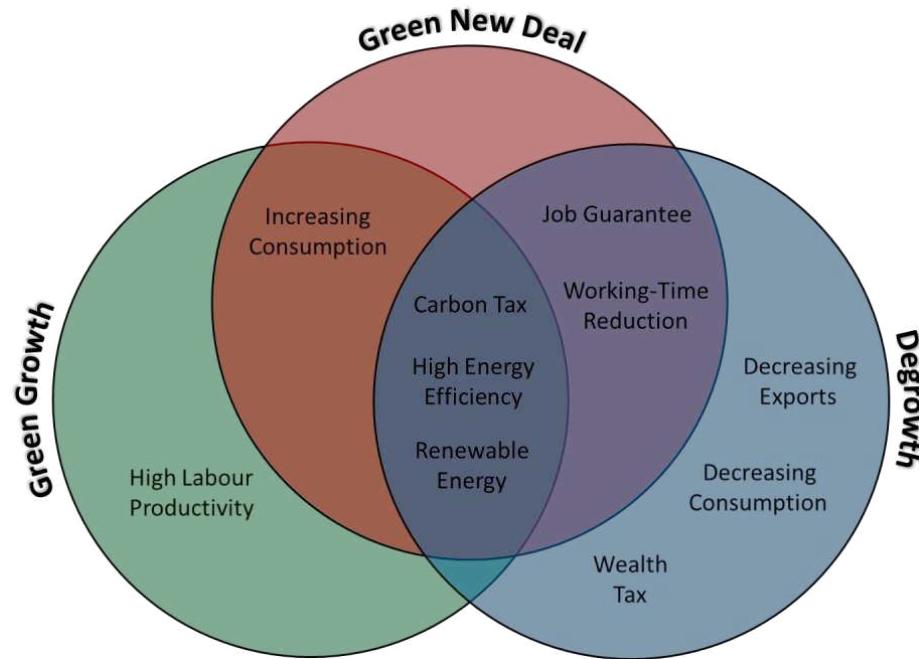
D'Alessandro (2020) feasible Alternatives - Presentation (pdf)

O'Neill

\*\* 'Green Growth' will increase inequality and unemployment unless accompanied by radical social policies.\*\*

The economy is embedded within society, which is in turn embedded within

the biosphere. Economic processes are therefore analysed in terms of flows of biophysical resources and social outcomes not just in terms of flows of money, as in conventional macroeconomic models.



Ecological macroeconomic models allow for multiple non-substitutable goals to be explored (e.g. sustainability, equity, and human well-being). These models have been developed to address issues such as the link between growth and inequality 5 and the effect of climate change on financial stability.

Green growth reduces greenhouse gas emissions, but inequality and unemployment both rise. The Green New Deal dramatically lowers unemployment and reduces inequality, but at the expense of an increase in the government deficit-to-GDP ratio. Degrowth reduces emissions and inequality further than the other two scenarios, but it leads to a higher increase in the deficit-to-GDP ratio (because GDP decreases). In short, there is no win-win scenario.

These results have important implications. First, they suggest that a purely market-based green growth strategy is likely to have serious negative side effects. These side effects may be corrected by complementing environmental policies with strong social policies, such as working-time reduction, a guaranteed jobs programme, and a wealth tax. Second, the results suggest that degrowth can dramatically reduce environmental impact and lead to improved social outcomes (e.g. more leisure time, higher employment, greater equality), provided the appropriate policies are in place. Third, a Green New Deal, with an explicit focus on achieving a just transition 7, may represent a compromise that advocates of both green growth and degrowth can support.

The Eurogreen Model makes a number of important contributions, but like any model it also has limitations. Importantly, the model does not assess whether the degree of decoupling assumed in its green growth scenario is actually possible, an assumption that has been challenged empirically.

The degrowth scenario does not include a number of additional changes that have been put forward by degrowth authors, such as alternative business models, new measures of progress, or public money creation 9 . For example, central banks could potentially create money to help fund a low-carbon transition (as they created money to bail out the banks), which would reduce the government deficit.

We need to choose our economic policies carefully. We cannot expect economic growth to deliver sustainability, or green growth to deliver social equity. If we want to achieve a sustainable and just society, then we need to move beyond the pursuit of growth, and target these outcomes directly.

ONeill (2020) Beyond Green Growth (pdf)

Russel (2020) Climate crisis: Is it time to ditch economic growth? (DW)

Mudge (2020) Fact check: Does climate protection stifle economic growth?

## 53.5 HARMONEY

### *King Abstract*

This paper explains how the Human and Resources with MONEY (HARMONEY) economic growth model exhibits realistic dynamic interdependencies relating resources consumption, growth, and structural change. We explore dynamics of three major structural metrics of an economy. First, we show that an economic transition to relative decoupling of gross domestic product (GDP) from resource consumption is an expected pattern that occurs because of physical limits to growth, not a response to avoid physical limits. While increasing operational resource efficiency does increase the level of relative decoupling, so does a change in pricing from one based on full costs to one based only on marginal costs that neglect depreciation and interest payments. Marginal cost pricing leads to higher debt ratios and a perception of higher levels of relative resource decoupling. Second, if assuming full labor bargaining power for wages, when a previously-growing economy reaches peak resource extraction and GDP, wages remain high but profits and debt decline to zero. By removing bargaining power, profits can remain positive at the expense of declining wages. Third, the internal structure of HARMONEY evolves in the same way the post-World War II U.S. economy. This is measured as the distribution of intermediate transactions within the input-output tables of both the model and U.S. economy.

### *King Memo*

HARMONEY v1.1 is a system dynamics model centered on simulating a set of ordinary differential equations using stock-flow consistent tracking of monetary flows. HARMONEY v1.1 is still a toy model, which is to say it is not yet calibrated (we're working on it!) to a real economy, such as the United States. Nonetheless, it has critical features and structural assumptions that make it applicable and valuable for comparing its trends to long-term trends in real-world data.

This is to say, an important part of HARMONEY is that it has a conservation of flow principle for both mass (as physical resources, energy or minerals, extracted from the environment) and money (at any given instant flows of money are tracked between firms, households, and private banks). While this idea has been around for many decades, this is still relatively unique for macroeconomic models.

Here are several assumptions in the design of the model that help explain why it can mimic long-term real-world trends relating energy consumption and economic variables

- The resource that supports the economy is a regenerative renewable resource stock, such as a forest.
- Resource (mass, energy) consumption is required for three purposes in the model, just like the real world: To operate machines (as fuel) To become new machines when they are manufactured (embodied in new capital) To “operate” or feed people to keep them alive (as food)
- Money is effectively defined as all of the following the compensation labor (workers) receive, the profits received by companies, money (as credit) is created when banks give loans to companies to invest in capital at levels beyond their profits, and the money is destroyed when companies pay back debt, and the interest payments on the debt, or loans given to companies.
- There is no government in the model.
- Population declines when there is not enough resource consumption for households.

The HARMONEY model overcomes three neoclassical limitations:

- the inadequate incorporation of natural resource consumption as required physical inputs to operate capital, become embodied in new capital investment, and keep people alive;
- the lack of consideration of credit, or private debt, in a modern economy; and
- the assumption that factors of production contribute to growth in relation to their cost share.

Unlike neoclassical growth theory (exogenous or endogenous), the post-Keynesian and biophysical structure of the HARMONEY model does not

assume an aggregate production function, TFP, or directly impose scaling of GDP to aggregate labor, capital, or natural resources consumption. Thus, the model enables a different exploration into the effects of resource efficiency and whether the economy has similar energy-GDP scaling as biological systems, and for the same reasons, throughout a growth cycle.

Global primary energy consumption (PEC) and gross world product (GWP) scale approximately linearly from 1900-1970, and since 1970 scale sublinearly at  $PEC \propto GWP^{2/3}$ . Post-1980 trends show PEC of countries scales with their GDP nearly as  $PEC \propto GDP^{3/4}$

... explicitly considers the “energy cost of maintaining the structure and function” of an economy as a complex system ...does not address the exact scaling (i.e., value of b) between energy consumption and GDP, but it explains why we expect a transition from superlinear or linear scaling to sublinear scaling, just as observed in biological systems.

...also contributes to the discussion of decoupling of GDP from PEC via increases in energy efficiency. Sublinear scaling in the economy, often referred to as a state of declining energy intensity ( $= PEC/GDP$ ), is often seen as a consequence of increasing energy efficiency. ...economy-wide rebound effects might erode more than half the reductions in engineering energy efficiency investments.

#### *King Conclusion*

The purpose of this paper was to explore the coupled growth and structural dynamic patterns of the HARMONEY model (v1.1) as updated from King (2020). The differences in the simulation results in this paper versus King (2020) derive from the more robust method in solving for prices and the explicit inclusion of wage bargaining power that augments a short-run Phillips Curve. Despite the assumption of a single regenerative natural resource (akin to a forest) to support the modeled economy, HARMONEY v1.1 exhibits several important high-level structural, biophysical, and economic patterns that compare well with global and U.S. data, and thus provide insight into long-term trends. The HARMONEY model provides a consistent biophysical and monetary basis for explaining the progression in global and country-level data from an increasing or near constant energy intensity (energy consumption/GDP) to one of decreasing energy intensity. That is to say, both HARMONEY and global data first show a period of increasing growth rates, when the growth rate of natural resource consumption exceeds or is nearly equal to the growth rate of GDP, followed by a period of decreasing growth rates when the growth rate of resource consumption is lower than that of GDP. Thus, given this latter condition referred to as a state of relative decoupling, we conclude that it occurs due to a natural progression of self-organized growth, and not necessarily from independent conscious choice by actors within the economy to pursue resource efficiency. While we show that explicit choices to increase resource consumption efficiency in capital (e.g., machines) do increase the level of relative decoupling, we also show the choice of price formation affects apparent decoupling just as much. When

basing prices on only marginal costs the economy appears more decoupled than if prices are based on full costs that include depreciation and debt interest payments. Further, marginal cost pricing generates higher debt ratios than full cost pricing, implying higher debt levels might provide only a perception of a more decoupled economy. Thus, relative decoupling of GDP from resource consumption represents an expected stage of growth, still similarly dependent on resource consumption, rather than a stage during which an economy is less constrained by resource consumption. When assuming full labor bargaining power for wages, such that wages increase with inflation, once resource consumption stagnates, profit shares decline to zero and wage share increases. An explicit reduction in labor bargaining power at peak resource consumption enables some profits to remain. Thus, the HARMONEY model provides a basis for arguing that because profits decline to zero once resource consumption peaks under a full bargaining power situation, a new pressure emerges to reduce wage bargaining power of labor to ensure some level of profits at the expense of labor. This reasoning helps explain the wage stagnation and declining wage share experienced in the U.S. since the 1970s.

