

New Austrian Society

# Austrian Economics in One Lesson

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# 1 Empirics, Verification, and Methodology

Methodology is the foundation of economics. As such, I think it's important that this be the first section of the FAQ. Throughout history, there has been much debate about what is the correct way to do economics. Without going into the historical details of the methodological debate, we know being students of the present time, that the dominant principle of economics today is based on "marginalism". This was the view put forth by the first Austrian economist Carl Menger in the late 19th century. Today, however, the Austrian view is focused on a different problem, more pertinent to the modern day debate as marginalism is already widely accepted. Thus a defining feature of Austrian economics in the past would be the belief in marginalism. Today the defining feature is different. Austrians today are critical of the mainstream treatment of economic analysis with its excessive reliance on mathematics and modeling. Lots and lots of time and effort is placed into creating complicated models and then attempting to empirically verify their strength. Milton Friedman famously proposed the view that the assumptions which models employ need not be realistic, as long as the model which they are a part of accurately predicts the future[1]. Is this effort misplaced? Not necessarily but it needs some important clarifications and deserves a more critical look.

Many economists talk about "verification", but what exactly is "verification" in economics? Certain words tend to be used in many different ways depending on the circumstances so it's important to be specific on how you are using some term. In economics usually the term "verification" is used to refer to the "explanatory or predictive value of hypothetical generalizations"[2]. But this isn't clear enough. What exactly does this mean?

There are a few particular terms that need careful defining which make the issue much more clearer. Consider an example of an economist in a research position whose job is to predict the actions of the agriculture industry after an increase in central bank activity. The initial step before any research begins is called a "hypothesis". A hypothesis is a

proposition or a provisional statement made which needs further “testing”. Before we go further, what’s important to note here is what is assumed implicitly. What’s important to note is that any sort of theorizing requires very general implicit assumptions. These can be called “fundamental assumptions” or “foundational premises”. As the term suggests, they form the foundations of theory building and are the most crucially important in attempting to explain reality. Usually, they are inductive and of a high degree of generality. For example, we often make the generalization that “if a man is here, then he is also not there” otherwise without this we could not continue theorizing about what the truth actually is.

“Most of the facts of history are based on previously formed general hypotheses or theories. To establish or verify ”historical facts”, we have to rely on the acceptance of numerous general hypotheses (theories) and to verify general hypotheses we have to rely on the acceptance of numerous data representing ”facts” observed or inferred at various times and places. We always must take something for granted, no matter how averse we are to preconceptions”[2]

## 1.1 Pure, Specific, and Conditional Theories

Suppose now the analyst has said that he believes the implications of the central banks activity will create lesser employment. A commonly used phrase that people will hear is the statement “that may be true in theory but it’s false in practice!”. While this statement make sense at first, it’s a problematic statement that often gets abused. The problem is in the definition of the term “theory”. You have to distinguish between theories, hypotheses, hunches and conjectures. A ”hunch” is an educated guess or a feeling about something. A ”conjecture” is often used to mean a conclusion formed based on incomplete information. A ”hypothesis” is a starting point proposition which needs further “testing” and “evidence”[3]. If the tests seem sound then the hypothesis becomes a “theory”. You can also distinguish between two types of theories: descriptive and predictive. A general (foundational, fundamental) assumption which is used “as a ”principle” for an argument or for a whole system of thought, but is neither self-evident nor “proved”, is called a ”postulate” or an “axiom”[2]. The problem is that the terms “theory” “hypothesis” and ”conjecture”

are incorrectly used interchangeably. It ends up defining a theory as a false conjecture when it's actual meaning is a warranted proposition whose logic is sound and has been well tested[3]. If something is true in theory then it must also be true in practice and vice versa.

For Austrian Economists, the foundation of economics rests on the fundamental assumptions and the logical extensions that are derived from them. In short, good economics for Austrians means sound arguments [4]. Some economic theory is axiomatic-deductive meaning it is derived from basic universal premises (axioms, postulates, fundamental assumptions, ideal types). This is called "pure theory". It is called "pure" because the theory applies universally and its "universal" because the premises apply to all humans equally regardless of time, place or culture. For the economist, these inductive premises include, among various others, that human action is "rational", that humans have ends or goals and are able to rank their preferences and that people generally prefer to satisfy their desires sooner rather than later. The foundation of economics is based upon such premises.

Ludwig Von Mises in his book *Human Action* calls the pure theory of human action "praxeology". For Austrian Economics, and economics in general, human action involves purposeful, rational behavior. Rational people having ends or goals mentally rank these ends as more and less important and then "economize" in the use of means to satisfy the more important ends. Therefore, human action implies purposeful behavior. For a person to be rational, he must satisfy a few basic criteria, which we presuppose based on general experience. A "rational" person means that this person is sane or has a functioning mind, that this person "economizes" seeking maximum subjective benefits and minimizing subjective costs and that this person has preferences which are consistent. If a person is not rational then he is outside the scope of economics because economics can only analyze rational action. Reality would be in quite a bit of trouble if this assumption wasn't generally true!

These premises are inductive because they are warranted based on empirical investigation and logic, which any person may do for themselves. For a visual analogy, you can



think of these as making up the “machine” representing the human actor. If you change these fundamental assumptions then you’ve changed the machine itself[2]. Its important to note that these fundamental assumptions can’t be isolated for testing since any attempt at empirical verification of these assumptions by reference to inner experience is obviously impossible. What they require is for one to do a subjective investigation of their own behavior, sentiments, and biases as well as the observation of other people’s actions, which we also interpret subjectively. If these fundamental assumptions and ideal types help fulfill the goal of understanding the world of human action and human choice, then they’ve fulfilled their purpose and leave us better off. In the social sciences, the problem is that the man is both the observer and subject of observation [2], so this makes the methodological prescriptions different from that needed for other sorts of sciences.

You can challenge the fundamental assumptions but you can’t do so by independently “testing them” in isolation, but only by coming up with better parts for the “machine” that are more satisfactory than the last. It seems counter-intuitive but there should be nothing problematic in this. Induction is a powerful tool. Humans have learned many important things using induction. For example, a powerful inductive revelation is the theory of gravity or Newton’s 3 laws. These fundamental assumptions are sometimes called “procedural rules”, because they aren’t synthetic, nor a priori, but remain in use as long they have heuristic value [2]. As Einstein puts it, these laws aren’t independently isolatable or testable but “free creations of the mind” [2], inductively derived based on empirical observation and logic.

Pure theory can also include conditional propositions. Some of the famous and widely used conditions in economics are the ”profit-maximizing” individual or the ”perfect knowledge” assumption of firms or ”factor mobility” of the factors of production. Economics does not say that all firms seek to maximize monetary profit, that individuals have perfect knowledge or that factors are perfectly mobile so the conditional pure theory applies only if the condition is applicable.

Using the principles of pure theory, a few of which were previously described, you can then attempt to explain specific phenomena; specific because they only apply to a particular place, time or culture. This broader system under pure economic theory is called a “hypothetico-deductive” analysis. You form a hypothesis, such as what our central bank researcher might do, and then “test” the hypothesis by looking at past or present data. The hypothesis becomes a theory or a theorem when it’s logic has been verified as sound and has been well tested. An example of such a theory in economics would be a theory of the 2008 Housing Bubble. An example of a conditional theory of this sort would be a hypothesis of the effect an increased minimum wage law will have in 2020 on employment.

## 1.2 Interpretive Understanding

An important principle of all theory is that of “Verstehen” or “interpretive understanding”. This concept originated from Max Weber, whose goal was to synthesize old German historicism with the Austrian School approach of focusing on the individual to form a robust and scientific approach to understanding causation. Verstehen is a German term whose meaning can be generalized to “putting yourself in anothers shoes”. For example, suppose there is a house in the suburbs which has a pool in the backyard and two prospective buyers go to visit it. Each individual will interpret the situation based on their experiences, values and preferences. “As humans, we don’t just see facts, but we interpret them based on our previous experiences, beliefs, and values. We also interpret the internal acts such as how we feel and think and imagine that other humans think and act similarly to how we act” [3]. The way we try to understand other people’s behavior is by imagining ourselves in their shoes and then trying to get an idea of what exactly is going on in this person’s head to understand why they are making the choices that they are making. This concept was then taken forward and applied to economics by people such as Schutz and Machlup.

In attempting to analyze society, we create “ideal types” (sometimes also called pure

types). What this means is that we craft particular “roles” that people play, distinct from other roles that they play. In other words, to render human action understandable we have to impute to them some sort of framework of motives and ends [5].

“If a visitor from Mars were to enter a lecture hall, a courtroom, and a church, the three places would seem quite the same to him in outward appearance. From the internal arrangements of none of the three would be able to comprehend what the presiding official was about. But let him be told that one is a professor, another a judge, and the third a priest, and he would then be able to interpret their actions and assign motives to them” [6].

In economics “entrepreneur”, “landowner” and “worker” are examples of ideal types and even though a single person can play multiple of these roles at the same time, by distinguishing these roles that people play from roles they don’t play, we can try to understand and also predict the outcomes of people’s reactions in response to certain sorts of changes in conditions. For example, an entrepreneurs role is to be alert to opportunities and look for profit. The ideal type is fulfilling the conditional claim within pure theory. We can guess that if entrepreneurs tend to have particular aims and perform a particular role then this fulfills the condition and we can make predictions of the future that are more likely to be true. We can come to meaningful conclusions about the behavior of price under impact from changes in the economic environment. The prediction could become stronger if the institutional circumstances are more limiting on the entrepreneur requiring them to be more alert to profit/loss. An entrepreneur will likely be more motivated by profit/loss and less likely to display random characteristics apart from the one assigned by the role in a competitive market than a less competitive market because profit/loss will impinge on them more directly.

### **1.3 Verification and Prediction**

With all this in mind, the final question is: how exactly do you test your hypothesis? Again, it is important to distinguish between two types of hypothesis: descriptive and predictive. Consider again the example of the man doing research. He starts with his

hypothesis that increased central bank activity will create less employment in agriculture. A hypothesis is tested by a two-step procedure: first you compile all the factual assumptions of the hypothesis and then deducing as much as can be inferred. Then you can confront these conclusions with data obtained from observation of the phenomena concerned. The hypothesis is confirmed if reasonable correspondence is found between the deduced and the observed” [2]. If this hypothesis contains conditions which are unidentifiable or cant be verified by independent investigation then this prediction can never be ”confirmed” or ”verified”. Instead it is said to be falsified if there’s a finding of irreconcilable contradiction and confirmed when it is not dis-confirmed. The number of tests which such a hypothesis survives makes the hypothesis ”stronger” or more trusted in its “trueness”.