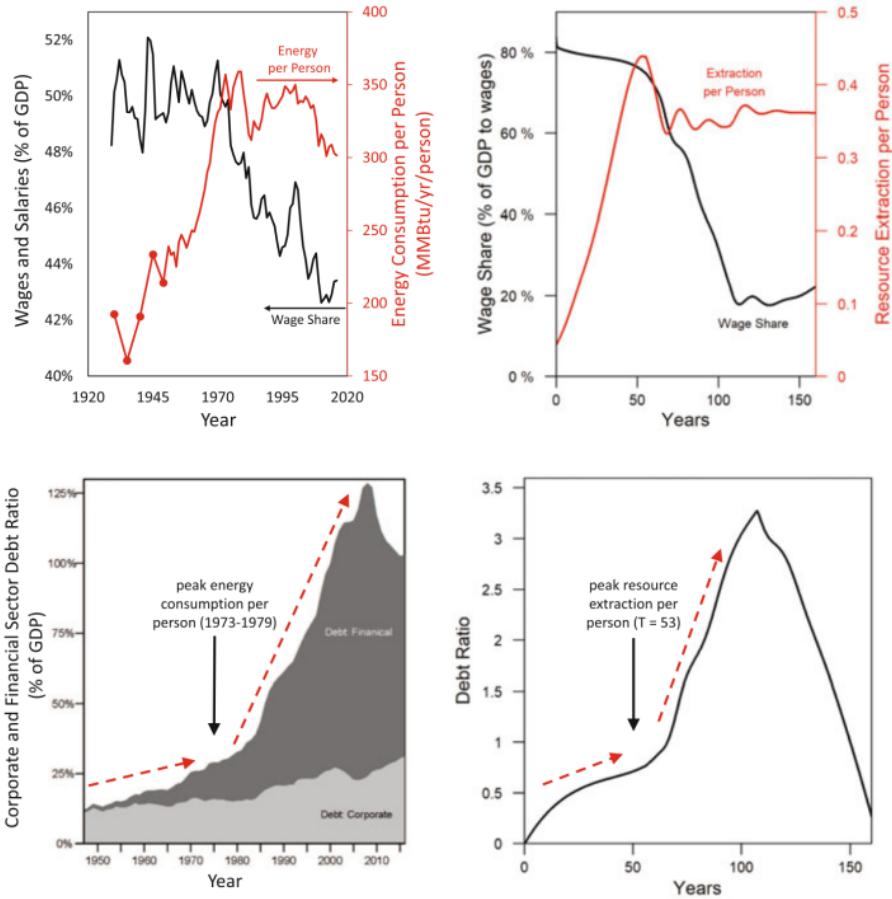
King (2021) Interdependence of Growth, Structure, Size and Resource Consumption During an Economic Growth Cycle (pdf) (pdf SI)

King Summary (blog)

King (2019) HARMONEY-1 (pdf) King Website

*Fix on King*

Figure shows King's key result. Without tuning it to do so, the HARMONEY model predicts that as resource use plateaus, the wage share of income should decline (top right). It so happens that this is exactly what occurred in the United States. As energy use (per person) plateaued, the wage share of income plummeted (top left). HARMONEY also predicts that after resource use peaks, debt (as a share of GDP) should explode and then later peak (bottom right). Again, the model's prediction is eerily similar to US history (bottom left).



*Figure: Results from King's HARMONEY model. Top left: the wage share of income in the US declined as energy use per person plateaued. Top right: King's HARMONEY model predicting the same phenomenon. Bottom left: The growth and peak of US corporate and financial debt. Bottom right: King's HARMONEY model predicting the same phenomenon.*

One more thing to mention is that HARMONEY does not use an aggregate production function. This is important, because there are many problems with such functions. Perhaps the most glaring flaw is that the standard production function (the Cobb-Douglas) is a tautology. It is a rearrangement of a national accounting identity. Hence, when systems modelers use such a function, they undermine what may otherwise be a sound model.<sup>3</sup> By not using a production function, HARMONEY avoids this misstep.

Fix on King 'Superorganism'

## 53.6 Input-Output

Technology matrices (IO tables) theoretically capture the conditions of production. Most presentations counterfactually assume they are constant (e.g. constant returns to scale). However, once the matrices are allowed to vary with demand then they capture market value too.

Ian Wright (tweet)

## 53.7 LowGrow SFC

*Jackson*

A simulation model of the Canadian economy

LowGrow SFC is a system dynamics model developed by Tim Jackson and Peter Victor, incorporating many features developed over several years. LowGrow SFC brings together: 1) the environmental and resource constraints on economic activity; 2) a full account of production, consumption, employment and public finances in the ‘real economy’ at the level of the nation state; 3) a comprehensive account of the financial economy, including the main interactions between financial agents.

LowGrow SFC is ‘stock-flow consistent’. this means that expenditures by each sector are incomes of other sectors and financial assets of each sector are financial liabilities of other sectors, and vice versa. The 6 sectors in LowGrow SFC are: households, non-financial firms, financial firms, the central bank, government, and the rest of the world. Interactions within and between these spheres of interest are modelled using a system dynamics framework and used to generate scenarios for Canada.

[Jackson (2022) LowGrow SFC (<https://timjackson.org.uk/ecological-economics/lowgrow-sfc/>)]

*Feygin on Keynes*

When I read Keynes’ General Theory tThe part that really appealed to me was how he structured his argument. The GT is set up as an argument against “Say’s Law” – that supply creates its own demand through a price adjustment. Alex William’s blog is what you want to read if you want a chapter-by-chapter discussion of how the book is written and what Keynes argues. However, for our purposes, I want to emphasize that Keynes sets up his critique of Say’s Law not by rejecting it outright but by noting that it is a “special case.” In other words. the law can hold under some circumstances, but it is more informative in that it fails than that it holds at all times. The logic is really, really clean. Say’s Law is more normative than it is a law, and if it is not a law, then you have to do a lot of work to make it real: work that can be more destructive than helpful. In fact, I think that’s a lot of what conservative economic thought comes down to; making Say’s Law real.

I think we have the same problem when it comes to theories of growth and development in the context of the dollar debate and other related matters. We have a lot of “special cases” that are being discussed as theories.

Feygin (2023) Theory and History

## 53.8 Paul Romer

*NY Times on Paul Romer*

Paul Romer was once Silicon Valley’s favorite economist. The theory that helped him win a Nobel prize — that ideas are the turbocharged fuel of the modern economy — resonated deeply in the global capital of wealth-generating ideas. In the 1990s, Wired magazine called him “an economist for the technological age.” The Wall Street Journal said the tech industry treated him “like a rock star.”

Not anymore.

Today, Mr. Romer, 65, remains a believer in science and technology as engines of progress. But he has also become a fierce critic of the tech industry’s largest companies, saying that they stifle the flow of new ideas. He has championed new state taxes on the digital ads sold by companies like Facebook and Google, an idea that Maryland adopted this year.

And he is hard on economists, including himself, for long supplying the intellectual cover for hands-off policies and court rulings that have led to what he calls the “collapse of competition” in tech and other industries.

“Economists taught, ‘It’s the market. There’s nothing we can do,’ ” Mr. Romer said. “That’s really just so wrong.”

Mr. Romer’s current call for government activism, he said, reflects “a profound change in my thinking” in recent years. It also fits into a broader re-evaluation about the tech industry and government regulation among prominent economists. They see markets — search, social networks, online advertising, e-commerce — not behaving according to free-market theory. Monopoly or oligopoly seems to be the order of the day.

Of all the economists now taking on big tech, though, Mr. Romer is perhaps the most unlikely. He earned his undergraduate and doctoral degrees from the University of Chicago, long the high church of free-market absolutism, whose ideology has guided antitrust court decisions for years.

Mr. Romer spent 21 years in the Bay Area, mostly as a professor first at Berkeley and then Stanford. While in California, he founded and sold an educational software company. In his research, Mr. Romer uses software as a tool for data exploration and discovery, and he has become an adept Python programmer. “I enjoy the solitary exercise of building things with code,” he said.

"People I like are frequently unhappy with me," he said.

Mr. Romer, who joined the faculty of New York University a decade ago, said that preparing for his Nobel lecture in 2018 prompted him to think about the "progress gap" in America. Progress, he explained, is not just a matter of economic growth, but should also be seen in measures of individual and social well-being.

In the United States, Mr. Romer saw worrying trends: a decline in life expectancy; rising "deaths of despair" from suicides and drug overdoses; falling rates of labor participation for adults in their prime working years, from 25 to 54; a growing wealth gap and increasing inequality.

Such problems, to be sure, have many causes, but Mr. Romer believes one contributing cause has been an economics profession that belittled the importance of government. His new growth theory recognized that the government played a vital part in scientific and technological progress, but mainly by funding basic research.

Looking back, Mr. Romer admits that he was caught up in the "small government bubble" of the time. "I substantially underestimated the role of the government in sustaining progress," he said.

"For real progress, you need both science and government — a government that can say no to things that are bad," Mr. Romer said.

NY Times

### 53.9 Frederick Soddy

*Reinert*

The Nobel Prize winner that predicted a crisis between nature and capital.

A scientist who used much of his time on economics was rewarded a Nobel Prize in 1921. Admittedly, Frederick Soddy (1877–1956) received the prize in chemistry, for his work on radioactivity. But in the period from 1921 to 1934 Soddy wrote four books campaigning for a radical restructuring of the global monetary system.

'There is no wealth but life' is the basic message.

Placing money as a kind of enemy for humankind. Here is a new type of economics: we have standard neoclassical economics, based on the metaphor of equilibrium between supply and demand, and we have evolutionary (Schumpeterian) economics based on a metaphor from biology (innovations as mutations). Soddy offered us a third angle: economics rooted in physics, in the laws of thermodynamics.

Humans survive, he wrote, based on the use of natural resources. If these resources are exhausted, we shall be in deep trouble. At the time Soddy was not taken seriously, but he is now seen as a forerunner for ecological economics. Romanian-born economist Nicholas Georgescu-Roegen (1906–1994) continued working in this tradition.

Soddy points to the fundamental difference between the biophysical resources and consumables — what he calls ‘real wealth’ — that are subject to the laws of thermodynamics. This wealth will rot, rust, wear out, or be consumed. Money and debt — which he calls ‘virtual wealth’ — are only subject to the laws of mathematics. Money can grow without limits, whereas the real economy cannot. In this mismatch, says Soddy, lies the roots of most of our economic problems.

in a very informative New York Times op-ed in 2009, US ecological economist Eric Zencey (1953–2019) notes that Frederick Soddy had distilled his vision into five policy prescriptions, of which four since have become conventional wisdom: to abandon the gold standard, to let international exchange rates float, to use federal surpluses and deficits as macroeconomic policy tools that could counter cyclical trends, and establish bureaus of economic statistics (including a consumer price index). Soddy’s fifth proposal — the only one that remains outside today’s bounds of conventional wisdom — was to stop banks from creating money (and debt) out of nothing.

Reinert (2021) The Nobel Prize winner that predicted a crisis between nature and capital

## 53.10 Dennis Snower

### *Behavioural Economics can't fix it*

This is probably the most exciting and fruitful time ever to become an aspiring economist. Why? Because economics is reaching its Copernican Moment – the moment when it is finally becoming clear that the current ways of thinking about economic behavior are inadequate and a new way of thinking enables us to make much better sense of our world. It is a moment fraught with danger, because those in power still adhere to the traditional conventional wisdom and heresy is suppressed.

Behavioral economics began as a compendium of “anomalies” that the neoclassical system could not explain. Some of these anomalies have been addressed by behavioral theories such as prospect theory or social preference theory, but many have not. Different theories explain different anomalies; there is no overarching theory to explain them all.

And since behavioral economics is devoted primarily to individual fixes, it has retained many of the basic axioms above, such as methodological individualism, consumption as central for wellbeing, understanding economic events in terms of

probability theory and the tendency toward equilibrium. However, these axioms are also open to question.

Regarding methodological individualism, who says that the individual is the only level of selection? After all, Homo Sapiens owe their evolutionary success largely to their ability to cooperate with one another, in larger number than other mammals.

Regarding consumption as central to wellbeing, who says that our material appetitive needs dwarf our social needs, such as the need to care and be cared for, or the need to belong to a community, or the need to shape your fate through your own efforts?

Regarding our ability to understand economic events in terms of probability theory, who says that we can imagine all conceivable future states of the world and that we can assign probabilities to each of them? After all, many of the most important events that young people look forward to in the future — whom they will marry, where they will live, what jobs they will get, how much they will earn, what their state of health will be, when they will retire, how long they will live — are simply unknown unknowns.

Not only has the neoclassical system encountered endless discrepancies between predictions and evidence and thus has accumulated endless fixes, but it also has had little success in addressing the great economic questions of our time. For example: If the free-market system is meant to satisfy our needs efficiently, why is it despoiling our environment? Why is it generating inequalities and other inequities that threaten the social cohesion of our societies? Why does it leave so many people economically insecure, vulnerable to unemployment and trapped in dead-end jobs? Why does it not correct for the excesses of consumerism, workaholism and digital addictions, frequently leading to anxiety, depression, burnout, substance abuse and crime? Why is it giving us so little guidance in promoting public compliance with social distancing rules during the Covid-19 pandemic, even though such compliance has economic causes and consequences? Why does it keep so many businesses focused on short-term profit and shareholder value, even though so many business leaders are genuinely concerned about the environment and the wellbeing of their customers and employees?

Now the practitioners' patience with mainstream economics is wearing thin. Unlike the academic economists, the practitioners must actually address the great economic questions of our time.

Nor can the practitioners be content with the economists' standard policy toolbox, since these instruments are obviously not overcoming the growing problems of climate change, social conflict, "deaths of despair," containment of the Covid-19 pandemic, and much more.

And finally, the practitioners are no longer enamored by the mainstream narrative on the division of responsibilities.

Consumers in their millions are taking an interest in the social, political and environmental consequences of consumption and production activities, school children are out in the streets in protest about climate change, international organizations are beginning to measure economic performance beyond GDP (such as through the OECD's Better Life Index and the UN's Sustainable Development Goals), businesses are beginning to measure business performance beyond shareholder value (such as through Environmental, Social and Governance criteria along with the initiatives of the WEF International Business Council, the OECD Business for Inclusive Growth coalition, the Value Balancing Initiative, the British Academy's Future of the Corporation programme), national governments are beginning to design budgets with regard to notions of wellbeing that extend beyond consumption of goods and services (such as New Zealand's well-being budget). In short, the practitioners are not waiting for the mainstream economics profession to adjust to reality; instead, they are forging ahead on multiple fronts, extending the domain of economics to the existential challenges we face.

Fortunately, we now have access to a powerful body of thought that can guide this new encounter. The evolution of our natural world can be understood in terms of variation, replication and selection. The evolution of ideas can be understood in such terms as well: new ideas keep cropping up; they are transmitted from person to person; and the ideas that get selected to survive are often to be ones that enable us to navigate our environment most effectively. Selection can act not only on individuals, but also on groups. "Selfishness beats altruism within groups. Altruistic groups beat selfish groups. Everything else is commentary." (E.O. Wilson and D.S. Wilson (2007), "Rethinking the Theoretical Foundations of Sociobiology," *Quarterly Review of Biology*, 82(4), 327-348) The level of functional organization thus depends on the relative strength of within- and between-group selection.

This is a different starting point from the one underlying mainstream economics. The discipline of economics is based on classical physics, i.e. the inanimate world. Evolution, by contrast, is appropriate to the animate world. Not a bad point of departure for economics. After all, humans are living creatures. If we choose this path, economics will be reaching its Darwinian – not Copernican – Moment.

This is why now is probably the most exciting and fruitful time ever to become an aspiring economist.

Snower

## 53.11 Adam Smith

The invisible hand, it turns out, belongs to the long arm of investors in New York, Toronto, Zurich and other financial capitals. (Sasja Beslik)

*Richard Smith*

Adam Smith's economics is an idea whose time has passed. Specialization, planless, anarchic production for market, single-minded pursuit of profit maximization at the expense of all other considerations, was the driving engine that generated the greatest advances in industrial and agricultural productivity, and also the greatest accumulation of wealth the world has ever seen. But that same engine of development, now immensely larger and running at full throttle, is overdeveloping the world economy, overconsuming the world's resources, flooding the world's waters and atmosphere with toxic and warming pollution, and propelling us off the cliff to ecological collapse, if not extinction. Adam Smith's fatal error – fatal for us – was his assumption that the "most effectual" means of promoting the public interest, the common good of society, is to just ignore it and focus exclusively on the pursuit of individual economic self-interest.

Even with respect to the public interest of the economic welfare of society, Smith's thesis that the invisible hand of the market would automatically bring about "universal opulence which extends itself to the lowest ranks of the people" as "a general plenty diffuses itself through all the different ranks of the society" could hardly have been more mistaken. Two-and-a-quarter centuries after Smith wrote, global capitalist development has produced the most obscenely unequal societies in history.

Two-and-a-quarter centuries after Smith wrote, global capitalist development has produced the most obscenely unequal societies in history, with half the world living on less than two dollars a day, billions of people living in desperate poverty, many times more than the entire population of the world in Smith's day, while a tiny global elite, even just a few hundred individuals, concentrate an ever-growing share of the world's wealth, which they lavish on "opulence" on a hitherto unimagined scale. On this breath-taking failure of social scientific prediction alone, Smith's economic theory ought to have been ridiculed and drummed out of the profession long ago, as such a comparable predictive failure would have been in the natural sciences.

With respect to the public interest of broader societal concerns, which today would include the environment, Smith's philosophy of economic individualism as the means to maximize the public interest – the common good of society – is not only completely wrongheaded, it's suicidal. And it is completely at odds with the world's scientists and scientific bodies who are crying out for a *plan* – a plan to stop global warming, to save the forests, to save the fisheries, to stop ocean acidification, to detoxify the planet, to save the thousands of creatures from extinction, etc.

Leaving the global economy in the hands of private corporations, subject to the demands of the market, is the road to collective eco-suicide.

Richard Smith (2015) Green Capitalism (pdf)

*Noah Smith on Adam Smith*

There's a sort of popular myth that economics began with Adam Smith's declaration that the "invisible hand" of the market would lead to a good society. In fact, while Smith did recognize the importance of market forces and self-interest, his vision of a good society didn't stop there. Here are some Adam Smith quotes:

1. "Our merchants and masters complain much of the bad effects of high wages in raising the price and lessening the sale of goods. They say nothing concerning the bad effects of high profits. They are silent with regard to the pernicious effects of their own gains."
2. "It is not very unreasonable that the rich should contribute to the public expense, not only in proportion to their revenue, but something more than in that proportion."
3. "No society can surely be flourishing and happy of which by far the greater part of the numbers are poor and miserable."
4. "Wherever there is great property there is great inequality. For one very rich man there must be at least five hundred poor, and the affluence of the few supposes the indigence of the many."
5. "People of the same trade seldom meet together, even for merriment and diversion, but the conversation ends in a conspiracy against the public, or in some contrivance to raise prices."

And so on. Adam Smith decries the existence of inequality and poverty, blames property rights for this inequality, advocates progressive taxation as a remedy, and is innately suspicious of profit. He sounds more like Thomas Piketty than Milton Friedman.

Smith's suspicion of profit and enthusiasm for redistribution are baked into the very core of economic theory. The zero-profit condition says that in a well-functioning market, the rate of profit should be no more than the cost of capital — if you see companies making big margins, you should suspect that the market isn't working right. This is the basis of the antitrust movement, which is again gaining strength in America with the appointment of Lina Khan to chair the FTC. Though there are a few populist firebrands in the antitrust movement, much of it is an intellectual movement driven by economists.

Meanwhile, Smith's call for redistribution is inherent in the Second Welfare Theorem, considered one of the basic theorems of economics — and something that every intro student is taught. The Second Welfare Theorem says that if you change the initial distribution of wealth in society, you can basically get any outcome you like. This puts the burden of proof on those who think we shouldn't redistribute wealth — it forces them to bring proof that the harms from taxation are just too high. Though there have been some economists who opposed redistribution, enthusiasm for the idea is traditionally very dominant within the profession. Even Milton Friedman, that great champion of laissez-faire, supported the idea of a negative income tax that would give people more cash the poorer they were.

And though economists do generally believe that very high taxes have some costs, a 2013 survey found that 97% of economists favored federal tax hikes, compared to only two-thirds of the general public, and a 2020 survey finds that most economists think raising the top marginal rate wouldn't hurt economic growth.

Noah Smith (2015) Is economics an excuse for inaction?

*Austin on Smith*

In 1714's *The Fable of the Bees* – among the first panegyrics to the market system – Bernard de Mandeville emphasized the market's seemingly magical power to transmute the individual 'Vice' of greed into the 'Virtue' of greater good. Not only did the market have the power to neutralize greed, but it also positively required greed as, in modern terms, the multiplier of effective demand and hence the driver of the economy overall.<sup>73</sup> De Mandeville's commendation of greed met strenuous and widespread objection. John Wesley, the contemporary theologian, condemned Mandeville as a latter-day Machiavelli: '...till now I imagined there had never been in the world such a book as the works of Machiavel. But de Mandeville goes far beyond it.'<sup>74</sup> But events took their course, with the practical benefits of markets asserting themselves, such that Adam Smith – 60 years later! – could offer a more palatable account of market dynamics. Mandeville's 'vice' became 'self-love' and 'self-interest' in Smith's telling. Where Mandeville had been the radical breaking new ground, Smith had the luxury of placing a professorial seal on the matter for an audience already won over.

At the heart of this shift was a major cultural reappraisal of the character of 'greed' – or 'Vice' or 'self-interest' or 'self-love'. Over a relatively short period, human culture flipped from a narrative of 'greed is bad' to an exciting new hypothesis: 'greed might be OK, you know'. Over time, conviction would grow. By 1987, of course, 'greed was good'.

Austin (2021) Market-led Sustainability is a 'Fix that Fails'... (pdf)

### 53.12 Milton Freeman

*Richard Smith*

Adherents of the Chicago school simply deny that there is any environmental problem, certainly none that the market can't solve. Thus, in a 1991 interview, Milton Friedman ridiculed environmentalists with his trademark condescending and nasty vitriol:

"The environmental movement consists of two very different parts. One is the traditional conservation groups, who want to save resources et cetera. The other is a group of people who fundamentally aren't interested in conservation at all, and who aren't primarily interested in pollution. They're just long-term anti-

capitalists who will take every opportunity to trash the capitalist system and the market economy. They used to be communists or socialists, but history has been unkind to them, and now all they can do is complain about pollution. But without modern technology, pollution would be far worse. The pollution from horses was much worse than what you get from automobiles. If you read descriptions of the streets of New York in the nineteenth century..."

And in his sadoeconomic screed *Free to Choose*, the anti-communist warhorse complained that:

"...whatever the announced objectives, all of the movements of the past two decades—the consumer movement, the ecology movement, the back-to-the-land movement, the hippie movement, the organic food movement, the protect-the-wilderness movement, the zero-population-growth movement, the 'small is beautiful' movement, the antinuclear movement—have always had one thing in common. All have been antigrowth. They have been opposed to new developments, to industrial innovation, to the increased use of natural resources. Agencies established in response to these movements have imposed heavy costs on industry after industry..." [and so on].

Friedman's redneck eco-know-nothingism has long defined the far-right wing of US economic theology but his confident assumption that endless growth is sustainable is shared by the entire profession of mainstream economists.

Richard Smith (2015) Green Capitalism (pdf)

### 53.13 Paul Krugman

*Richard Smith*

If we look at the far-left extreme of acceptable economic thought, say Paul Krugman, we hear the same "can't stop progress" mantra: writing in the New York Times Krugman wonders "if there isn't something a bit manic about the pace of getting and – especially – spending in fin-de-siècle America":

"But there is one very powerful argument that can be made on behalf of recent American consumerism: not that it is good for consumers, but that it has been good for producers. You see, spending may not produce happiness, but it does create jobs, and unemployment is very effective at creating misery. Better to have manic consumers American style, than the depressive consumers of Japan... There is a strong element of rat race in America's consumer-led boom, but those rats racing in their cages are what keep the wheels of commerce turning. And while it will be a shame if Americans continue to compete over who can own the most toys, the worst thing of all would be if the competition comes to a sudden halt."

Paul Krugman is a brilliant economist but the Smithian premises of his theoretical framework cannot allow that we could actually run out of resources to

make all those toys.

Richard Smith (2015) Green Capitalism (pdf)

### 53.14 Herman Daly

*Parrique*

7 concepts from Herman Daly that will change your vision of economics.