Prediction was briefly discussed earlier however it is a different sort of problem entirely. It’s not so easy to assign certain kinds of theories ”predictive power”. Fritz Machlup explains this with an analogy of the methodology of a meteorologist [7]. Suppose a meteorologist wants to know and inform the public of the chances that it will rain tomorrow. How does he go about doing this? Likely he will use some form of regression analysis. A regression analysis is a set of statistical processes with which you try to estimate the relationship between some dependent variable and a set of independent variables. The model which is used is also augmented with some scalar so the model can also represent an error term and/or the various unknown variables. Maybe after he’s done, he says that there will be a 20% chance it will rain in which case no matter the outcome, he will be right. The real meaning of this is that if he had taken many of the exact same cases, then out of those cases it should have rained 20% of the time and not 80% of the time. In economics, this kind of thing can become very problematical and can lead to some more or less useless conclusions.

The problem is that it all depends on what kinds of assumptions are embedded in the model so there could be an indefinite amount of results a single model could have at any moment in time and even more by changing the assumptions. It is not as simple as in the

physical sciences because in the social sciences such as economics, the experiments which such theories would need are non-reproducible. There just aren't thousands of equal cases you can test your model on like you can with most other things these tools are used for. A descriptive theory of the Great Depression might incorporate elements and details which are particular to that time but it's important to take caution. It's not so easy to use that theory to predict the next Depression because the conditions of the time and the mental states of the people then and the people now are unlikely to have stayed the same. And again these conditions are not replicable and may not even be identifiable. If our analyst tried using a similar method in order to say that employment would fall by a very specific number, say 6.3% in 5 years, it would be hard to have any level of confidence in his claim.

However, there are some kinds of predictions that do make sense in economics because the assumptions and theories embedded in them are more or less true such as what was mentioned earlier. Suppose I tell you that if the central bank creates more money and if people spend that money then it's almost impossible for prices not to rise. You can call this a sort of "negative" prediction but in fact it's the nature of the system and the typical persons (ideal types) involved that makes it a prediction of a very high generality. It will be true almost all of the time. Another possible use of predictions is to set some bounds and say that based on what is known at the moment, it's unlikely for the price level to rise more than 2%. This is a common practice in real markets such as used by professional appraisers or investors. A pure prediction in the sense that most people speak of would be if this prediction said not only that the price level will rise but also that it will rise by 6.3 percent and this like the previous example is just another example of a fatal conceit.

None of this is to say that empirical investigation of empirical hypotheses should be discouraged in economics, rather it should better inform economists of the limits of verification and empiricism. Austrian economics is open to theory from any school or approach so long as its pure theory can be derived from sound axiomatic propositions or has specific theory founded on pure theory.

Without this understanding, very quickly good economics can turn into bad economics.

## 2 Institutions and Incentives

Understanding the role of “institutions” in economics is critical if one wants to do an analysis of regulation, policy and the market process. For decades, economists have studied and been interested in the effects that institutions have on economic development. Austrian Economics contends, as well as most economic schools, that well-protected private property rights are indispensable for economic development. One reason for that is what we call the “Economic Calculation” and “Knowledge” problem. These will be discussed more in depth in a later chapter. It is important to first understand what institutions are and why they are indispensable in achieving economic growth.

### 2.1 What are “Institutions”

Institutions are the formal and informal rules governing human behavior [8]. Formal rules include written rules such as a constitution or the legal and political structure of written contracts which reduce risk and uncertainty. Informal rules include culture, norms and conventions not backed by formal law, but by social custom. One example is the informal imprint that is left on people from growing up in church and around religious influences while other other examples include families, associations, friendships and other spontaneous organizational structures [8].

Institutions in a certain sense can be thought of as the “context” of economics or “rules of the game”. As rules of the game, institutions structure incentives and affect the mechanism employed to transmit information [8]. Individuals respond to incentives based on the information they have at their disposal. The institutional environment thus determines if people engage in productive, unproductive, or destructive behavior [8]. Economic civilization depends on the complex exchange relations between peoples and across geographic boundaries. If the institutions which exist do not serve to enable and promote such behavior then this will hamper the growth of civilization. This requires property rights so

that people are able to discover and adjust. Only in a market can knowledge and prices be used and knowledge be generated by the prices being made known by the dynamics of the market.

There is a structure to the institutions which can be organized from higher-order institutions to lower-order institutions. The higher-order institutions are more permanent (slower rate of change or harder to change) while the lower order institutions are continuously changing. Tradition and custom would be an example of a higher-order institution - it changes very slowly if at all over a very long time. Governance and policy would be a lower-order institution, which regularly changes and updates. Such changes however are also constrained by the higher order institutions. A society's informal institutions for example have an impact on the formal institutions. Informal norms reflect the underlying belief systems, norms and traditions and are therefore self-enforcing. Where the formal institutions do not reflect the underlying informal norms, formal institutions will be costly to enforce because the formal rules governing society will be at odds with the underlying belief systems [8]. Consider the "war on drugs": in most countries, enforcing these drug policies is very costly and requires a wide array of policies whereas the rule of driving on the right side of the road has little cost and no obvious moral qualms.

## **2.2 Emergence of Institutions**

As previously stated , "institutions" can be broadly defined as the formal and informal rules governing human behavior and interaction. Austrian Economics places special emphasis on the "spontaneous" order of many institutions and structures in society. Without any genius central planner, complex chains of trade and coordination can be seen across all of the economy, the famous example being the production of pencils. Similarly, the emergence of institutions also happens somewhat spontaneously with no central planning. Many institutions are the by-product of actions which were not directly intended to gen-



erate the institutions which actually emerged. An example of this is language. It emerged spontaneously as a result of many individuals wanting to be able to communicate with each other. Another theory is that institutions will emerge when they are socially efficient and that institutions will be abandoned when they are socially inefficient. An example of this is property rights, which emerge because people realized over time that trade and allocation of goods to the most people's wants become difficult without ownership and discretion. Other times institutions form and become ingrained in society due to the writings and propagation of religious belief and ideology.

No view is necessarily more correct than the other however some apply to certain situations better than others. Each view of institutional emergence can potentially contribute to our understanding of how and why institutions emerge as they do.

### 3 Entrepreneurship and the Market Process

What is a "market" in economics? A "free" market consists of voluntary production, exchange, and consumption. Voluntary here means non-coercive, coercive being something that alters that which voluntary action would otherwise do. This would usually also require an exploration of ethics but for the purposes of this section, we can abstract away from this and simply say that it is usually confined within the informal institutions which dictate society or certain societies. In most societies you find that property rights are self-emergent so a violation of property rights would generally be considered an intrusion. For efficient economic calculation however, private property is indispensable.

#### 3.1 Marginalism

Austrian Economists pioneered what is now commonplace today, called "marginalism" or "marginal analysis". Marginal analysis involves the concepts of marginal utility, marginal costs, and marginal products. Underlying marginal analysis are the general assumptions or principles that resources are scarce and that they are scarce relative to human desires. Another way to express this is that if some good which is scarce is priced at \$0 then the quantity demanded is greater than the quantity supplied. "Utility" is the subjective importance one places on the use of a good and the satisfaction gained from the use of the good. Marginal utility is the gain in satisfaction from the use of one more unit of the good, holding all else equal. In mainstream utility theory, the marginal utility is treated mathematically with derivatives, where the marginal utility is the first derivative of the total utility function. Austrian marginal utility treats it slightly differently where the individual utilities are listed as an ordinal scale of preferences. The economic puzzle that this understanding solved is commonly explained with the case of water. Water is very useful, it has many uses, so its total utility is high. The marginal utility is for the least important use, the more important uses having already been fulfilled. Although the total

utility is high, the marginal utility of one more unit of water for washing a car is low, so the price people are willing to pay for a second car wash is low.

“Cost” in economics does not mean the monetary cost. When one engages in trade, there is a subjective gain - you would not have engaged in the trade if the thing you traded for wasn’t more valued to you than the thing you traded. The cost is instead the “opportunity cost” or what you could’ve gotten instead. The “marginal cost” is the cost incurred in attaining an extra amount of something. In production, the marginal cost would be the cost of the additional inputs used to make another unit of output. The marginal product is the change in output resulting from employing one more unit of a particular input. For a worker, their marginal product (MP) is equal to the extra amount of revenue raised by an extra unit of their work, such as an extra hour. For land, the marginal product is equal to the contribution an extra amount of land adds to the total value of output. After some amount of time, the marginal productivity will typically diminish as production increases, where each addition of the factor will contribute less and less to output.

Profit equals revenue minus explicit costs. Explicit costs include the costs that accountants record in spreadsheets such as the payments made for land, labor or capital goods. Explicit costs also include depreciation. This amount is commonly called “accounting profit”. The implicit costs also include the opportunity costs such as the wage you could have earned if you worked for another firm instead of being self-employed. When you also subtract implicit costs, then you get the “economic profit”. In the long-run, competition will drive economic profits to 0, while the accounting profit or normal profit remain positive. In traditional graphical representations, the “cost” curve includes the normal profit and so in a market of many sellers and free entry, there is “no profit” but the meaning of this is economic profit.

## 3.2 The Market Process

In mainstream economics, the basic model of the market structure is “perfect competition” meaning there are many firms and there is an absence of pricing power. This is modeled with a conventional supply and demand curve, where the curves cross is where there is price equilibrium. When there is a shift in supply and demand, there is a new equilibrium. The models are then reintroduced with new constraints such as information costs, and various others but these are knowable variables which one purchases at some cost. What Austrian economists focus on is the “market process”, how the market equilibrates when there is a shift in variables and how people get surprised, discover and learn as they react to these changing variables.

In economics, equilibration is the process of exhausting the gains from trade. Israel Kirzner in his book *Market Process*, explains how entrepreneurs who seek to make a monetary profit cause prices and quantities to move towards an equilibrium eliminating shortages and surpluses [9]. Kirzner distinguishes between underlying variables (UVs) “identified conventionally as preferences, resource availabilities, technological possibilities, regulation and taxes” vs the induced variables (IVs) consisting of the prices, methods of production and quantities and qualities of outputs which the market at any given time generates under the impact of the UVs. IV’s often change even though UV’s have not changed, which creates disequilibrium [9]. UV’s are also continually changing where IV’s have not, which create more disequilibrium. When there is disequilibrium unexploited opportunities become “discovered” or “created”. The “process” is defined as the sequence of changes that come from the sequence of entrepreneurial actions of discovery and creation. Sometimes actions the entrepreneurs make can be wrong, and thus be disequilibrating such as during speculative frenzies and moments of hysteria. But in practice, in normal times, we see more equilibration than disequilibration.

Ludwig Von Mises explains this with his model of the “Evenly Rotating Economy” or

ERE [10]. In the ERE, there is a static circular flow where the exact same occurrences happen over and over again where there is a fixed population, no innovation or anything that would deviate the cycle. Since the future is known with certainty, there is no scope for entrepreneurship.

However in a changing world, markets are constantly in disequilibrium. Change and entrepreneurship break the ERE. Thus, one role an entrepreneur fulfills is to exploit the market where the market has systematic tendencies and create more knowledge where it is lacking. Entrepreneurs profit in the process and the market as a whole sees general gains in efficiency and productiveness. Economists GLS Shackle as well as Ludwig Lachmann proposed the idea, sometimes referred to as “radical subjectivism” [11], that people don’t respond to circumstances in standard ways, that human action is unpredictable due to human expectations and that there is no particular tendency to reach equilibrium. There may be times where we are at equilibrium and times where we are not, but the tendency to equilibrate is not generally present or is not identifiable when it is present. Kirzner however recognizes the propensity of the entrepreneur to discover failures in existing patterns. People learn overtime and thus the market becomes more efficient as the process continues. He explains that equilibrating market tendencies can be traced back to entrepreneurial alertness [9].