1/ The ENVIRONMENTALLY EXTENDED INPUT-OUTPUT TABLE: bringing purely economic interactions, purely environmental interactions, and interactions between the economy and the environment into one comprehensive framework.

2/ The ENDS-MEANS SPECTRUM: political economy is the academic discipline that studies the use of intermediate means to produce intermediate ends.

3/ SCALE, DISTRIBUTION, ALLOCATION: a good scale is one that is sustainable, a good distribution is one that is just, and a good allocation is one that is efficient.

4/ The ECONOMIC PLIMSOLL LINE: the scale of the economy, like the cargo limit on a ship, should be determined first, and then distribution and allocation can follow.

5/ The INDEX OF SUSTAINABLE ECONOMIC WELFARE (ISEW) as an alternative indicator of prosperity to replace Gross Domestic Product (GDP).

6/ UNECONOMIC GROWTH: When growth has more costs than benefits, it becomes “uneconomic”.

7/ STEADY-STATE ECONOMY: “an economy with constant population and constant stock of capital, maintained by a low rate of throughput that is within the regenerative and assimilative capacities of the ecosystem.”

Parrique (2022) Twitter Thread

*Richard Smith*

#### Beyond growth or beyond capitalism?

Recent publications have revived interest in Herman Daly's proposal for a Steady- State Economy. This paper argues, first, that the idea of a steady-state capitalism is based on untenable assumptions, starting with the assumption that growth is optional rather than built- into capitalism. I argue that irresistible and relentless pressures for growth are functions of the day-to-day requirements of capitalist reproduction in a competitive market, incumbent upon all but a few businesses, and that such pressures would prevail in any conceivable capitalism. Secondly, this paper takes issue with Professor Daly's thesis, which also underpins his SSE model, that capitalist efficiency and resource allocation is the best

we can come up with. I argue that this belief is misplaced and incompatible with an ecological economy, and therefore it undermines Daly's own environmental goals. I conclude that since capitalist growth cannot be stopped, or even slowed, and since the market-driven growth is driving us toward collapse, ecological economists should abandon the fantasy of a steady-state capitalism and get on with the project figuring out what a post-capitalist economic democracy could look like.

### **Capitalism without growth?**

In the 1970s and 80s, Herman Daly launched a broadside assault on the academic discipline of economics assailing its dogmatic and neo-totalitarian embrace of neoclassical economics and its willful blindness to our looming environmental crisis. In ground-breaking and widely influential books and articles Daly assailed the "stupor of economic discourse" by holding up to his colleagues what he called the "wild facts" of our ecological crisis: the growing hole in the ozone shield, the alarming evidence of rising CO<sub>2</sub> levels, the shocking rates of natural resource consumption, the frightening rates of extinction and loss of biodiversity and so on, which mainstream economists ignored (and most continue to ignore to this day). The ecological crisis is caused, Daly argued, by too much growth: "the scale of human activity relative to the biosphere has grown too large" and most especially, by ever-growing consumption in the advanced industrialized countries. Daly attacked the mainstream's "idolatrous" "religion of growth," its "growthmania," its "fetish" of limitless consumption. 13 Daly's critique of the neoclassical defense of growth is probably the most devastating critique to come from within the profession. But despite his "radical" break with the mainstream's fetish of growth, Daly did not at all break with his colleagues' fetish of the market organization of production, the capitalist market economy. On the contrary. His proposal for a Steady-State Economy was based, he said, "on impeccably respectable premises: private property, the free market, opposition to welfare bureaucracies and centralized control." So in his Steady-State model, Daly embraces capitalism but he rejects the consequences of market-driven economic development, especially overconsumption and environmental destruction.

For more than 30 years Daly has chanted his mantra of "development without growth" but he has yet to explain, in any concrete way, how an actual capitalist economy comprised of capitalists, investors, employees and consumers could carry on from day to day in "stasis".

Daly rejects any such interference with market organization of production because, like his mainstream colleagues, he believes that "the market is the most efficient institution we have come up with" and the only option we have. 38 He can say this because he subscribes to a capitalist conception of efficiency. Capitalist economists since Adam Smith have defined economic efficiency from the standpoint of the production unit – the factory, mill, mine, etc. (which, conveniently, the capitalists own). So in capitalist terms, the most efficient production method, technology, or economic system is the one that gets the most output from the least input, so produces the cheapest widgets and generates the

most product/sales/wealth for a given investment of labor and raw materials. So Daly says the market “is wonderful for allocation”. “Markets singlemindedly aim to serve allocative efficiency.”

Richard Smith (2015) Green Capitalism (pdf)

*Vettese*

?

### 53.15 Wassily Leontief

*Leontief*

An uneasy feeling about the present state of our discipline has been growing in some of us who have watched its unprecedented development over the last three decades. This concern seems to be shared even by those who are themselves contributing successfully to the present boom. They play the game with professional skill but have serious doubts about its rules.

The trouble is caused, however, not by an inadequate selection of targets, but rather by our inability to hit squarely any one of them. The uneasiness of which I spoke before is caused not by the irrelevance of the practical problems to which present day economists address their efforts, but rather by the palpable inadequacy of the scientific means with which they try to solve them.

The consistently indifferent performance in practical applications is in fact a symptom of a fundamental imbalance in the present state of our discipline. The weak and all too slowly growing empirical foundation clearly cannot support the proliferating superstructure of pure, or should I say, speculative economic theory.

Much is being made of the widespread, nearly mandatory use by modern economic theorists of mathematics. To the extent to which the economic phenomena possess observable quantitative dimensions, this is indisputably a major forward step. Unfortunately, any one capable of learning elementary, or preferably advanced calculus and algebra, and acquiring acquaintance with the specialized terminology of economics can set himself up as a theorist. Uncritical enthusiasm for mathematical formulation tends often to conceal the ephemeral substantive content of the argument behind the formidable front of algebraic signs.

In the presentation of a new model, attention nowadays is usually centered on a step-by-step derivation of its formal properties. But if the author—or at least the referee who recommended the manuscript for publication—is technically competent, such mathematical manipulations, however long and intricate, can even without further checking be accepted as correct. Nevertheless, they are usually spelled out at great length. By the time it comes to interpretation of the substantive conclusions, the assumptions on which the model has been based are

easily forgotten. But it is precisely the empirical validity of these assumptions on which the usefulness of the entire exercise depends.

What is really needed, in most cases, is a very difficult and seldom very neat assessment and verification of these assumptions in terms of observed facts. Here mathematics cannot help.

An attempt to compensate for the glaring weakness of the data base available to us by the widest possible use of more and more sophisticated statistical techniques. These are intended to stretch to the limit the meager supply of facts.

Like the economic models they are supposed to implement, the validity of these statistical tools depends itself on the acceptance of certain convenient assumptions pertaining to stochastic properties of the phenomena which the particular models are intended to explain; assumptions that can be seldom verified.

Continued preoccupation with imaginary, hypothetical, rather than with observable reality has gradually led to a distortion of the informal valuation scale used in our academic community to assess and to rank the scientific performance of its members. Empirical analysis, according to this scale, gets a lower rating than formal mathematical reasoning.

Devising a new statistical procedure, however tenuous, that makes it possible to squeeze out one more unknown parameter from a given set of data, is judged a greater scientific achievement than the successful search for additional information that would permit us to measure the magnitude of the same parameter in a less ingenious, but more reliable way.

The pursuit of a more fundamental understanding of the process of production inevitably leads into the area of engineering sciences. To penetrate below the skin-thin surface of conventional consumption functions, it will be necessary to develop a systematic study of the structural characteristics and of the functioning of households, an area in which description and analysis of social, anthropological and demographic factors must obviously occupy the center of the stage.

Establishment of systematic cooperative relationships across the traditional frontiers now separating economics from these adjoining fields is hampered by the sense of self-sufficiency resulting from what I have already characterized as undue reliance on indirect statistical inference as the principal method of empirical research.

An exceptional example of a healthy balance between theoretical and empirical analysis and of the readiness of professional economists to cooperate with experts in the neighboring disciplines is offered by Agricultural Economics as it developed in this country over the last fifty years. A unique combination of social and political forces has secured for this area unusually strong organizational and generous financial support. Official agricultural statistics are more

complete, reliable, and systematic than those pertaining to any other major sector of our economy. Close collaboration with agronomists provides agricultural economists with direct access to information of a technological kind.

Leontief (1970) Theoretical Assumptions and Nonobserved Facts (pdf)

*Feygin*

Leontief was closely connected to these figures. He was trained in St. Petersburg by Kondratieff and, after his move to Germany, completed his Ph.D. under Bortkiewitz. You can see a lot of that heritage in Leontief's approach to economics. The Input-Output method has the reputation of being empirical rather than theoretical but that's not really the case. Leontief was never very friendly to institutionalists like Wesley Claire Mitchell and agreed that pure empirical statistical testing was not very useful to an economic theory.

However, the input output method itself is designed to add some illustration to intersectoral ties of the kind that were so central to the Legal Marxists. One of the ways we can see that heritage is through the centrality of technology to Leontief models. Leontief solves his model by assuming a static production function. In other words, unlike other econometric models, labor and capital don't act like perfect substitutes at the aggregate because each sector has a different coefficient that is in fixed proportions and can only shift through technical progress of different production choices. Such a change has ramifications through the model. Leontief I-O models are thus comparative statics at all times.

Leontief never believed in any kind of automatic supply and demand co-determination. His first publication caused a debate with father of econometrics Ragnar Firsch because Leontief published on a method to determine supply and demand elasticities as separate functions. In his further development, Leontief rejected simultaneous equation approaches like the ones that came from Firsch's research program through Haavelmo and Larry Klein and the Cowles Commission tradition. The latter group believed that models could only be fit in the reduced form; the fully solved system of equations in which all endogenous variables are functions of exogenous variables. In mathematical terms, that means reducing a matrix of endogenous variables – the structural form – into a vector that, as a linear structure, can be estimated using a least squares method of regression. Leontief's models stayed at the structural level, meaning they relied on matrix inversions to inform inter-industry ties that supplied final demand. However, crucially, that meant that the only way to test a model was through surveying specific production functions since linear methods obscured the real functioning of technology.

Leontief methods are a big part of how we understand the economy to this day. They simply work better than many other empirical, econometric models because they are grounded in concrete realities of technical processes rather than assumptions about substitutabilities. However, to really fulfill what Leontief wanted them to do – to help with the process of learning-by-monitoring

they need to be put into a broader, politically embedded system of both data gathering and decision making. For that, we need other forms of governance models and mechanisms.

Feygin (2023) Economists We'll Be Talking About: Wassily Leontief

### 53.16 Friedrich Hayek

*Austin on Hayek*

One might place the ‘free market’ at the top of this structure today as being among the latest cultural developments, made possible by formal property rights. Interestingly, Hayek, for all that he bequeathed us the neoliberal trap we find ourselves in, offered a very helpful phrase for capitalism. He didn’t much like the term, preferring to refer to the market system as the ‘extended order of human cooperation’. He was alert to the idea that the market had emerged out of earlier human cooperation to form something substantially new. With hindsight, his mistake that we are now suffering from is that in his eagerness to limit the powers of government, which might easily stray to authoritarianism, he overestimated the degree to which the ‘extended order’ market system could fully supersede the underlying layers in promoting long-term human wellbeing.

Austin (2021) Market-led Sustainability is a ‘Fix that Fails’... (pdf)

*Jason Smith on Hayek*

I am fully on board with the idea of a *market as an information processing system*, and that Hayek is key in the development of that idea. However, his essay *The Use of Knowledge in Society* [pdf] is at best out of date and should be relegated to the history of economic thought. There are a lot of hints at something that could make sense given our modern knowledge of information theory and communication, but nothing that does on close examination — only assertion and speculation.

To use a physics analogy, Hayek is Bohr, not Heisenberg. The general thrust of what would become quantum mechanics was pioneered by Bohr, but “old quantum theory” (as it is referred to these days) was wrong despite getting the leading order energy levels of the Hydrogen atom correct. It would take Heisenberg (and Schrodinger, and Dirac, and ...) to nail down quantum mechanics. However, it seems very few people have genuinely taken Hayek as a new starting point for a re-invigoration of the field.

There are so many small decisions made in an economy there is no feasible way to collect all of the information required. That is to say the economic state space is both large and dynamic on a scale too short to survey the entire space. In physics, this same problem is addressed by an emergent theory called thermodynamics — it depends not just on the “law of large numbers”, but emergent concepts like entropy and temperature.

It is the movement of this fine-grained information throughout the economic state space that Hayek says is crucial to understanding economics:

The various ways in which the knowledge on which people base their plans is communicated to them is the crucial problem for any theory explaining the economic process, and the problem of what is the best way of utilizing knowledge initially dispersed among all the people is at least one of the main problems of economic policy—or of designing an efficient economic system.

This is the primary place where Hayek both hints at the real problem, but is misguided about the solution. The issue is that the reason this information is invisible at the level of the macroeconomy is because of its scale, not because it is not communicated. In a complex modern economy, it is simply too large a state space to be communicated. It has millions, if not billions, of dimensions at the agent scale. We will never figure out how it is communicated and because we cannot actually compute a centrally planned solution given an objective function we will never be able to prove optimality.

Hayek proposes that the price mechanism provides the solution to the information problem he identifies.

Hayek first tells us there is a bunch of information that goes missing in statistical aggregates that needs to be communicated, but then turns around and says prices can communicate that information despite also dropping nearly all of it on the floor. “Don’t worry,” he says. “It keeps the relevant information! Trust me!”

The initial insight is there — that there is an immeasurable amount of fine-grained information that is fundamentally inaccessible at the level of the macroeconomy due to the scale and dynamic nature of it. However, the suggestion prices magically capture the right information is no different than the assertion that planning the commanding heights is sufficient to run an economy. Saying that prices aggregate or communicate that fine-grained information is fundamentally wrong; saying that they detect the flow of that fine-grained information is plausible and there are real world examples we can point to. Regardless, the fine-grained information is still invisible at the macro scale.

Information equilibrium is a concrete economic theory built on information flow in a social system. In contrast, there is no concreteness to Hayek’s arguments even where they are not self-contradictory.

Hayek’s essay is relevant background to modern economic thought, having influenced the field (mostly later on, via Milton Friedman). However it is probably better to know of the essay than to know the contents of the essay itself.

The essay conveys a kind of aristocratic detachment of someone who just enjoys hearing themselves talk.

*The main problem in economics is understanding how dispersed knowledge re-*

*quired for planning is communicated, and the main problem of economic policy is finding the best way to use that knowledge.*

This is supposed to be a genuine statement of the thesis.

Certainly, when one is stumbling in the dark around a new idea the language is not always clear. I do think Hayek was genuinely stumbling on to a new idea relevant in the nascent information age — one that germinated too early, before the advent of information theory.

Smith (2023) On Hayek's "The Use of Knowledge in Society" (1945)

### 53.17 William Nordhaus

*Bichler Nitzan*

The LA Times called the bluff: William D. Nordhaus won the Nobel prize in economics for a climate model that minimized the cost of rising global temperatures and undermined the need for urgent action.

'The economics Nobel went to a guy who enabled climate change denial and delay':

It has been a scary month in climate science. Hurricane Michael and a frightening report from the U.N. Intergovernmental Panel on Climate Change underlined the potential costs of human-caused global warming. Then to add insult to injury, William Nordhaus won the economics Nobel Prize. Nordhaus was recognized for his work developing a model to guide policymakers on how best to address the costs and benefits of limiting greenhouse gases. That's a noble goal, but Nordhaus' work has no more helped to defuse the threat of global warming than Neville Chamberlain's appeasement of Germany prevented World War II. Rather, Nordhaus' low-ball estimates of the costs of future climate change and high-ball estimates of the costs of containing the threat contributed to a lost decade in the fight against climate change, lending intellectual legitimacy to denial and delay.

Bichler Nitzan (2018) The Nordhaus Racket: How to use capitalization to minimize the cost of climate change and win a 'Nobel' for 'sustainable growth'

### 53.18 Axel Leijonhufved

*Farmer on Leijonhufved*

My view of modern macroeconomics is much like my view of modern Hollywood movies. The pyrotechnics are spectacular but the plots are sadly lacking.

Modern macroeconomics is a degenerative research program that took a wrong turn in the 1950s.

Farmer (2022) Axel Leijonhufvud Remembered

### 53.19 Karl Marx

Marx would have been a Firefox user

*Soriano on Marx*

Karl Marx was able, scientifically, to demonstrate that the planetary crisis is inevitable under capitalist production by revealing the causal concatenations of the metabolic rift, as a potential planetary crisis, with the particular form of labor exploitation under the capitalist mode in the context of his labor theory of value.

Soriano (2022) Anthropocene, Capitalocene, and Other “-Cenes”: Why a Correct Understanding of Marx’s Theory of Value Is Necessary to Leave the Planetary Crisis

### 53.20 Amartya Sen

*Selwyn on Sen*

his work is two-sided (or contradictory). On the one hand, Sen punches big holes in mainstream explanations for manifestations of poverty and deprivation that are caused, often directly, by capitalist development. He also provides an approach to development that, on the surface, counters the emphasis on growth and capital accumulation.

On the other hand, Sen sets out a vision of development that promotes the expansion of capitalist markets. This two-sidedness stems from the fact that Sen can identify problems with capitalist development but is unable to penetrate the veil of capitalism itself.”Amartya Sen punches big holes in mainstream explanations for manifestations of poverty and deprivation that are caused, often directly, by capitalist development.”

His understanding of capitalism is shallow and rooted in the liberal ideology that presents it as a system based on market exchange between free agents, rather than one rooted in exploitative productive relations, as a Marxist framework would suggest.

There is much in Sen’s work that we can usefully deploy to develop a critique of capitalism. But this has to involve linking his insights to an alternative, labor-centered version of political economy.

Sen’s 1981 book *Poverty and Famines* was an essential intervention into the political economy of famine and the analysis and alleviation of hunger. Born in

1933, the economist grew up in British-controlled India and experienced first-hand the 1943 Bengal famine, in which at least three million people perished.

Dominant explanations of the Bengal famine as well as other famines and episodes of widespread hunger resort to food availability decline (FAD) arguments. Simply put, they argue that there were too many mouths to feed."Sen's 1981 book *Poverty and Famines* was an essential intervention into the political economy of famine."

By contrast, Sen showed how in a series of cases, from Bengal in the 1940s to the Bangladesh famine of 1974, food was available at the time — often in higher quantities than during non-famine periods. Crucially, it was not the absolute volume of food that determined whether people died or lived, but the capitalist price mechanism.

Sen demonstrated that the Bengal famine was caused by rapid price inflation rather than crop failure. British military and civil construction investments, including air strips, barracks, munitions, and clothing for soldiers and civilians, fueled such inflation. It pushed up food prices in relation to agricultural wages, leaving agricultural laborers unable to afford food.

Since there was no general crop failure, peasants with access to land were relatively unaffected by price inflation. On the other hand, nonmilitary or civil construction wage workers, mostly in the rural sector, were particularly vulnerable. These sections of the wage-labor force bore the brunt of the catastrophe.

Sen's arguments in *Poverty and Famines* were a necessary counterargument to the mainstream apologetics for mass hunger. Such arguments often ended up blaming the poor themselves for being too numerous, conveniently obscuring how the capitalist economy continually reproduces poverty."Despite his perspicacity, even Sen himself underestimated the deliberately manufactured causes of the Bengal famine."

However, more recent scholarship has shown that despite his perspicacity, even Sen himself underestimated the deliberately manufactured causes of the Bengal famine. His analysis is thus incomplete as an explanation for the persistence of global hunger.

Indian academic Utsa Patnaik's study of the Bengal famine demonstrates how the price inflation in Bengal represented a deliberate British policy. This policy was recommended by none other than the famed liberal political economist John Maynard Keynes.

In the context of the UK's wartime crisis, Keynes advocated "profit inflation" to achieve a "forced transference of purchasing power" from the mass of the population to the British exchequer. Military investments in Bengal were to be paid for by printing money, without regard for their impact upon the poor of the region.

The increased money supply pushed up prices, benefiting the region's capitalists

who were then taxed in turn by the colonial state. The state used these funds to raise its military investments in India itself while siphoning off surplus funds to the UK exchequer to finance its European war effort.

As Patnaik puts it:

**Without deliberate state policy of curtailing mass consumption, over £1,600 million of**

Sen's emphasis on the capacity of the capitalist price mechanism to generate mortal threats to millions of people is indispensable for any analysis of the current world food crisis. But we also need to identify deliberate state policies designed to further weaken the poor and accelerate marketization.

The problem of world hunger now, as in the cases analyzed by Sen, is not insufficient food but rather the poverty and unequal power relations that are intrinsic to capitalism. The world's poor simply do not have the money to pay for the food they need to live healthy lives.

*Poverty and Famines* largely ignored the collective action of workers to bring about improvements in their social conditions. This reflected a latent methodological individualism in Sen's conception of social change, which came to the fore in his later work. As professor Pritam Singh told me, this means overlooking important forms of popular resistance during the 1943 famine:

**The better organized working class in Calcutta forced the then British government in I**

Singh notes that the British government demolished refugee camps for famine victims, which worsened their conditions. Once again, it was the rural masses rather than what Singh calls the "more conscious and more organized urban population" who were the main targets of the colonial state.

Real democracy does not just mean the right to vote and the existence of a free press. In order to combat world hunger, our goal should not be to ramp up food production, but rather to establish the democratic distribution of power and resources. In particular, this would mean land reform under the democratic control of rural and urban workers.

In *Development as Freedom*, Sen noted that much growth-based development had the effect of suppressing freedom.

Sen adopted an individualistic conception of "people," rather than a collective one. This constituted a major source of tension as he elaborated on his vision. For Sen, development as freedom meant expanding the abilities of individuals and thus the choices available to them, rather than simply increasing their incomes.

In *Poverty and Famines*, as we have seen, Sen showed that it was the capitalist price mechanism, not the availability of food per se, that functioned as the core determinant of whether the poor lived or died. Yet in *Development and Freedom*, he portrayed capitalist markets as spheres that promote freedoms, and called

for the expansion of those markets as a remedy to the poverty and inequality they generate.

Sen's analytical weakness derived from his understanding of capitalist markets as spheres of freedom. He conceptualized them as systems of exchange between individuals that all parties entered into freely, ignoring the reality of productive relations based on the exploitation of subordinate social classes.

We can still embrace Sen's advocacy of real human freedom over economic growth. But this requires us to conceive of freedom as liberation from capitalist rule. Instead of "development as freedom," it would be better to think in terms of "development as liberation."

Selwyn (2023) Amartya Sen's Work Shows Us the Human Cost of Capitalist Development

### 53.21 Ha-Joon Chang

*Selwyn on Chang*

Korean economist Ha-Joon Chang is a brilliant, best-selling critic of neoliberal orthodoxy. But Chang stops far short of taking the necessary next step: questioning the capitalist system itself.

Ha-Joon Chang is a rarity in the contemporary world: an economics professor who is highly critical of the neoliberal free-market orthodoxy, advocates progressive social change, writes and speaks accessibly, and is very, very popular.

Chang's self-professed aspiration is to promote an alternative form of capitalism, but our goal should be to develop an alternative to capitalism.

Ha-Joon Chang rebuts this way of thinking as a modern-day exercise in mythology. He roots his own political economy in historical and institutional analysis, with theoretical generalizations derived from historical cases rather than abstract theory. His historical-institutional political economy is a breath of fresh air when compared to abstract free-market theories that are detached from social reality.