Israel Kirzner calls this the “Market Process” to refer to the spontaneous order of the market. Its spontaneous because it happens through the dispersed actions of many individuals not intending to create such institutions and it’s orderly because the environment is such that individuals can form reliable expectations and identify rates of change relating to elements of the environment. This is what enables entrepreneurs to exploit opportunities for arbitrage so that gains can be made and inefficiencies can be reduced. Many economists as well as Austrian economists recognize that the future is uncertain, however Kirzner explains that although the future is uncertain, it is bounded [9]. There are fundamental economic regularities where individuals can learn from the past and also from their

experiences.

### 3.3 Historical Background

This perspective is in contrast to old school economic thought which attempted to explain economics by looking at history and economic events, and then generalizing using induction. Austrian Economics and most modern economics oppose this view. Today the general agreement is that the market economy tends to allocate resources according to the valuations of consumers and that prices are a result of the subjective value of a good to people. This view is also in contrast to the economic thought of some Marxists and other old school economic thought. This view is that central planning can be used to efficiently manage an economy and maximize human welfare. Austrian Economists also confronted this view and showed how this brand of Marxist thought is fundamentally flawed at an axiomatic level, and also how it fails at providing efficient allocation of resources and production. This debate ended with two prevailing ideas. One was the ‘knowledge problem’ [12] pioneered by F.A Hayek. The other was called the ‘Calculation Problem’ [13], pioneered by Ludwig Von Mises. The Knowledge Problem emphasizes the decentralized nature of knowledge and the Calculation Problem emphasizes the importance of prices. Central planners lack the knowledge needed for effective central planning. Prices reflect scarcity and values so without prices, entrepreneurs could not know how, where, when and which goods to produce which are most valued by consumers. With central planning, there is no way to measure scarcity and valuations. The next two sections will cover this in a little more detail.

An analysis of the market process is what gives the unique Austrian insight into the role and emergence of money, the importance of time and interest rates, a theory of capital goods, a theory of entrepreneurship and also a theory of the business cycle. These topics will be discussed in the coming sections.

## 4 The Calculation Problem

Can "Central Planning" be used to run an Economy? This is the question we pose when looking at the *Calculation Problem*. The word "socialism" is often attached here, but today that word has become very vague and is best avoided. Central Planning is the idea that the entire economy of a country (or the world) can be planned by a central agency. Several societies have attempted this, such as the USSR.

Imagine a Central Planner in his office. His subordinates give him all sorts of facts about the production of various goods. Can these facts be used to allocate resources? No, not by themselves and certainly not directly. That's because each type of good is different. You cannot compare apples to oranges. Usually that phrase is used as an analogy, but here it's directly true. One type of good cannot be counted directly in units of another good. Mises point[13], this is the simple problem, you can't calculate in dis-similar units.

This is important because different goods are not economically separate. All goods and services use common basic inputs. Labor is used, many different kinds of labor. Land is used too, many different kinds of land. Then there are capital goods. Often capital is specific to one end product. For example, a cider press can only be used to make apples into cider. However, the steel used to make the cider press has many possible uses. All capital goods, no matter how specific, are made from basic capital goods that have many possible uses.

Some think with enough technical information the problem can be solved. However, technical information can't solve the problem by itself. There are the desires of the people to take into account. We shall ignore that for now. As an approximation to those desires, the Central Planner can pick a set of consumer goods that will be produced. Each person can then be given a book of coupons issuing them their share. The decision can be made to produce X apples, Y oranges, Z tons of coal, etc.

Does this solve the problem? We have a chosen set of goods and known technological

processes to make them. We also have known technological inputs such as labor, capital goods and land. Some Economists, such as Oskar Lange and Enrico Barone [14] claimed that this solves the problem. The set of consumer goods assumed to be necessary can be used to calculate the inputs necessary to produce them through the concept of Walrasian equilibrium.

The argument here is essentially that prices can be decided by a simulation of competition. We know the necessary outputs. So different configurations of inputs can be tried to achieve the production of those outputs. There must be one correct answer - so some Economists suggested.

Lange suggested that each production plant can use simulated prices and have a simulated profit and loss account. It's manager can compete with managers of other plants to produce the most at the least cost. Or they could compete to produce profit which is paid back to the state. Accounting entries between plants would exist; they would take the place of money and monetary calculation. Successful managers could then be given a bonus. As a result, Lange believed that the dynamism of market economy could be retained alongside complete government control and a very small amount of inequality. Mises pointed out that this sort of thinking is also incorrect. This is the second part of the Calculation problem, which is probably better described as the "appraisement" problem.

Suppose there are capital goods with a long duration being produced called "fixed" capital. Fixed capital poses problems because it's return is not clearly defined. It's something that's discovered over time. A machine can last many years or decades. It continues to be useful if the goods it produces are still wanted. As a result, a set of profit and loss accounts cannot really reveal a price for long-lasting capital goods. If we assume that the future is exactly the same as the past then each capital good has a clear price. But, the future cannot be the same as the past. This is especially true if the Central Planners want a world where the production of goods rises.

Here is a demonstration of the problem; let's suppose that two plant managers submit



their accounts to the central planners above them. The planner above them notices that one of them has spent a lot on new fixed capital. The one, who has spent less on fixed capital, has made the most paper "profit", and provided goods for the lowest unit cost. The planner is about to give that manager the larger bonus, but the first manager protests. He points out that his investment in fixed capital will bring down the units costs at his plant in future years. He claims that he should have the larger bonus. The problem here is that there is no objective way to decide the issue. The planner must decide who he believes. The return on fixed capital happens over a long period of time, often much longer than managerial appointments and sometimes longer than human lifetimes. This "appraisement" problem in turn creates an incentive problem. The planner and plant managers are likely to do whatever is best for their own careers.

In practice, it is because of issues like this that we have things like stock markets and stock market analysts. If a profit and loss account showed everything then the price of stocks would be determined entirely by those accounts. There would be no speculation on stock prices and every firm would be valued on its last reported profit.

This problem is related to the Knowledge Problem, which is treated in the next section.

## 5 The Knowledge Problem

Knowledge is spread out across the economy and across society. Existing market economies use this knowledge in many different ways. Can Centrally Planned Economies do the same? This Knowledge Problem is often misunderstood.

Mises brought us the Calculation Problem which is discussed in the last section. He pointed out that economic calculation cannot be done directly. There is no simple way to measure cruise liners in terms of haircuts, for example. Markets and money provide an indirect way. Since we can price a haircut in money and a cruise liner in money we can compare the two. Markets link the two of them.

The Knowledge Problem and the Calculation Problem are not the same thing. The Knowledge Problem looks at things from a different angle. Let's say that the administrators of a Centrally Planned economy have created a plan. A set of goods has been decided on to be produced and distributed amongst the people. The Central Planners believe that their plan can perform this task.

Now, how are changes in facts to be dealt with? Suppose that the supply of one resource is found to be lower than was thought. Or, suppose that the supply of another resource is found to be greater than was initially believed. In this case a plan based on quotas can't work. The quotas can't be met, so the plan must be adapted. In the Centrally Planned economies that actually existed this happened all the time. Some economic historians have argued that the economy of the USSR should have been described as a "centrally managed" rather than planned. That's because, often modifications to plans by powerful bureaucrats were at least as important as the plans themselves.

Oskar Lange believed the answer to be simple - the Central Planners should just simulate a market economy [14]. Data on supplies of all resources are sent to the Central Planning bureau. The bureau then creates synthetic prices from this data using a trial-and-error process. Lange suggested setting prices at random at the beginning. Then where shortages

develop prices are risen, and where surpluses develop prices are cut. This idea was based on mainstream equilibrium theory. He took the view that this would lead to a "steady state". He thought it could deal with changes in consumer demands and changes in available resources.

The idea was that these simulated prices would exist as accounting entries but would not exist as actual money. He suggested that consumers may use a form of money to buy goods, but after that all transactions within industry would take place using only accounting entries. Factory managers would be given bonuses for efficient production. Mises had already criticised schemes like this from a different angle. That's described in the section on the Calculation Problem.

In response to this Hayek wrote his paper "The Uses of Knowledge in Society" [12]. That paper is very simple to understand, anyone can read it. It's often assigned to undergraduates in economics courses. Hayek pointed out that prices act as signals running through the Economy. If the price of one resource increases then many people adjust. Users of that resource replace it with substitutes or increase their prices, or do both. Hayek gave the example of tin rising in price. Businesses who can easily replace tin with another metal will be the first to do so. As the price of goods made from tin rises, businesses and consumers that buy them will substitute alternatives, or buy less. So, the effect ripples through the economy.

When mainstream economists look at this they tend to see equilibrium. The end result of these changes -when they're fully worked out- is that a new equilibrium is created. Mainstream Economists tend to treat this paper as an introduction to the idea of equilibrium or the idea of market clearing. Although Hayek mentions equilibrium more than once that's not the main point. Price changes create a movement towards equilibrium, even though equilibrium may never occur. What's important here is the mechanism of the price changes.

Market economies have well established ways of dealing with changes. When knowledge

changes about a situation businesses and individuals respond to deal with it. Going back to the tin example, it doesn't matter if the increase in the price of tin is caused by a shortage of tin, or by an increase in demand from another industry. In either case everyone else responds by economizing on tin. The price change acts as highly-summarized information. Of course, they are never complete information.

These price signals do not depend on markets being perfect. Businesses with market power have an incentive to respond, just as others do.

Schemes like the one proposed by Lange require reinventing all of this. For centuries humans have been giving things prices and money. In each business and each market ways have been devised to deal with changes in prices. The advocates of Central Planning call for all of this to be torn-down and rebuilt from scratch. A system of simulated prices that are never actually paid is the suggested replacement. It must replace our existing system where prices are things actually paid in money, which is a very different thing. It is like suggesting that society should abolish use of the wheel, in all of its different forms. That means that the wheel must be replaced in each specific role where it is used.

Each price must be set by the Central Planners. That means that information must constantly flow to and from them. Each unit of industry can't respond itself. At every step information is sent to the Central Planners who respond by changing the plan. Then information is sent to others on what to do. That creates more changes, which must be forwarded to the Central Planners once again. The efficiency and speed of such a system is clearly doubtful. (Notice this is not the same as a bank transfer system which just centralizes payment not the creation of prices).

Does everyone have an interest in relaying this knowledge? Not necessarily. No person is working to generate their own income. Nor is any factory or organization really operating for profit. The manager of a factory may have a bonus dependent on the simulated profit of the factory. That doesn't necessarily give this manager the incentive to report resources accurately to the Central Planning bureau. Indeed, it gives an incentive to falsify

information in many cases. In this way, knowledge problems become incentive problems.