In his book *Economics: A User's Guide*, Chang rejects, in admirably clear prose, the idea that we can identify a single set of economic laws governing the world. Rather, there is a wide range of economic thought, including Marxism, that we can deploy to understand (and change) the contemporary world.

Although he puts forward an effective critique of neoliberal orthodoxy, Chang is not committed to transcending capitalism, nor can he envision a successful noncapitalist society. In his own words, he wants to explain the workings of capitalism so that the system can be "made to work better."

Chang's political objective — to generate a better form of capitalism — and his mode of political economy also generate significant weaknesses in his analysis of

really-existing capitalism. At crucial moments, he obscures the reproduction of capitalism through labor exploitation.

Another problem for Chang is the environmental toll of economic growth. This is a tension that he arguably cannot resolve in view of his commitment to capitalist, growth-based development. A Marxist approach to economics can offer solutions to such pressing problems.

In his book *23 Things They Don't Tell You About Capitalism*, he shows how markets have always been regulated by states.

It is politics and social norms, rather than a pristine “logic of the market,” that determine whether societies have better or worse wages and conditions, rates of investment and innovation, environmental regulation, health care, and so on.

Two of Chang’s books, *Kicking Away the Ladder* (2002) and *Bad Samaritans* (2007), challenge the free-trade, free-market orthodoxy known as the *Washington Consensus*. The author provides voluminous evidence to show how countries that are now highly developed made use of a whole range of protectionist and interventionist policies to transform their economies.

Chang shows how *state planning* can generate more rapid economic growth and more effective industrial diversification than free-market policies.

For Chang, the key determinant of whether countries can achieve economic development successfully is their ability to deploy an effective industrial policy.

Chang is correct to note that states can regulate investment through industrial policies to generate more rapid economic growth and industrial diversification. Yet he overlooks the way that such development often requires extreme exploitation of workers.

This gap in Chang’s analysis of successful developmental states partly stems from his historical-institutional version of political economy, which downplays the importance of shifting class relations in processes of historical change. It also stems from his political project, which is to create a better version of capitalism rather than an alternative socialist system.

Selwyn (2022) Ha-Joon Chang has exposed the fallacies of neoliberalism

## 53.22 Friedrich List

*Selwyn on List*

Much like Chang today, List subjected the dominant liberal orthodoxy of his own time to a withering critique. His aim was to help Germany to industrialize and compete effectively with Britain, the dominant economic and military power of the Victorian age.

As List wrote in his 1841 *The National System of Political Economy*:

*It is a very common clever device that when anyone has attained the summit of greatness, he kicks*

Much like Chang today, List provided a very effective critique of the free-market nostrums espoused by thinkers like Smith and David Ricardo. List was not interested in promoting a socialist society as an alternative to capitalism: he wanted more effective national forms of capitalism. *Mutatis mutandis*, the same is true of Chang today.

Selwyn (2022) Ha-Joon Chang has exposed the fallacies of neoliberalism

### 53.23 Robert Lucas

*Noah Smith on Lucas*

Lucas helped steer the profession toward the highly formalized mathematical models we now call “DSGE”, yet his own most influential paper used only simple math and logical arguments. Few of his own theories are used today, or even given much credence by macroeconomists, but his arguments about *how to do* economic theory — and how not to do it — remain the foundation of the field.

Lucas’ most famous work, by far — and the work that won him a Nobel in 1995 — was about how to fight recessions. In a landmark 1976 paper entitled “Econometric Policy Evaluation: A Critique”, he argued that the policies macroeconomists were recommending at the time made no sense, because they didn’t take people’s shifting expectations into account.

Suppose that you look at the past 50 years of macroeconomic history, and you notice that whenever inflation is high, unemployment is low. So you decide “Oh hey, I can use this fact to keep unemployment low forever, by having the central bank pump up inflation whenever there’s a recession!” Sounds clever, but the logic is flawed, because it doesn’t take human rationality into account. If businesses see that inflation is generally much higher than it used to be, they might reset their mental baseline — whereas before, they would take 4% inflation as the signal of an economic boom, and hire a bunch of workers, now 4% is just an average level of inflation, thanks to the new central bank policy. So now the central bank has to raise inflation by 6% to get businesses to think there’s a boom and hire a bunch of workers. Then 6% becomes the new normal, and so on. Eventually you either get hyperinflation, or you wind up with the same old level of unemployment at a much higher average level of inflation. Neither of those is a good outcome.

You can see why this line of argument resonated in the late 1970s.

So if human beings always catch on to whatever policy you’re trying to use to manipulate their behavior, what do you do? Lucas basically said you should do three things:

*Assume that people catch on very quickly to whatever is happening in the economy, and adjust thei*

Build a model of the economy that's based on things that policy can't easily change — technology, people's preferences, resource constraints, and so on.

Have policymakers make policy according to set rules, instead of their own ad-hoc disci-

None of these three ideas were original to Lucas, and other economists had made versions of the same critique. But Lucas brought it all together. He combined a clear and forceful logical argument that economic theory was being done all wrong with a complete policy program for making it right. No one else had done that.

And in short order, all three of Lucas' recommendations had been wholeheartedly embraced by the macroeconomics profession. Rational expectations became the basis of almost all macroeconomic theories. The quest for "structural" models of the economy led to what we now call Dynamic Stochastic General Equilibrium models, or DSGE. And the idea of monetary policy made by rules rather than discretion became a key feature of DSGE models.

In other words, macroeconomics after Lucas was *Lucasian*, and it remains largely so to this day. That doesn't mean Lucas created absolute consensus in the field — most macroeconomists will have some kind of problem with at least one of Lucas' basic ideas, and many will have problems with all three. But credible alternatives took a very long time to materialize. In the meantime, Lucas and the other macroeconomists he worked with — most notably Thomas Sargent and Edward Prescott — did a lot of work in the 1980s to solidify Lucasian macroeconomics into a paradigm that anyone in the field could pick up and use. That follow-up effort crystallized Lucas' status as the most influential macroeconomist of his time.

Perhaps the most paradoxical thing about Lucas, though, was that although his most famous work was about business cycles, it wasn't really the topic he cared about most. Over the course of his career, he shifted toward economic growth theory.

The growth model he developed in that 1988 paper was not considered to be particularly useful by growth theorists — its main conclusion, that you can grow an economy infinitely by continuing to build up ever more human capital, just isn't credible; eventually people max out on schooling and skills. Later growth theorists, like Paul Romer (Lucas' student, and another Nobel winner), would introduce more realistic models in which investment in researching new ideas takes center stage. But even these models are difficult to test empirically, and the question of whether research investment hits diminishing returns remains unresolved.

Ultimately, the kind of analysis that had propelled Lucas to superstardom in the world of business cycles was less effective when tackling the problem of economic growth. Lucas was at his best when he was using simple, powerful logic to criticize the assumptions behind economic theories. That kind of intelligence is inherently destructive — its purpose is to clear away the deadwood and point the

direction to something newer and (hopefully) better. Constructing a theory of long-term growth is a different sort of challenge entirely, and doing the rigorous empirical work necessary to even start to test that theory was just not in Lucas' wheelhouse. Fortunately, he did manage to direct some students like Romer toward the problem.

In the late 2000s and 2010s, Lucas' attention was pulled back toward the field of business cycle theory that he had revolutionized three decades prior. The Great Recession seemed to upend many of the conclusions Lucas and his friends and disciples had reached about how recessions worked. It was caused by a financial crisis, which contradicted Ed Prescott's technology-driven explanation of business cycles. It was the biggest downturn since the 30s, and monetary policy failed to contain it. The DSGE models that Lucas & co. had spent years ideating and promoting both failed to foresee the possibility of the crisis, and were too rigid and opaque to be of much help to policymakers in fighting it.

Cynics are going to look at this and wonder whether the whole Lucas research program was worth pursuing in the first place. What's the point of thinking about the economy with the kind of simple, logical arguments that Lucas used in the 70s and 80s, if those arguments don't lead to dependable conclusions about the economy? Why did all the brilliant macroeconomists who followed Lucas spend decades on theories that had to be replaced with ancient Keynesianism the next time a big recession came around?

Smith (2023) Thus passes Robert Lucas

*Michael Roberts on Lucas*

In 1995, Lucas received a 'Nobel prize' for his theory of 'rational expectations'.

It is an irony, given the body of his work, that when Lucas started studying economics, he considered himself a "quasi-Marxist" because he reckoned that it was the economic foundation of society that was the driver of history, not the ideas of individuals. The irony is that his main contribution to mainstream economics was eventually to present a theory that economic change was driven by the 'rational' action of 'agents' i.e, individuals as consumers.

What is 'rational expectations' theory? Apparently, economic changes are the product of agents who make 'rational' decisions on the basis of available information to maximise the 'utility' for each agent over their lifetime. Individual agent expectations thus drive output and prices in an economy, not some aggregated forces like class or exploitation. As economies are driven by individual expectations, markets tend towards some equilibrium state that ensures supply and demand are balanced – and are only disturbed by 'shocks' or by wrong decisions by monetary and fiscal authorities.

Lucas was widely acclaimed because he furthered mainstream theory that markets could work without crises or distortions as long as individuals has sufficient information to make 'rational decisions' on their own interests. So the reality

of crises and inequalities was due not to capitalist markets but to ‘irrational’ decisions by authorities or unions interfering with markets.

In particular, Lucas attacked the Keynesian ‘aggregate demand’ theory of economies, namely the Keynesian conclusion that total demand could fall below total supply in an economy, leading to periods of high unemployment. Lucas argued that if governments intervened to increase money supply or increase spending to boost aggregate demand, they would distort the ‘rational expectations’ of individuals and only make things worse.

A ‘bastardisation’ of the radical aspects of Keynesian theory, namely that capitalism did not grow smoothly and could not without periods of slump and depression. But now these only happened as ‘shocks’ to the harmony of the market. Lucas had succeeded in his critique in reducing Keynesian macro economics to a weak and feeble beast. No wonder he got a Nobel prize at the height of the neoclassical, neoliberal ascendancy in 1995.

The reality of ‘irrational’ capitalist markets eventually exposed Lucas’ rational expectations theory.

Roberts (2023) Robert Lucas: the rationality of capitalism

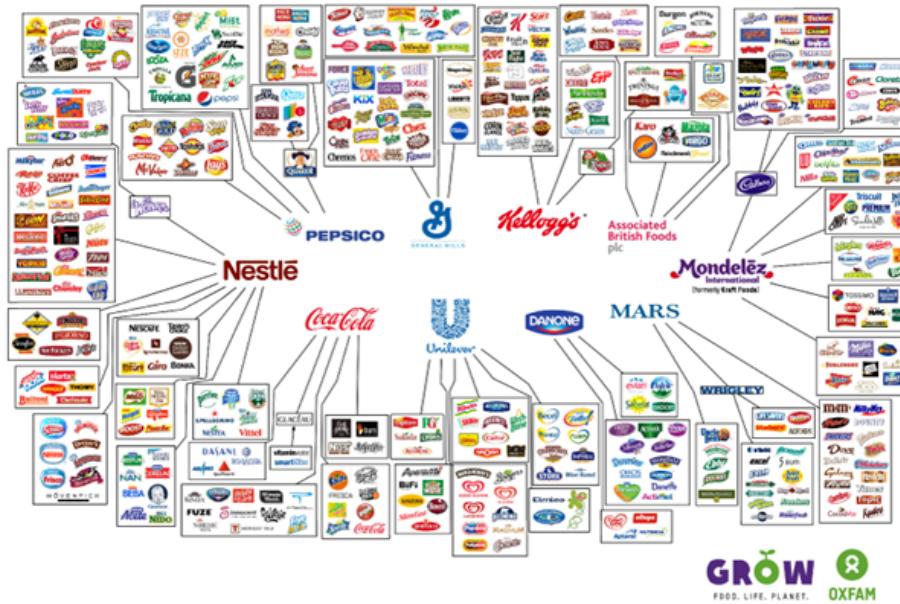
# 54

## Economic Sectors

### 54.1 Food

*Roberts*

And then there are the food monopolies. Four companies – the Archer-Daniels-Midland Company, Bunge, Cargill and Louis Dreyfus, known collectively as ABCD – control an estimated 70-90% of the global grain trade. They have been taking advantage of the food supply crisis by hiking their profit margins. Further up the food chain, just four corporations — Bayer, Corteva, ChemChina and Limagrain — control more than 50% of the world's seeds . From seeds and fertilizer to beer and soda, just a small number of firms maintain a powerful hold on the food industry, determining what is grown, how and where it's cultivated and what it sells for. Only 10 companies control almost every large food and beverage brand in the world. These companies — Nestlé, PepsiCo, Coca-Cola, Unilever, Danone, General Mills, Kellogg's, Mars, Associated British Foods, and Mondelez — each employ thousands and make billions of dollars in revenue every year.