## 6 Competition and Market Structures

The *Market Process* section explained why Austrians prefer to focus on the "Market Process". The market process broadly refers to how individuals and entrepreneurs in a pure market reacting to changes in the economy eliminate surpluses and shortages and increase the welfare for the most people by allocating resources to where they are the most demanded. Entrepreneurs are competing among one another and this competition is what generates the prices for goods. This section will delve deeper into the meaning of competition and the various ways in which markets compete and organize.

### 6.1 The Meaning of Competition

Let's begin this by first talking about "monopolies". What exactly is a monopoly? Do they have any relevance in a market process approach? Are they even real? If they are real, are they necessarily bad? It's a difficult question, but there is an answer.

The first difficulty is that there is no agreement as to what should be considered the criterion of monopoly. Sometimes, people will define monopoly simply as a lack of "competition". If this is the way monopoly is defined then in fact no firm can ever be a monopoly since no seller ever has a monopoly in this sense. Every seller must compete for the consumer's dollar among the millions of other products he or she could buy. What if the firm has a "control over output"? Is this a monopoly? Certainly not, because of course every firm has a control over their output, as they choose how much to produce and how. Perhaps this problem can be made easier if we confine the meaning to "within the industry". Then it would mean that if there is only one firm in the industry then there is a monopoly and conversely if there are many sellers in the industry, then there is competition. This too doesn't solve the problem. In this case, you would need to define "in the industry". Are firms who sell similar but slightly differentiated products not in competition? Consider the example of smartphones. Are Android based smartphones not in competition with iOS

based phones? The problem would be this: suppose there are only two smartphone companies, one being Apple and the other Google. If one doesn't consider iPhone's as being part of the smartphone industry then Apple is erroneously defined as monopoly. The most common error is attempting to define monopolies by the "fewness" of the number of firms. The number of firms within a select industry isn't of much help either since theoretically you could have an industry with 1000's of firms but a select two giant firms controlling the industry.

In fact, it's the first definition that is actually correct because the term "competition" has a double meaning. One meaning is "rivalry" which is simply the proposition that there are firms competing for your business. In this sense, firms can never be monopolies. The other more useful meaning is a lack of pricing power. The meaning of monopoly can be defined as this: an industry is *monopolistic* when it has some *monopoly power*; a firm having monopoly power when they enjoy a *degree of control over the price* of their products. If there is only 1 firm producing this product and there are no close substitutes then the demand curve of the industry is the demand curve of the firm so it sets the price of the product. This can be called an absolute monopoly. Conversely, when an industry is in "perfect competition", there is a complete lack of pricing power.

Since the distinctions between industries and products are subjective, dependent on individual perspective, a better metric to determine the degree of monopoly power that some firm has is depending on the *price-elasticity of demand* and the *cross-elasticity of demand*. Both relate the quantities demanded to prices charged. Price-elasticity relates them to the prices of the product itself while cross-elasticity relates them to the prices of other products in the market. The purpose of this is to indicate what would happen to the sales of a product if its price were changed, and what would happen if the price of another product were changed. These concepts are important in applied economics because businesses would like to know the effects on their sales due to a change in price. The cross-elasticity can also help determine which goods are close substitutes and which

are complementary.

The next task is concerned with classifying the various sorts of market structures which can arise throughout the market process and due to the effects of institutional and governmental structures. The key character of all these classifications is the fact they are derived based on the subjective expectations of the seller and the buyer. Then we extrapolate further to help us understand the effects changes in market structures and conditions will have on prices and output and the market process which arises.

## **6.2 Polypoly: Perfect and Imperfect**

As Ludwig Lachmann notes in his treatise on capital goods theory, the two most important aspects of capital goods are heterogeneity and complementarity. He emphasizes that what heterogeneity means is "not the physical heterogeneity but heterogeneity in use" [8]. While this may be very important in macroeconomic theorizing, the opposite is also important when it comes to attempting to evaluate which goods individuals view as close substitutes. In the situation where there are many sellers, who are selling goods that are the exact same, or extremely similar, this sort of market structure is called a polypoly. A polypolist is someone who is unconcerned about the actions taken of other entrepreneurs in his industry and knows that his actions will be unnoticeable to his industry-mates. From here, polypoly can be broken into two forms.

In mainstream economics, there is what is often called "pure competition" or "perfect competition". For us, it is polypoly taken to its extreme or "perfect polypoly" [15]. In this case, many firms sell an identical product, but all firms are "price takers", selling the output at the market price. The seller knows that his supply represents such an exceedingly small part of the total market supply that changes of his supply would not count. He can sell as much as he wants at the market price. The seller also knows that he sells exactly the same good as all the others, undifferentiated by quality or service or anything else.



He feels that there is nothing he could do to keep any customers if he charged more than "the" price. Thus the profit maximizing firm will produce output until the price equals the marginal cost. (Firms being "price takers" doesn't mean that prices can never change, just that no single bidder can dictate the price). A similar concept in mainstream economics is called "perfect competition" or "atomistic competition".

A second sort of market structure is what is called "monopolistic competition". In our case, it is a form of imperfect polypoly [15]. In polypoly of this sort, there are still many firms selling but the products are slightly differentiated such as by brand or style leaving them with a mild monopoly on their version of the product. The question is no longer "to sell or not to sell" at the one, given price, but rather "to sell more at a lower or less at a higher price" [15]. However since the seller still feels he is one of many in the market, he is not concerned with how his actions will concern his competitors. An example is different kinds of chips, cookies, smartphones, etc. The price of the good will tend to be equal to where the cost of producing one more unit equals the marginal revenue leaving some economic profit. In this case, the slight differentiation gives the firms some control over price.

The criterion of polypoly is not simply there are "large numbers" of market participants. It is, instead, "a state of mind and a type of behavior usually associated with large numbers of sellers in a market [15]. In this sort of competition, there is no particular particular reason to suppose they are producing the "optimum" output, nor is there any reason to suppose extra-profits to be eliminated.

### **6.3 Pliopoly**

In mainstream theory, the terms "perfect competition" and "monopolistic competition" often include a bevy of more criteria including the ability of easy entry into the industry. Although in practice these things may be closely related to each other, as such industries

also have easy entry, for theory purposes it's useful to keep them analytically separate. Polypoly is simply a term denoting the market position of a seller who is one of many in the market, however when the industry also has a probability of new firms entering the industry, the term "pliopoly" [15] will be used. If pliopoly is perfect, then there is free ability to enter an industry when super-normal profits are made known and there are no excessive or artificial barriers to entry inhibiting the process. This process will drive super-normal profits to 0 and the price will also equal the industry's average cost. If barriers are present, then super-normal or economic profits can persist.

## 6.4 Pliopoly + Polypoly

Under perfect polypoly, marginal revenue is equal to the expected selling price, hence output and size of the organization are chosen such as to equate marginal cost to the expected selling price ( $MC = P$ ). Under perfect pliopoly, excess profits lead to more entries into the particular industries, hence to an increased supply of the products of these industries, with the result, that selling prices are depressed until economic profits are reduced to zero ( $P = AC$ ). Likewise, if pliopoly is imperfect then ( $P > AC$ ) and if the polypoly is imperfect then ( $P > MC$ ).

## 6.5 Oligopoly

When there is competition only among a few sellers, this is called an "oligopoly". The fundamental character of this type of sellers competition is not the "fewness" of the firms but rather it is about the state of mind of such a rival-conscious seller, which is different from that of a polypolist. For oligopoly, there are also two different kinds; "pure oligopoly", in which the products being sold are identical, and another which can be called "imperfect oligopoly", where the products are slightly differentiated [3].

In an oligopoly, the seller will realize that his actions will be noticed by his competitors,

and because he knows this, this will be a factor in his calculations before he makes any choice. Any gains one seller could bring about losses to the opposing seller. In this case, the seller has a choice of prices (or average net revenues) at which he might sell his goods or services. The difference lies in the mental process of choosing the selling price. An oligopolist does not have a straightforward way in which he prices his goods, however a profit maximizing oligopolist will still at least price his product at least where marginal costs equal marginal revenues unless he likes losing money. When the oligopolist is deciding whether to change his price, he's not only considering the effect his price change will have on revenues but also how his competitors will react to it. It is impossible to know with confidence what kind of actions towards price and output an oligopolist will generally make however game theory can help elucidate some of this fog.

## **6.6 Polypsony, Oligopsony and Pliopsony**

So far, we have only discussed this from the sellers point of view, specifically the sellers consciousness of his market position and how he uses this when determining prices and outputs. The opposite of this is the calculus of buyers.

In "polypsony", there are many buyers and so the single buyer out of many does not feel that his choices will have any effect on the actions of the other buyers. Under a perfect polypsony, the buyer knows that he has such a small market share of the total demand and feels that the supply is perfectly elastic. He also knows that he is to the seller, the same as every other buyer, so he himself offers nothing special. In this case the buyer is a price-taker, only buying the product at "the" price, knowing that at any price lower, he would not obtain any of the goods in question. Under imperfect polypsony, the buyer is differentiated from the other buyers, and knows or feels that he can command a lower than the market price and still obtain some of the product. Both sorts of buyers are however still polypsonists, so long as they do not expect any of their actions to have any effect on

the choices of other buyers. In an "oligopsony", there are only a few buyers, and the buyers are conscious of their actions, as they expect that the choices they make will indeed be taken in account by their rival buyers. "Pliopsony" is concerned with whether there can be new buyers in the industry.

## 6.7 Non-price Competition and Price Rigidity

Another crucial aspect is to mention that the only thing we have discussed of these various forms of competition is price competition however that is far from the only kind. When mainstream economists talk about "perfect competition", generally they refer to "perfect *price* competition". In many cases, either due to governmental regulation, cartel-like agreements, social norms and custom or the nature of the product, there can be limitations on the degree to which sellers can compete for business simply through price. Particularly in an imperfect polypoly, firms will not compete simply through adjustments of price and quantity of output but also through changes in quality, services offered or selling efforts like advertising.

Graphically you can think of price and output being on y and x axis but quality being on the z axis. Price could be fixed due to some institutional or governmental factor yet there could still be a high degree of rival-consciousness and competition by quality, service or selling effort.

## 6.8 A Note on Marginal Analysis

It's important to note that a fundamental assumption used in this marginal analysis of a seller's competition is of narrow self-interest, where the entrepreneur and firms aim is assumed to be to maximize money profits. Whenever it is said that there are "profits" made, whether economic or normal, the meaning has been monetary profits. In the initial section it was noted that profit maximization does not necessarily have to be a fundamental goal

of human choice and this is compatible with marginal analysis. However if we are aiming to come to useful understandings about economic realities, such as what firms will do in reaction to changes in economic condition, it's not of much use in attempting to analyze firms, if no matter what this person does, it's considered as his subjective profit. It's preferable to be able to separate the money aims from the non-money aims in certain sorts of analysis.

This isn't to say that non-money aims are not important, and in fact they are very important. Many times people and firms will donate money to aims which don't yield a monetary benefit such as actions purely to gain social prestige or regular payments to religious institutions. It is not the purpose of assuming money-profit maximization to cast aside these considerations, rather it's to investigate how changes in certain variables and conditions will impact the incentives placed on profit maximizing firms. If profit maximization is assumed and if it's a true condition then whether or not non-money considerations were included is not important and doesn't impact the analysis [16]. With this sort of marginal analysis, we can come to useful conclusions about the behavior of price and output and quality under the impact of UV's and IV's.

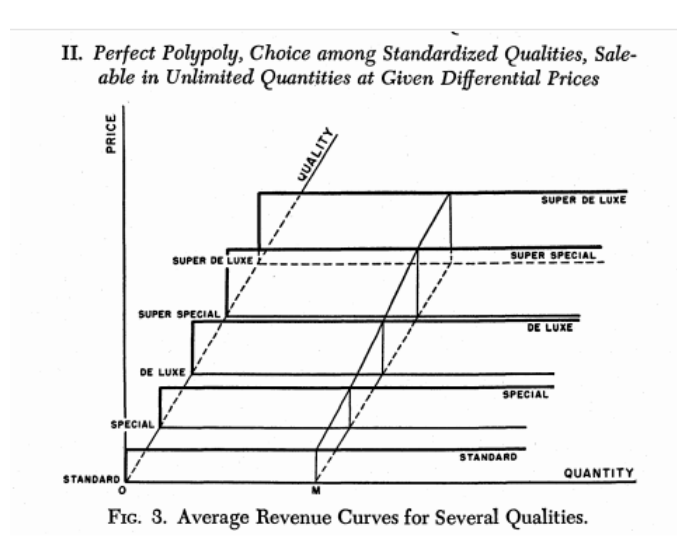


Figure 1

An interesting matter not discussed is related to "average-cost pricing", where firms due to one reason or another, are in a situation in which the prices of their products are fixed to the average cost + some mark-up. Often it is argued that this is a reason why the marginal analysis is flawed, but this is not the case. Marginal utility (and marginal analysis) is simply derived from the basic propositions of human action that 1. people have ends, goals or desires and that these are subjective and 2. that people have various ends which they mentally rank as more and less important. It is logically implied that whenever a person makes a choice, they are maximizing their subjective utility, otherwise this person would be irrational, and outside the scope of economics. If some singular person when buying a product has a close friendship with the person he's trading with, and so he sells the product at a discount, this is still a maximization of his utility; just not a profit maximizing one. If the factor prices of the inputs used in some firm happen to be stiff and don't fall in response to falling demand, maybe due to some sort of contract, it is logically implied that he engaged in this contractual trade previously because he expected it would maximize his utility. A person's decision is always rational at the moment of exchange even though he may regret a previous decision later on. You could, if you wanted to, craft a "total utility"[16] marginal analysis of the firm, but this would have to consider every possible source of utility to an individual. Any change could induce any response so what good would this sort of thing do?

*"Instead of giving a complete explanation of the "determination" of output, prices, and employment by the firm, marginal analysis really intends to explain the effects which certain changes in conditions may have upon the actions of the firm. What kind of changes may cause the firm to raise prices? to increase output? to reduce employment? What conditions may influence the firm to continue with the same prices, output, employment, in the face of actual or anticipated changes? Economic theory, static as well as dynamic, is essentially a theory of adjustment to change. The concept of equilibrium is a tool in this theory of change; the marginal calculus is its dominating principle."*[16]

## 7 Capital Goods and The Structure of Production

The concept of capital must also find its origin in the mind of the individual, who seeks to improve his material, and therefore economic, well-being. The foundation of human action is the notion of means and ends. An individual has a given set of ends (or goals) he desires and decides which means best help him achieve them. He must choose among alternative means due to their scarcity and heterogeneity. These are known as capital goods. Ends are considered consumer goods. Capital goods cannot satisfy peoples' ends directly. They must "mature" into consumer goods during the production process.

These choices are inherently subjective, and therefore part of an individual's plans. He must appraise all of the alternative choices at his disposal, and this market process never stops.

### 7.1 Definitions

Like the last section, every section will contain a thorough taxonomy related to the topic of the section. The terms that are relevant here are the following: goods, capital goods, final goods, intermediate goods, consumer goods, producer goods, capital consumption, economic wealth, tangible goods, intangible goods, spending and investment.

In economics, a "good" can be defined as an item which "impacts a person" (Foldvary 1998) or things that are "useful". Goods are also further distinguished into more categories. A "final good" or consumer good is an item that is used by the consumer to satisfy current wants or needs and provides the user with direct utility. "Intermediate goods" are goods used to produce other goods. Producer goods are usually intermediate goods. A factory machine for example is an intermediate good, while the food it produces is a final good. Most economics textbooks use the phrase "goods and services" to make it clear that goods also include services - a good which is simultaneously produced and consumed . All of these things that are produced that have a positive value are called "economic wealth".

This is opposed to “financial wealth” or money, which is not itself valuable but valued for the things that it can buy. If the items are not positively valued then they are useless, valueless or garbage.

Usually when textbooks talk about “capital goods”, they are referring to physical items and then they separately use the term services when talking about services. A more useful and encompassing definition is that “capital goods” are economic wealth that has been produced but not yet consumed [Foldvary 1998]. As capital goods are used/consumed either for production or for direct utility, the tendency is for the value of the capital good to diminish such as due to wear and tear or because the good is no longer useful to anyone, among various other reasons. This is called “depreciation” or “capital consumption” because the economic value of the good gets used up through consumption. A “consumer good” is wealth that is typically bought by households as opposed to “producer goods” which are typically bought by firms and enterprises. A capital good can also be either tangible or intangible. For example, a tangible capital good is a building, car, etc, whereas an intangible capital good could be written knowledge or a firm which has gained a reputation. All classifications fit under the umbrella of “capital goods”, until they become consumed or completely depreciated hence capital goods being items “produced but not yet consumed”.

The counterpart of consumption is investment. Investment in economics means the production of capital goods. Fritz Machlup explains that when workers invest in education, this is also counted as investment, so investment also includes gains in the knowledge, skills and abilities of individuals. The distinction here would be that if an individual spends for consumption such as for education, to the extent that the services provide them with immediate satisfaction, it is consumption, but to the extent it increases their human capital it is an investment (Machlup 1962, p.115).



## 7.2 The Time Structure of Production

Mainstream treatment of capital goods is many times constrained by the assumptions used in the models. Often, the models will treat the capital goods as homogenous, as if all capital goods were clones of one good and thus substitutable. It's an understandable problem that ultimately is a result of the excessive reliance of mathematizing production. The formula commonly used is the Solow-Swan model that is based on savings, population growth, and technological growth. GDP is simplified to  $Y=A*f(K, L)$ , where K is capital and L is labor. Another standout problem is that this model excludes land. Land is held fixed and then included in capital for the distribution of income. Thus the primary function of the model is to model economic growth if the growth is based on the accumulation of capital goods.

Austrian theory however places more emphasis on the heterogeneity of capital goods, and sees the total stock of capital goods as misleading and unimportant. Human choice always takes place in time, and so does capital accumulation. When someone creates a capital good, it takes labor and time to extract the materials from natural resources and combine them in order to eventually transform that capital good into a consumer good. The original factors of production differ from capital goods in that the former exist in nature while the latter have been combined with other factors and have been previously produced.

It is obvious, then, that not all capital goods take the same amount of time to mature into consumer goods. Some goods like automobiles take much longer to create by extracting the metals from the earth, molding them, transporting them, assembling them, testing them, and so forth, before they are sold for consumption when compared to something simpler like nail clippers.

This is complicated by the fact that any given production process does not have an objective "beginning" in that it can only commence in the mind of an entrepreneur. When

a businessman begins a plan to create or purchase capital goods and factors of production (labor, land, etc.) and combine them, this is the beginning of his production process. The capital he now owns is of the highest order or, put differently, more remote from turning into a consumer good. As his production process proceeds and the capital good is combined with other capital goods and labor, it becomes a lower order good until it is finally ready for consumption (lowest order good).

These higher and lower order stages of production form the capital structure. As capital goods mature as they go from higher stages of production to lower stages, they increase in value. Thus, the value of consumer goods is imputed by individuals to the capital goods that produce them. In addition, the stages of production are not vertically integrated. There are many owners of capital and factors of production, and virtually all industries are subject to extreme competition.

### **7.3 The Nature of Capital Goods**

If capital goods are to be viewed in terms of the multi-stage subjective plans of entrepreneurs, then we must observe that capital is not homogenous. It comes in all shapes and sizes and of differing durabilities, and thus this heterogeneous capital must "fit" together in terms of those plans so that the structure of production is sustainable. It is not so much that there are sufficient amounts of resources or capital goods to complete the plans of society, but the capital goods must be complementary to others as well as the original factors of production in order to coordinate economic activity.

In terms of time, there are two kinds of capital; fixed and circulating. Fixed capital goods include things like factories, tools, and railroad tracks which are completed (and depreciate) while circulating capital can be goods like inventories which are incomplete (and increase in value as they move towards completion into final consumer goods). Fixed capital circulates slowly (hence lower turnover) while circulating capital goods turn over

very quickly. When combined with raw materials and labor and land, capital goods are used to make other capital goods lower and lower in the supply chain. During this process, rents, interest, wages, and profits are paid and earned at each stage of production. A certain business in a higher order stage of production will sell the inputs to a business in a lower stage of production which, in turn, will sell their capital good to a business at an even lower stage of production, and so on.

Bohm-Bawerk emphasizes what he calls “roundabout production”, where the structure of capital goods is also affected by the productivity gained by first producing tools which in the future will yield more output. For example, suppose a farmer realizes that he can produce more output, if he buys a tractor. He would have to forego some output now, in order to save for the tractor and so he gets less output for the time being. But in the future he gets more apples, and thus more profit.

Some of these goods are very specific in their applications in production (especially early on), while others are not, making the capital structure very complex. If all capital goods were essentially non-specific, then they would be transferred and reconfigured to different stages of production at no cost. This would mean that the capital structure would be no structure at all. It would simply be a homogenous “lump” that could be remolded to fit any shape without lags or frictions in either the capital or labor markets. This would mean no business cycles could occur. Hence, all capital goods have a certain degree of specificity, though many have multi-specificity.

Capital goods that compliment other capital goods or factors of production (like a machine combined with a worker who has been trained to use that specific machine) create a more sustainable market structure, though not a perfect one. At times, entrepreneurs are mistaken in their appraisal of future consumer demand, and thus their subjective production plans. When a given plan is revealed to be unprofitable, a business will reassess their plans for production and sell or liquidate some of their inventories or real estate so that those capital goods can be reallocated to new, more productive industries.

The non-specific capital goods will have an easier time being replaced and sold, whereas the more specific one will not, and will thus be more affected by such changes in demand. Substitutability plays a crucial role in the capital structure. If a piece of capital can be more easily substituted for another, this capital good will see a wider demand and thus competition for its use in the structure of production.