Roberts (2023) Food Trade and Slumpflation

## 54.2 Housing

### 54.2.1 Land Tenure Finance

*Ryan-Collins Abstract*

This article examines the links between private property in land and the financial system. Private landed property (PLP) has played an important role in supporting the growth of modern banking and credit systems, industrialization, and economic democratization. However, since the 1980s, high-income economies have exhibited a strong preference for PLP as a form of tenure, in the form of home ownership in particular. This pattern has combined with financial liberalization and innovation to create a land-finance feedback cycle with negative social and economic outcomes. They include a housing affordability crisis for younger and poorer socioeconomic groups; rising wealth inequality as land rents have become more concentrated; economic stagnation due to capital misallocation; and increased financial fragility as household debt has exploded. We illustrate these historical processes in the Anglo-Saxon “home-owning democracies,” where they have been strongest, focusing in particular on the United Kingdom, Australia, and the United States. This article considers how alternative tenure arrangements and reforms to finance and taxation could help mediate these dynamics.

*Ryan-Collins Memo*

**Residential Capitalism**

The dominant model of land tenure in high-income economies is private ownership, whether the use is commercial or residential. This fact is rarely questioned, but it could be considered one of the great paradoxes of modern capitalist economies. For, unlike most commodities, land (considered as location) does not observe the basic rules of supply and demand upon which capitalist exchange and markets depend for their operation and efficiency. Land has special properties— inherent scarcity, fixity, and irreproducibility. As a result, increased demand yields higher economic rents, which tend to be capitalized into the market value of land. To say that land—which absorbs the growing wealth of the community and wider society in which it sits—should be privately owned and its value only lightly taxed (relative to income and profits) is perverse since the “owner” has done nothing to merit such gains. It was for this very reason that the founding fathers of modern economics—Adam Smith, David Ricardo, John Stuart Mill, and Karl Marx—viewed the landed class and land rents more generally as a threat to capitalist development.

An important reason private landed property (PLP) has become so entrenched as a mode of tenure is its intimate relationship with finance. Titled, privately owned land is arguably the most attractive form of collateral in existence for financial institutions, given the above-mentioned special properties. By supporting the development of modern banking, PLP encouraged economic development and industrialization in both settler colonies and feudal regimes. The perverse economic effects of PLP are then, to some extent, counterbalanced by its enabling of finance and capitalist development.

But the interaction between land and finance is a delicate one. As a result of financial liberalization and globalization in advanced economies, financial speculation has become the dominant motive for investment in land and its appurtenances (most notably residential housing) and the source of negative consequences for society and the economy.

Policy attention has focused almost exclusively on so-called supply-side solutions to the housing problem, whether it be deregulating planning or zoning systems or just building more affordable homes, with much less attention paid to the demand side of the equation or the underlying institutions that have created the land-finance cycle.

In academia, the term “financialization” (of housing/real estate) has become popularized since the 2008 global financial crisis (GFC). However, a number of urban scholars, including Anne Haila, noted the problem of land being exploited as a financial asset rather than a factor of production or consumption good well before the GFC.

In one of her final works, critiques classical economists, who underestimated the ongoing power of landowners in capitalist accumulation. She also notes more recent trends of both corporations and the public sector selling off land in order to release capital to their core business and public services, respectively. She calls for “a theory explaining landowners’ power and alliance with financiers,

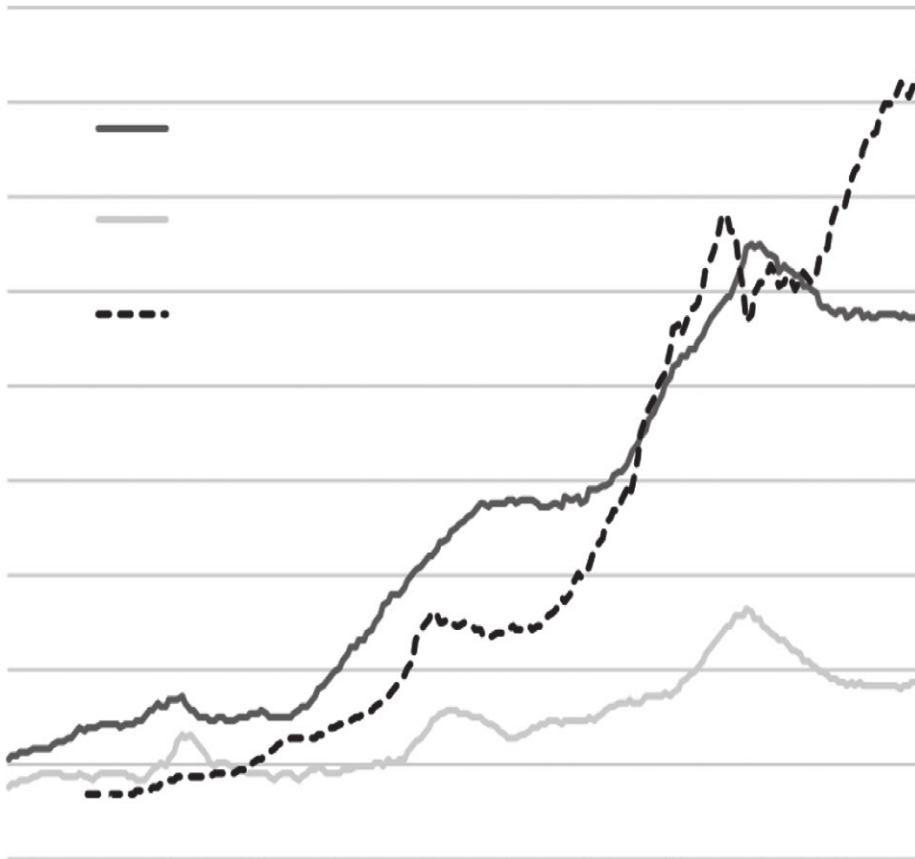
and the relationship between real estate and finance sectors".

In this article, I focus on the relationship between PLP and the financial sector over time, with special attention to Anglo-Saxon liberal capitalist economies, in particular the United Kingdom, the United States, and Australia, where this mode of tenure, along with financial liberalization, has been promoted most vigorously.

In the hierarchy of risk of property titles, land carries the least risk, being superior to real capital goods, tradable assets, and contracted income. The more secure the debtor's property title, the more easily he or she can secure credit and the lower the rate of interest. The rate of interest is then determined by the quality of collateral, and there is no "natural rate" that clears the goods market achieving equilibrium. This point has been noted by some economists critical of an equilibrium notion of perfect information.

Credit constraints, which are judged by the degree of liberalization of the mortgage credit markets, are the "elephant in the room," helping to explain significant differences in house prices and consumption between countries such as Germany, the United States, the United Kingdom, and Japan.

The deregulation of mortgage finance was initiated in the United States, the United Kingdom, and Australia following the collapse of the Bretton Woods agreement, which led to the freeing up of international credit flows and increasing competition between the New York and London financial sectors (Helleiner 1994; Krippner 2011). The election of conservative, free-market-oriented leaders (Reagan and Thatcher) in the United States and the United Kingdom led to the repeal of regulations that prevented banks from competing with building societies and other established housing finance institutions. Limits on interest rate charges and tax disadvantages were removed, along with other sectoral credit controls on mortgage credit—the so-called Big Bang. The removal of foreign exchange controls also made banks less dependent on domestic deposits for their funding, de-linking domestic incomes from mortgage credit growth.



From the mid-1970s, U.S. banks were able to borrow from abroad to finance mortgages, in particular from the largely unregulated “Euro-dollar” market. Domestic financial innovations also enabled banks to attract deposit funding away from the thrifts.

By opening up housing finance to a vast global investment sector, it broke down previous national and local institutional barriers to the funding of home purchase.

A key development motivating these dynamics in high-income economies in the 1980s was the emergence of a new international regulatory framework—the “Basel Accords”—that introduced for all banks minimum capital requirements that are related to the type of assets they held. Loans secured by mortgages on residential properties only carried half the risk weight (50 percent) of loans to non-financial firms in the original Basel Accord. Securitized mortgages, which were viewed as more liquid and thus even less risky, only carried a 20 percent risk weight. The effect of these reforms was to allow banks to earn fees and net interest margins by holding 2.5 times more credit risk in real estate than they had before, without any increase in their capital requirements.

These regulatory strategies can be seen as a classic example of the fallacy of composition. Regulators and banks, encouraged by policy-makers keen to boost homeownership levels, were right to consider that at the level of any individual bank, a residential mortgage loan will be less risky than an unsecured loan to a firm. But from the perspective of macroeconomic and macro-financial stability, the synchronized expansion of mortgage credit well beyond the rate of growth of GDP and of incomes was clearly problematic. Until the 2007–2008 crisis, however, central banks were reluctant to act, continuing to strictly observe their mandated focus on consumer price stability.

Credit and finance are not neutral. Where they go determines their effect on the economy. Traditional lending to firms supports capital investment and helps pay wages, leading to increased GDP transactions, economic growth, and productivity. The increased growth in the economy enables firms to pay back both the principal and the interest, preventing the build-up of excessive debt overhangs. But credit creation for the purchase of existing property and land increases property prices without stimulating investment or wages. Households must either take on more debt or reduce their spending, leading firms to cut back on investment, leading to lower profits and stagnating wages. This, in turn, feeds into more demand for mortgage debt as house prices continue to rise relative to incomes, generating a positive feedback cycle where increasing mortgage credit effectively creates its own supply. A study of 46 economies over 1990–2011 found a negative relationship between the stock of bank lending to domestic real estate and economic growth but positive growth effects of credit flows to non-financial business.

In Anglo-Saxon economies, homeownership levels appear to have peaked in the early 2000s and have been falling since then, despite further increases in mortgage debt relative to GDP. In these countries, housing wealth and land rents have become more concentrated in older and richer cohorts, with significant growth in “petty landlordism” and second-home ownership.

### **Privatized Keynesianism**

This model of economic development has been termed “privatized Keynesianism” or “house-price Keynesianism”. Encouraging the personal accumulation of assets, such as housing equity, as a means of meeting the cost of social care and retirement needs in an aging population also made political sense to neoliberal governments keen on reducing the role of the state. “Asset-based welfare” began to emerge as a new policy framework, with homeownership leading to less support for higher taxes to fund universal welfare provision and pensions.

The embrace of financial liberalization and homeownership by Anglo-Saxon capitalism may have also been driven, in part, by broader national economic strategies towards globalization. These countries saw their export industries, in particular manufacturing, facing fierce competition from China and other emerging markets and may have seen attracting foreign investment into real estate and other financial assets as a means to offset the resulting trade deficits.

Other Western economies, such as Germany and Sweden, were able to preserve their manufacturing sectors and generate current account surpluses that made asset inflation a less attractive macroeconomic strategy.

### **Post-2008 Developments**

Post-crisis, central banks have taken a closer interest in monitoring house prices and introduced macro-prudential policies aimed at restricting real estate credit to address “systemic risks” across national economies (Cerutti et al. 2017). Regulators have imposed limits to loan-to-value and loan-to-income ratios for mortgages and also targeted buy-to-let and interest-only mortgages with some success in the United Kingdom, Australia, Switzerland, New Zealand, and Hong Kong.

However, countervailing this has been extraordinarily loose monetary policy. Short-term policy interest rates have been reduced to the zero lower bound, whilst quantitative easing (QE) programs have driven down medium- and longer-term rates via the vacuuming up of government bonds from capital markets. The hope was that this would lead investors to invest more in risky, real-economy investments such as debt and equity issued by companies. But the evidence suggests that, rather than stimulating real-economy growth, QE has pumped up asset prices, in particular house prices.

The “wall of liquidity” created by QE catalyzed a global search for higher yielding, but safe, assets). Landed property, particularly in rich global cities, proved to be one of the most attractive assets for investors with global reach, not least because they could easily source borrowing, backed by property assets, at ultra-low interest rates from a banking sector still with a preference for real estate. Property prices in global cities have “synchronized,” with price dynamics closer to each other than with cities and regions in domestic hinterlands (Duca 2020). Although speculative buyers from both home and abroad usually target “prime” (very expensive) properties, speculation raises prices across these cities and means they become unaffordable for those on middle incomes.

A financial sector that has become so dependent on high and rising collateral values.

Only a developer protected from the profit motive, such as the state itself, can ever have any incentive to produce houses at a rate that would lower the cost of housing overall in the area they are being built.

East Asian states, in particular Singapore and Hong Kong, adopted a strategy of public land value (or rent) capture, becoming “property states.” In Singapore, 90 percent of the land is owned by the state, which leases it out for development, enabling it to capture land value increases as leases come up for renewal; 82 percent of the resident population lives in high-quality public housing provided by the state. This creates a virtuous circle of socialized non-bank mortgage finance that has proven effective at providing affordable housing. The average house-price-to-income ratio in Singapore is one of the lowest in Asia and has

been falling since a housing bubble in the mid-1990s. Meanwhile, the system provides the Singapore government with a handsome source of public revenues.

More aggressive macro-prudential policy would seem the most obvious and easiest first step for central banks and financial regulators seeking to reduce the flow of mortgage credit into real estate.

The easiest way to introduce such a scheme might be to have some form of productive credit ratio, whereby a minimum ratio (such as 30 percent) of a bank's assets should support non-financial firms. Currently, that ratio is around 10 percent on average in the United Kingdom.

Regulations should support banks that are able to de-risk their loans via methods other than property-based collateral. "Stakeholder banks" are more focused on business lending, do not have such stringent collateral requirements, and devolve decision-making to branches. They de-risk their loans not by requiring property as collateral but by building up strong and long-lasting relationships with and understanding of the businesses they lend to.

A tax on the incremental increase in the unimproved market value of land that would fall upon the landowner is the obvious policy choice, following Henry George's ([1879] 1884) concept of a land value tax (LVT). By attaching a cost to owning land, LVT diminishes the incentive to buy land for speculative purposes—in hopes of realizing capital gains—rather than for productive purposes or simply to provide shelter.

By the 1980s, the interaction between titled land and finance morphed into a damaging feedback cycle whereby the financial sectors became addicted to property as the main source of profits, collateral, and dominant assets on the balance sheets of financial institutions. The more credit flows into land, the higher house prices and collateral prices go, and the more attractive property becomes as an asset against which to lend. Ultimately, this leads to land and house prices rising well above incomes, driving up land rents and creating financial fragility and widening wealth inequality.

Ryan-Collins (2021) Private Landed Property and Finance: A Checkered History (pdf)

### 54.3 Ocean ('Blue') Economy

*Crona Abstract*

Ocean activities are rapidly expanding as Blue Economy discussions gain traction, creating new potential synergies and conflicts between sectors. To better manage ocean sectors and their development, we need to understand how they interact and the respective outcomes of these interactions. To provide a first comprehensive picture of the situation, we review 3187 articles to map and an-

alyze interactions between economically important ocean sectors and find 93 unique direct and 61 indirect interactions, often mediated via the ocean ecosystem. Analysis of interaction outcomes reveals that some sectors coexist synergistically (e.g. renewable energy, tourism), but many interactions are antagonistic, and negative effects on other sectors are often incurred via degradation of marine ecosystems. The analysis also shows that ocean ecosystems are fundamental for supporting many ocean sectors, yet 13 out of 14 ocean sectors have interactions resulting in unidirectional negative ecosystem impact. Fishing, drilling, and shipping are hubs in the network of ocean sector interactions, and are involved in many of the antagonistic interactions. Antagonistic interactions signal trade-offs between sectors. Qualitative analysis of the literature shows that these tradeoffs relate to the cumulative nature of many ecosystem impacts incurred by some sectors, and the differential power of ocean sectors to exert their rights or demands in the development of the ocean domain. There are also often time lags in how impacts manifest. The ocean governance landscape is not currently well-equipped to deal with the full range of trade-offs, and opportunities, likely to arise in the pursuit of a Blue Economy in a rapidly changing ocean context. Based on our analysis, we therefore propose a set principles that can begin to guide strategic decision-making, by identifying both tradeoffs and opportunities for sustainable and equitable development of ocean sectors.

Crona (2021) Sharing the seas: a review and analysis of ocean sector interactions (pdf)

### 54.3.1 Financing the Ocean Economy

*Sumaila Abstract*

The ocean, which regulates climate and supports vital ecosystem services, is crucial to our Earth system and livelihoods. Yet, it is threatened by anthropogenic pressures and climate change. A healthy ocean that supports a sustainable ocean economy requires adequate financing vehicles that generate, invest, align, and account for financial capital to achieve sustained ocean health and governance. However, the current finance gap is large; we identify key barriers to financing a sustainable ocean economy and suggest how to mitigate them, to incentivize the kind of public and private investments needed for topnotch science and management in support of a sustainable ocean economy.

Sumaila (2021) Financing a sustainable ocean economy

## 54.4 Blue Hegemony

*Schutter Abstract*

The blue economy has become an influential concept in international and national marine governance discourse. Various contested interpretations exist, and different actors choose to emphasise different aspects of the triple goal

of environmental, economic, and social improvements. However, despite disagreement over its interpretations, the blue economy finds support in many different arenas. This paper explores the position of dominance that the blue economy has reached, and examines how supporters of the concept maintain and employ power to keep it relevant. The paper applies a mixed-methods approach: 29 semi-structured interviews with people in roles of formal decision-making across the fisheries sector, economic development and tourism sector, conservation and environment sector, and specific blue economy-institutions are supplemented by observations from the wider landscape during 4 months of fieldwork in Seychelles. Findings show that in international discourse, the blue economy obtains and maintains its influence through persuasion and through the construction of a ‘common sense’ and productive way forward, capable of achieving triple wins. Within this narrative, oceans are undergoing a reconfiguration as economic frontiers, and the blue economy places economic growth from oceans centrally within contemporary environmental governance. Maintaining the blue economy as a powerful concept on the ground is done through social power relations: the blue economy functions as a boundary object, contributing to depoliticisation of discussions about a shared vision. Depoliticisation allows Seychelles to continue using the concept despite simmering dissent among policy makers, practitioners, and resource users. Dominance of the blue economy on the international stage means that associating with it brings Seychelles visibility and influence. The usefulness of the concept in eliding tensions makes it difficult for counter-hegemony to arise, although alternatives are emerging elsewhere, such as blue justice. However, fundamental change is needed to re-politicise environmental decision-making and explicitly discuss values and images attached to the blue economy.

*Schutter Memo*

The blue economy has widely gained influence at the international stage, and ties in with the hegemonic regimes of contemporary global environmental governance. It has become influential through persuasion and consent, and the boundary object status is useful to facilitate communication but also to offer something to everyone. The triple bottom line promise creates an appealing sense of progressive change, benefiting the economic, environmental, and social dimension simultaneously. Interest in the blue economy is further fuelled by framings of the ocean as underdeveloped and underexplored [31,62], and in need of rational management. The blue modernisation narrative thus absorbs issues associated with the ocean economy (e.g. coral bleaching, pollution, industrial overfishing). It avoids “challeng[ing] the factors causing our ecological ills” [77], constituting a passive revolution of continued and even accelerated exploitation through closing off pathways to alternative trajectories [66]. The emerging conceptualisations and proposed ways of governing oceans also determine who is considered to be connected to the ocean, and consequently, which stakeholders have a voice in blue economy debates. The lack of a culture of local civil society engagement and the ambiguity in the concept means that local engagement in Seychelles has proven difficult. Instead, voices from the international

civil society have managed to gain positions of influence, strengthened by the increased reliance on NGOs in marine environmental governance following economic restructuring and cuts in government budgets.

Schutter (2021) The blue economy as a boundary object for hegemony across scales (pdf)



# **Part I**

# **Appendices**



## Appendix A

### About



*Dyre Haugen and Dyrehaugen* is Webian for *Jon Martin* - self-owned Globian, Webian, Norwegian and Canarian with a background from industrial research policy, urban planning and economic development consulting on global, regional and urban scales. I am deeply concerned about the (insane) way humanity (i.e. capitalism) interfere with nature. In an effort to gain insights in how and why this happens stuff is collected from around the web and put together in a linked set of web-sites. The sites are operated as personal notebooks. However, these days things can be easily published to the benefit of others concerned with the same issues. But be aware - this is not polished for presentation or peer-reviewed for exactness. I offer you just to have a look at my ‘work-desk’ as it appears in the moment. Any comment or suggestion can be mailed to [dyrehaugen@gmail.com](mailto:dyrehaugen@gmail.com) You can follow me on twitter as @dyrehaugen. Thanks for visiting!



## Appendix B

# Links

### Current Dyrehaugen Sites:

- rcap - On Capitalism (loc)
- rclm - On Climate Change (loc)
- recs - On Economics (loc)
- rfin - On Finance (loc)
- rngy - On Energy (loc)
- renv - On Environment (loc)
- rsts - On Statistics (loc)
- rurb - On Urbanization (loc)
- rvar - On Varia (loc)
- rwsd - On Wisdom (loc)

### Blogs:

- rde - Blog in English (loc)
- rdn - Blog in Norwegian (loc)

### Discontinued:

- jdt - Collection (Jekyll) (loc)
- hdt - Collection (Hugo) (loc)

### Not listed:

- (q:) dhe dhn jrw56
- (z:) rcsa rpad rstart



# Appendix C

## NEWS

### C.1 221220 Market-based development finance in crisis

On December 13 Ghana reached staff-level agreement on a \$3 bn IMF credit package. In addition it is seeking to negotiate a 30 percent haircut with private creditors on tens of billions in bonds. Already in September Ghana's 2026 eurobonds plunged to a record low of 59.30 cents on the US dollar. By the end of October yields had surged to 38.6 %, up from less than 11% at the end of 2021. Meanwhile, inflation is headed to 40 percent and the cedi is the worst performing currency not just in Africa but of all currencies in the world.

You could shrug and say that this is Ghana's second IMF deal in 3 years and its 17th since independence in 1957. Plus ça change. But it is more than a national crisis. It is the latest sign that the entire model of market-based development financing is in crisis.

Toozé (2022) Chartbook #181: Finance and the polycrisis (6): Africa's debt crisis

### C.2 210717 Carney calls for stronger Government Regulation

For the world to meet its climate goals, governments would have to force industries to follow *clear rules, on everything* from energy generation to construction and transport, and set carbon prices that would drive investment towards green ends and close down fossil fuels.

"We need clear, credible and predictable regulation from government," he said. "Air quality rules, building codes, that type of strong regulation is needed. You

can have strong regulation for the future, then the financial market will start investing today, for that future. Because that's what markets do, they always look forward."

Without such robust intervention from governments, markets would fail to address the crisis.

Gurdian

# Bibliography