## 7.4 Capital and a Progressing Economy

Sustainable economic growth and well-being must be financed by voluntary savings. These savings, in terms of money, allow investment to increase in higher stages of production like mining and R&D. When individuals in a society decide to increase their money savings, they are 1) deciding to defer their consumption until a later date and 2) providing the necessary funds for entrepreneurs and investors to buy capital goods and factors in order to produce consumer goods at a later date. When this occurs, the profits of the consumer goods industries fall off. The lowest stages of production thus reduce output by releasing capital and labor which they no longer require. This frees up the necessary capital goods and factors of production to increase investment in the higher stages of production.

Businesses in the highest stages of production see lower borrowing costs (through falling interest rates with the increased savings) and thus banks increase lending to credit-worthy entrepreneurs who wish to expand production in the stages most remote from consumption, as they are the most sensitive to changes in interest rates and thus changes in capital values. This means that people value present/consumer goods less relative to capital goods, making the latter rise in value. Furthermore, with the release of factors of production from the lower stages of production, their available supply has risen which prevents their market prices from rising. This allows the profit margins in the higher order stages of production to widen, while profits in the lower order stages fall.

A given investment idea that was previously unprofitable at an interest rate of 5%

will now be seen as profitable at an interest rate of 2%. It now becomes worthwhile for businesses to expand investment with lower interest rates and higher capital values, which deepens that capital structure with new and even higher stages of production. New tools and equipment are created and utilized that increase productivity. The capital structure becomes more "roundabout" as the marginal productivity of labor rises, making capital relatively more attractive to use in production than wages since the latter rises in real terms. The higher stages of production become more capital-intensive, while the stages nearer to consumption narrow. This new production structure is permanently lengthened and widened.

The supply of capital goods increases immensely, as does the supply of consumer goods after a period of time. The increase in the supply of consumer goods combined with the fall in demand for them decreases their prices, increasing real wages, disposable income, and national income.

## **7.5 Depreciation and Capital Consumption**

Capital is susceptible to depreciation and a fall in value during the production process. The physical wear on capital equipment as it is used up can, but not always, cause its market value to fall as well. Its value can fall before this occurs, however, for several reasons. One could be a reduced demand for such capital, or a greater supply relative to demand. A recession could increase uncertainty and discourage investment, lowering capital values. Owners of capital may want to consume more than their current income and can sell their capital goods in order to finance this consumption, or capital consumption.

Such a phenomenon can be detrimental to an economy's ability to maintain its capital stock and therefore growth unless the capital that is being liquidated is bought by new savings by other individuals. This would mean no net loss of capital values in the aggregate. If this does not happen, then the productivity of the economy falls, lowering real wages

and output. This disinvesting means that the funds that are typically used for upkeep on capital goods like machinery are now used for consumption.

Inflation that is unexpected could cause this to occur, fooling entrepreneurs into thinking that their profits are real, or adjusted for the fall in purchasing power. But in reality, the funds cannot cover the cost of replacing or renewing such capital. The taxation of profits could be another cause of capital consumption if the entrepreneur does not reduce his consumption by a commensurate amount.

In order to prevent capital consumption in the aggregate, gross savings must be maintained in order to cover the costs of capital replacement from wear and tear or a fall in value from the reasons listed above. And in order for an economy to accumulate more capital goods and become more productive, net savings must increase so as to increase net investment into higher order stages of production.

## 7.6 Gross Domestic Product (GDP)

GDP is useful in that it's a proxy for a country's ability to produce goods and services. It measures income in various ways such as:  $GDP (Y) = C + I + G + (X-M)$  where C equals consumption, I equals investment, G equals government spending and (X-M) equals net exports, or exports minus imports.

However, it has problems. First, it does not take into account all of the intermediate products in the higher order stages of production, only the spending by the final users. Only a fraction of the total amount of capital goods that are produced are taken into account, thus underestimating the total amount of spending in the economy. It does this to avoid "double counting." It is therefore not truly gross as it states and implies that the role of time and the maintenance of capital are to be cast aside in favor of an aggregate fund which inherently maintains itself. Second, it incorporates government spending in the economy. It is argued that government spending must be financed through "crowding out"

private savings with higher interest rates which lowers the demand for investment, *ceteris paribus*.

## 8 Spatial Theory and Public Goods

One important contribution of Austrian Economics is including the time dimension in capital theory by separating out capital goods based on their period of production as well as on how fast they turnover or how fast they are consumed. An area which Austrians have lacked focus on is the \*spatial\* dimension. Although it is often missing from public discourse, in the academic world, Austrians have made many contributions to spatial theory. One contribution for example is in the efficient provision of collective goods and another is with a theory of the spontaneous city, among many others.

In the previous section on capital theory we learned that spending can be divided into two categories: consumption and investment. Consumption means the using up of economic value and investment means the production of capital goods and human capital.

### 8.1 Definitions

For land, it is a bit different. First you must differentiate between land as a factor of production and the categories of land. Land in economics means that which exists apart from human action. Oil in nature for example is considered “land”. But if an entrepreneur removes that oil from its natural state, it becomes a capital good. Spatial land on the other hand is the extent of 3D space in some location and is also considered land. The universe just is and no one can produce more of it and it also can’t be improved or changed. Any improvements that are made within the space are produced so they are capital goods. Unlike labor and capital goods, land cannot be moved, it can’t hide and it can’t shrink. Land “rent” is the yield of land, or what the land or space would rent for in a market. For simplicity, it’s easier to refer to spatial land as land, and material land as natural resources.

Land is also considered a “higher order good” as it is a factor that is used in the production of more goods. Like the stages of production of capital goods, the value of higher order goods are determined by the value of the final goods they produce. This is



called “imputation” because the value is “imputed” from the lower orders to the higher orders. Likewise, the value of land is imputed from the final value of the goods produced on the site or from the direct use of the site. When a resource is scarce, this generates a market price. Similarly, when land in some location is scarce for particular uses, this results in it having a positive rent. Like bonds, the formula to calculate price is a function of the rate of interest and the rate of return (the rent in this case). The interest rate is the rate at which rent or streams of income become capitalized into asset values. The algebraic notation is  $p = r / i$ .

## 8.2 Land and Consumption

When someone buys land, it is not an economic investment because land cannot be produced - its supply is fixed. The “supply of land” here has multiple meanings. With regards to space, there are two separate uses of the phrase. One meaning of the phrase is the supply of land in some location and the other is the amount that is up for sale at some moment in time. The supply of land in some location such as in New York is fixed, but the amount offered for sale at some moment in time is variable. The supply of natural resources on the other hand becomes depleted when used.

But does land get consumed? It does. The purchase of land isn’t production or consumption, but the use of land is consumption. The space itself doesn’t get used up, but the space is consumed as a flow of site services over time. That flow of services generates rent. The space provides the service of allowing a person a place in which to do things, put things and enjoy things. For every moment that someone is using land, the site service is simultaneously consumed and generated.

Land prices also capitalize locational externalities. The positive externalities of the neighborhood generate higher land rent while the negative externalities lower land rent. Thus, land rent captures a perpetual surplus or economic profit that remains since com-

petition cannot increase the amount of land. When an increase in site value is due to entrepreneurship and the capital goods produced, this return can be classified as a territorial capital yield. Suppose a mall decides to build a new playground in the center of the mall, where all the kids can enjoy time while the parents shop. This causes more businesses to want to rent space inside the mall and so the mall makes more profit renting the store units. This is called a territorial capital yield.

The value of a site can be separated into 3 portions. The first is the value due to nature: this is the value sites accrue from the benefits not relating to private or governmental activity. One site compared to another distant site might for example be more valuable due to getting more sunlight for farming, or due to it being closer to urban centers for industrial activity. Another source of site value is from governmental activity such as the provision of government collective goods. When the government provides communities with civic goods such as schools, roads, security and so on, if these services are desirable, then they will raise the land value of the sites they serve, by making them more attractive and productive. A third source of land value is due to private activity. For example, land prices would get a negative adjustment if it had proximity to a factory that pollutes the air, and conversely would get a positive adjustment if it was near a nice looking park.

### **8.3 Public Goods and Private Provision**

An understanding of spatial theory also gives us insight into the provision of collective (or public) goods. It is often contended that there is a “market failure” which arises in the provision of collective goods. Pick up any mainstream economics textbooks and it will probably tell you that markets fail to provide sufficient public goods because of free riders who cannot be made to pay. Austrian spatial theory rejects this view because it points out the mistake that this market failure doctrine treats public goods as though they have no location in space and time.

A “collective good” is a good that is consumed by many at the same time in contrast to a “private good” that is consumed by only one person at a time. Money for example is usually a private good because it is rival (owned by one person) and excludable (when a person uses it, no one else can use it). A person must pay to acquire them and only one person can be using the dollar at a time. Certain goods can be both private and collective depending on the use. A TV for example can be watched by two people at a time in which case it becomes a collective good, but if only one person is watching it then it is a private good. Most collective goods are “territorial” meaning the goods’ impact is confined within some geographic area. Since entry into geographic areas can be controlled, territorial goods are a subset of excludable goods.

Some collective goods are non-territorial but excludable. An example is a concert or club since the service or services are only offered to the people who have tickets or are dues paying members. Knowledge is a non-territorial, non-excludable collective good since after the knowledge becomes public, it becomes non-excludable. Some may point out that there are also goods that are territorial but not excludable such as a park. How can they be made to pay? The answer is that the park is territorial and territorial goods are a subset of excludable goods. The park is in fact excludable: if the community was private then they could close off the private area and block entry or they could put gates around the park. If a good is not excludable then it is not territorial.

The problem of excludability is often solved through advances in technology. Radio signals can be scrambled to prevent someone from listening. For games, the software can be copy protected, and so on. Sometimes companies will discover innovative solutions such as selling goods in bundles with the software only being able to run on that computer. An understanding of spatial theory however gives us insights into how the private sector can in fact provide territorial collective goods efficiently. Territorial collective goods do not exist out in the ether, they impact a certain territory. People who want to use such goods must move to that territory in order to use this good and so the value of land in that area

rises. The increase in land value then reveals the demand for the good. If an organization has ownership rights to the sites on which the rents arise, the rents reveal the demand for the goods and the means to pay for them. There is no free rider problem because the territorial collective goods are excludable and only those in the area who are paying can have continued use.

Many territorial collective goods have a low marginal cost. In general the optimal price to charge for a good is the marginal cost: the cost incurred in getting one more unit of output. The principle is the same for territorial collective goods. Hotels provide a good example. When one is staying in a hotel, the elevator is usually provided for “free”, free in the sense that anyone who is in the hotel can use it without payment at the time of use. The best price to charge for it is 0 because the physical cost in having one more person in the elevator when it’s not crowded is near 0. How does the elevator get paid for? Now we know: it gets paid for from the people renting rooms, from the higher rental it generates.

## 9 Time-Preference and Interest Rates

Many people scoff at the idea of banks making money off of interest. Why should someone make money off of money? Why should I have to pay someone money to use money? It's not an obviously answered question so it requires thorough discussion. Once people have a clear understanding of interest, it's easy to see why there is so much neglect and confusion. It's important to understand why and how crucial interest rates are in the economy and how much work they do in coordinating the market process.

### 9.1 Time Preference

To understand this, it's necessary to understand where the origin of interest comes from. As we know, economics is a science dealing with activities of people and the choices they make. One universal tendency of people is what economists have come to call "time preference"; the tendency of people to prefer to obtain goods in the present day rather than in the future. The reason we infer that people have "time preference" is because this; suppose a person was given confronted with a choice to have money today or the same amount of money in the future. Holding all else equal, what would they prefer? The natural tendency of humans is to say today and take the money. This is called "time preference". It is inferred because we know that people have a limited lifespan and because of the uncertainty of the future. If we knew with no uncertainty that we would live forever, then it wouldn't matter if we had to wait to satisfy our various ends. So interest properly defined is the premium that is paid in order to exchange future goods for present day goods.

To bring this idea into economics fundamentals - we know that when a resource is scarce, this generates a market price since if the price was 0 then the quantity demanded is greater than the quantity supplied. Since savings is also a scarce resource, this is what generates a positive price for borrowing - the rate of interest. Economist Knut Wicksell calls this the "natural rate of interest", which he defined as the rate which guarantees price

and economic stability. Sometimes the interest rate is also called the "discount" rate, since if there was no interest premium paid, then the future goods would sell at a discount. For example, suppose a bond pays out \$100 in five years time, it would trade for less than \$100 now. It will trade for a discount, so this gives the interest rate its other name.

There are two main influences on time-preference. Eugen von Böhm-Bawerk showed how time preference is influenced by the productivity of roundabout production - the production of more goods by first producing more tools. Another influence on time-preference is the time needed between producing capital goods of higher order and the production of the final consumer goods. More productivity induces people to shorten their time preference in favor of borrowing more today in order to profit from the greater gains which increases interest rates. As one accumulates capital goods, their increase in productivity sees diminishing returns, and thus the effect is to lengthen time preferences and reduce interest rates.

## 9.2 Loanable Funds

The supply of loanable funds represents the willingness of credit institutions to lend money at different interest rates. The demand for loanable funds represents the willingness of borrowers to borrow funds. People holding money in banks constitute as savings because the funds are not being spent on current consumption although this doesn't necessarily have to constitute an increase in total savings. Therefore as people save more money, there are more funds to lend out so interest rates fall. The natural rate of interest is the rate that arises in the market when the supply of money equals the demand for money.

A false notion people have of interest is that it causes inflation since if I borrow funds then I have to come up with more money to pay the interest. However if the loan is for current consumption, the interest is paid from the reduced future consumption; I must in the future consume less in order to pay back the loan. No new money is needed.

An increase or decrease in  $M$  in the short run can have an effect on interest rates. Since

there are more funds to loan out, interest rates fall, as the banks seek to lend out these new funds. The extra money pushes prices up and so the money supply relative to prices goes down to where it was before. Interest rates then go back up to their natural levels. This is called the “nominal income effect”.

If for example, the central bank sets interest rates at zero, this would cause the quantity of funds people seek to borrow to be greater than the quantity saved. For example, when a central bank creates more money into banks reserves, banks lower interest rates to lend out the extra money but people’s demand for consumption, or for holding money, still hasn’t changed. Austrian economists call this “forced savings” because the supply of loanable funds have gone up even though real time-preferences (savings) have not changed. As the new money is being lent out, this can result in the new investment to come in conflict with real consumer demand once interest rates go back up. Austrian theory argues that this is much of the reason why the US has experienced such devastating economic downturns in the past. The Austrian Business Cycle Theory will be discussed further in another post.

### **9.3 Real Types and Exact Types**

Within the term interest, there are some clarifications needed. Again, interest properly defined is a payment made to shift a future purchase to the present. This can be called “pure interest”. Consider the following example: you want to take a loan so you can go to college. You don’t have much credit history so the lending company gives you a loan at 8% interest. Not all of this is “pure interest”. Some of it is to cover the bank’s overhead costs, some of it is a “risk premium” to cover for the chance of default while the rest is the “nominal interest” as this is what they get to keep as the return on their money.

This however still isn’t the full story. Another important concept to interest is called the “Fisher Effect”. It describes the relationship between inflation and interest rates. Suppose there was inflation of 2% every year, then to get the “pure interest”, you would also have to

subtract out inflation. Whatever is left is the “pure rate of interest”, the premium paid just to shift a future purchase to the present since it subtracts out the effects of both inflation and risk.

### Capitalization

The interest rate is also a “capitalization” factor.. Economic capitalization is commonly used to calculate the value of an asset based on its flow of net income using some capitalization rate. Interest rates are often used as the capitalization rate as that is the rate at which people discount time. However the rate doesn’t necessarily have to be the pure interest rate since there are many kinds of interest rates in the market. One asset price is a land title. The implicit income stream is the yield (rent) which the owner pays to himself, and the selling price of the land is the capitalized value of the expected future rents. Similarly, if a bond pays some return then the price of the bond equals the annual return divided by the interest rate. In algebraic form, the formula is  $p = r/i$ .

## 9.4 Usury

Some falsely term interest as usury since deeming it as a payment for the use of money. The origin of interest, however, comes from the natural tendency of people to prefer goods sooner rather than later. Interest could be paid with goods rather than money so interest really has nothing to do with money. The exploitation would occur if people are prevented from satisfying their desires such as restrictions on credit leaving the supply for loans artificially reduced and allowing firms to possibly charge monopoly premiums. Indeed, the exploitation is caused by government restrictions rather than the other way around. Without government monopolies on banking and bad regulation, the interest rate would equal the natural rate, from the tendency to consume sooner rather than later and the competition between banks would eliminate any monopoly premiums.

Since interest is a result of the natural tendency of humans, it is always present even if



suppressed by some government measure. If interest is prohibited, then it is still present only the borrower is receiving it as the benefit of present-day use of goods without payment. In some locations, banks share in the profits from enterprises which borrow funds rather than directly charging interest, but this is just implicit interest paid differently. It is similar to land ownership. I can rent out the space I own for some rental price but even if I am an owner-occupier, the rent is still present as an implicit income I, the owner, am paying to myself. It is also similar to rent control. If rent control measures set a price ceiling below the market price of the capital good then the rental price of the apartment is the same but it is in effect gifted to the tenant. Even if explicit interest is suppressed, it always remains an implicit reality.

## 10 Money and Inflation

### 10.1 What is Money?

An Austrian understanding of the market process also gives a different perspective on monetary systems. It's important first to understand the foundations. What is money exactly? Money is commonly said to fill two roles. First, money is a medium of exchange. The role of a medium of exchange is to facilitate the sale of goods. A medium of exchange can only be classified as a “money” when it is generally or widely accepted. E-currencies that exist today can't accurately be called “money” since they aren't yet widely used - they are used in many places but it's not yet sufficient. The second is that money is also a unit of account which means it includes some measurement unit (a gram or an ounce) by which the value of all other goods can be measured. Today we have a fiat money system, and the unit is the national currency not backed by any weight of gold or silver but artificial units kept in place through law and custom.

Money is also what you call “financial wealth” as opposed to “economic wealth”. Economic wealth consists of produced things with a positive value such as buildings, cars, etc. Financial wealth or money on the other hand is not valued for itself but rather for the things (economic wealth) it can buy. If all the money in an economy were burned, then there is no real loss since the money can be printed again at near 0 real cost. Thus money is also considered a claim on wealth - it is like a ticket to a show - it has no value other than that it can be exchanged to get into the show.

### 10.2 How and why does money emerge?

Money also emerges spontaneously through the sum of individual actions. One reason is what Jevons called the “double coincidence” of wants. Barter becomes inefficient since you can't always find someone who wants your particular goods. By trading goods or services

for more saleable goods regardless of its particular value, you can increase your chances of profitable exchange. Historically, shells, cacao beans, salt, cattle, gold and silver have been the chosen mediums, since they were transported and measured more easily than other commodities. The most widely used medium was gold due to its high value, durability and divisibility such that they eventually began to be produced in standard shapes and weights. Another way money evolved was through religious practice. Metals and jewels were used as offerings to their gods. Since the community needed to use these commodities generally, they became widely used and also eventually became media of exchange.

The exchange value of money can also differ from the real value of money. If gold was money, then it is real wealth since it is produced and has a market value (the melt value of the gold) but it can also have an exchange value that's less than the real value.

### 10.3 The Equation of Exchange

$MV = PT$  is the equation of exchange. It's a tautology which says that goods are produced and sold at prices which happens with money. Velocity (V) is the rate at which money turns over/how many times it changes hands. M is the money stock, P is the price level and T is the total amount of transactions.

M can be measured in many different ways. The 3 main current ones used by the central bank are named M1, M2 and MZM. M1 includes all currency (i.e., cash) in circulation, traveler's checks, demand deposits at commercial banks (or other depository institutions) held by the public, and other checkable deposits. This measure is very liquid and narrow. M2 includes all of M1 as well as savings deposits, time deposits below USD 100,000, and balances in retail money market funds. MZM (money with zero maturity) is the broadest component and consists of the supply of financial assets redeemable at par on demand: notes and coins in circulation, traveler's checks (non-bank issuers), demand deposits, other checkable deposits, savings deposits, and all money market funds.

By looking at the behavior of these different statistics, we can learn different things about the state of the economy. A decreasing velocity of M1 might indicate fewer short-term consumption transactions are taking place. Many economic activities include transactions between different types of accounts, which is only partially included in M1. So the velocity of MZM could help determine how often financial assets are switching hands within the economy.

The "price level" is an index of prices relative to changes in the index at some other time. The time which you choose is arbitrary. For example, we can say that the prices as of January 1, 1935 will have a price level of 1 where P at other times is measured relative to that base year. The price level can be measured using several different indicators which are prices of baskets of goods, such as the CPI or the PCE, or the "GNP deflator" that uses prices throughout the economy.

At the beginning, when  $MV = PT$ , prices and output are such that there is no unemployment resulting from monetary factors. All goods and wages are priced such that at the rate of spending, the goods are getting sold and factors are getting paid. If the money supply increases, and the money is getting spent while the level output remains the same, then prices must rise as more money is chasing the same amount of goods. If velocity falls, with M and T remaining unchanged then prices must fall in order to sell product at the lesser demand. With T increased (more output) and with the same amount of money chasing a larger amount of goods at the same rate then prices must fall. This process of the price level adjusting to changes in spending, in the monetary stock and changes in output is referred to as maintaining monetary equilibrium. The phase where the price level is still adjusting to changes in spending and output is referred to as monetary disequilibrium. Although you can have short-run periods where there is monetary disequilibrium, or extended short-run periods due to price rigidity, in the long-run prices will adjust. This is referred to as a concept called long-run money neutrality.

## 10.4 Inflation vs Deflation

There are two kinds of inflation: "price inflation" and "monetary inflation". Price inflation is a continuous increase in the price level. Monetary inflation is an increase in the money supply that is higher than the increase in total real transactions ( $T$ ). If you have a fixed  $M$  and get a sudden increase in  $V$ , this can cause a one time jump in the price level. This is different from sustained price level inflation which is a rising price level for an extended period of time. Price inflation however is normally caused by monetary inflation through central bank policy. Deflation is the opposite. With monetary deflation, there is a decrease in the money supply relative to goods, and with price deflation, there is a decrease in the price level.

As stated earlier, the equation of exchange is a tautology and tool for analysis. There is no virtually no economist that disputes it because  $V$  or velocity is defined as  $PT/M$ .  $PT$  equals all the goods produced and sold times the price level. Another way to refer to this is "NGDP". By implication  $MV$  equals all the goods bought with money which also equals NGDP. Since inflation can increase the nominal value of GNP or GDP more than the increase in real production, the deflator allows us to see the real increase (relative to some base year). Monetary inflation also does not raise all prices evenly. Some goods will rise in price more than others (such as the price of real estate compared to retail goods) as the increase in money works its way unevenly through the economy. The subsequent distortion of relative prices is commonly referred to as the "Cantillon Effect".

## 11 Business Cycle Theory

One universal mystery throughout the history of economic thought is concerning economic cycles. Why is that after periods of growth that we experience periodic downturns? Why do they only last for a period of time, only to return again? Are they an inherent occurrence in the market process? Or are they caused by extra market forces? Many economists have had many thoughts regarding economic cycles, but unfortunately most of them have been unsatisfactory in general. Austrians propose that the major cause of the economic cycle is one factor and that fixing this issue would rid the economy of the major cycles. Austrians don't say that fixing this issue would remove any economic cycle from occurring - some minor cycles can still occur - but that it would fix the major, devastating cycles that seem to occur periodically.

### 11.1 A General Theory of Economic Cycles

It seems appropriate that before getting into some of the details of the Austrian Business Cycle Theory (ABCT), to give some generic information relating to economic cycles as an area of study. When discussing "the business cycle", what we are specifically concerned with are the "booms" and the preventing of "busts". What causes "booms"? What causes the "boom" to end? Can the "boom" be made "sustainable" so as never to bust? These are the questions we are asking when discussing the business cycle.

An economic cycle can be broken up into phases: recovery, prosperity, recession and if it is especially bad then there is also the depression. The uppermost point from where the period of prosperity turns into a recession is called the peak and the point where a recession or depression turns to recovery is called the trough. Usually periods of prosperity and periods of hardship will behave like curves. If you were to plot this process onto a graph it would look like a sine curve (important note: the sine curve is just a useful analogy, economic cycles don't have a definite recurring period). During the period of prosperity,

you could take the first derivative and you would find that where the line is going up, the number would be positive measuring the rate of increase. Take the second derivative and you would find that where the number changes signs, is where the rate of increase slows down and begins to steepen. This point is called the inflection point. Eventually it will completely steepen and you reach the peak and enter the bust. The same process is inverted for the depressionary phase. It's not puzzling why the depressionary or recessionary phase will transform into a recovery. In a market economy, entrepreneurs are looking to make a profit and a bust phase is the best place to find it. Entrepreneurs are naturally disposed to try and better their economic position and this is what creates the recovery. It's also not puzzling that sometimes we will see hardship as entrepreneurs and market activity is often miscalculated. The economic puzzle is what causes the rate of increase of prosperity to slow down, increase or collapse in such wide amplitudes even in the face of entrepreneurial activity.

## **11.2 Booms and Busts**

First, to get an understanding it's better to stick with more economically friendly terms rather than "booms" and "busts". The "bust" consists of two main sorts: recession and depression - the latter being worse than the former. A depression is usually a state of affairs in "which there is a fall in the volume of spending or a fall in volume of production which would result in the rate of employment falling or being subnormal in the sense that there are idle resources and unused capacity, especially unused labour" [Haberler]. The opposite of a depression is prosperity in which there is full employment, maximized employment of resources and a stable, predictable level of prices. This excludes normal fluctuations in levels of employment. What is "full employment"? An economy is in full employment when the only unemployment is frictional meaning the only unemployment is workers who are between jobs, are engaged in job search out of college or are about to be

hired. Then there's structural unemployment and seasonal unemployment however these will be left aside as they might require different policy aid than what's being proposed here if any at all. What we are concerned with is cyclical unemployment. Generally cyclical unemployment is caused by a lack of demand meaning a fall in spending which results in firms having fewer sales as demand falls, and the falling demand becoming a downward spiral as falling purchases by some become falling production by others.

### 11.3 Types of Cycle Theories

From here we can distinguish between two sorts of business cycle theories: real and monetary. A “monetary” explanation of the business cycle has to do with the quantity of money or the velocity of circulation of money. A “real” explanation of the business cycle has to do with non-monetary factors such as technological change or the role of land, among various other sorts of “real” influences. The Austrian theory of the business cycle is a mostly monetary theory of the cycle. The ABCT emphasizes the role injections of credit play in distorting the capital structure. The Austrian theory of the business cycle is based on three factors: money, capital structure, and interest rates. For a review of these topics and the concepts used later in this explanation, I would encourage checking out the other FAQ sections for [capital goods](#), [time preference and interest rates](#), and [money and inflation](#) as they are all very important to the theory.

### 11.4 Austrian Business Cycle Theory

When the market rate of interest is pushed below the natural rate of interest (excluding risk premiums), Austrians emphasize that this distorts the structure of capital goods and results in economic waste. For example, when a monetary authority lowers the interest rate by increasing the supply of money, then this sends a false signal to entrepreneurs. When the interest rate is low, more investments will be directed into goods of higher-order



because it is now profitable to do so. With interest rates lower depositors are also less willing to save. But the fall in interest rates resulting from central bank injections is only temporary and does not reflect real changes in time-preferences (or desires to forego present consumption). Now there's a tug of war between consumers spending more in consumer industries and from investors trying to invest in later stages of production more. And so both sorts of actors are bidding up the prices of factors making it less conceivable that latter sort of producers finish the project before interest rates go back up.

When the interest rate goes back up due to either the nominal income effect or a slow-down in central bank activity, the demand for the higher goods may be seen to be lacking as the revived interest rate reduces spending to their original levels. Roger Garrison explains that "interest-rate sensitivity increases with the temporal distance of the investment sub aggregate, or stage of production, from final consumption" meaning that higher order goods are more sensitive to changes in the interest rate. The higher interest rate means the cost of continued borrowing to sustain the higher-order goods is now no longer profitable and so the firms fail. In the Austrian theory, this is the main component which induces the downturn. Part of the recovery phase then consists of what Lachmann calls capital re-grouping - a process in which the capital goods used in failed plans will be discarded in their current uses and moved to more profitable uses likely into the shorter period of production industries who buy them out - a restructuring of the economy's distorted intertemporal capital structure.

It's sometimes argued that under a central bank, there's no reason the interest rates ever have to go back up. But if the inflation is continued indefinitely then you may run into the possibility of hyper-inflation. There are also other factors that can cause the central bank to raise interest rates such as the economy overheating meaning unemployment that is lower than the optimal, or the fact that the central bank might want to raise interest rates now, so they can lower them at a later point. It's just not conceivable that the interest rate could be kept depressed forever.

The second component of the theory combines other Keynesian insights concerning the stickiness of prices. Now suppose the previously described situation had occurred. After the interest rates rise, the capital projects that had been undertaken are now unprofitable and capital regrouping commences. There may be some unemployment as the employed labour and capital for the projects is now being transitioned but if it's quick and easy then the recession is short lived. But sometimes the bust becomes a cumulative spiral in which the falling sales lead to falling production and employment and then more falling spending, if the primary bust happens in areas of the economy that are highly interconnected causing widespread bank failures and credit crunches. Then the bust goes beyond the simple capital readjustment. Roger Garrison explains it like this: suppose there is an earthquake and this causes fires to break out from gas lines bursting. In one scenario, the earthquake could just cause some shaking and move some stuff around so the unrest is short lived but in another it could blow everything up! If there's no earthquake then the gas lines don't burst!

#### **11.4.1 The Secondary Depression**

Now relate this back to the equation of exchange:  $MV = PT$ . In this secondary sort of depression, velocity is rapidly falling and this necessitates that all prices must fall for inventories to get sold, and for labour to get paid. What if prices don't fall? Then we have another problem and this is what is commonly referred to as the "secondary depression" or the "secondary deflation". Prices including wages are temporarily "sticky" and are slow to adjust to the rate of spending. One person's spending is another person's income, and so instead of the price level and wages falling to avoid unemployment to protect some firms revenues, firms lay off workers to the extent that they can to prevent bankruptcy. Eventually once prices fall, then employment will return but this can be a painful secondary adjustment on top of the capital adjustments. What do we do about this?

In this case, since prices are not flexible, and people are saving more than spending ( $V$  is falling), a temporary increase of the money supply would be beneficial. When prices and

wages are sticky, an increase in the money supply can change the “real wage” or the wage relative to the price level. A lower real wage increases employment and output and so in the short-run before prices adjust from the monetary increase, an increase in the money supply will increase output and employment. The temporarily increased supply of money would allow firms which are seeing falling revenues to be able to borrow from banks in order to sustain themselves rather than lay off workers.

This is the view of the ABCT as espoused by Austrian thinkers such as Gottfried Haberler and F.A Hayek and also modern thinkers such as George Selgin, Lawrence White and Roger Garrison. In effect, the policy recommendation is to stabilize MV or the total stream of spending. Capital regrouping should be allowed to occur but this need not include the secondary adjustment. If the total stream of spending or nominal income is falling then banks or central banks should accommodate this by increasing the supply of money but only as much as is warranted by the fall in spending. However if there is an increase in output or a fall in output, then the price level should be allowed to take the hit. In this case, there is no corresponding increase in savings (or a fall in spending) so it is not warranted on that front. Another reason we allow the price level to take the hit in the second case but not in the first is for a finer empirical distinction between which sorts of goods are usually involved in the price adjustments and how they react to changes in supply and demand. As explained by George Selgin:

Product prices will be rigid only to the extent that factor prices are rigid, because product prices are often set according to ‘implicit contracts’ promising some fixed percentage mark-up of prices above unit costs. Although this view accounts for a sluggish adjustment of product prices in response to changes in nominal income, it does not predict any ill-adjustment in situations of changing productivity. In the latter case, unit costs of production are themselves changing, so that adjustments in product prices tend to take place, even as factor prices and the total outlay for factors stay the same, to preserve a constant mark-up[17]

This is however only one view of the ABCT. A different perspective is the one put forward by Murray Rothbard and his followers. In this view, any change in the money supply will cause an ABC. Since the money supply has increased then this necessarily

lowers interest rates below the level they were at previously and so this constitutes a distortion of the capital structure and all the previously described consequences. As the downturn commences, the only recommendation is to do nothing and let the deflation play out. However this view is rejected here since we believe it misunderstands the nature of savings and investment.

The key in coordinating the capital structure into a sustainable form is maintaining the natural rate of interest however it doesn't mean that the money supply has to be fixed. When people open a checking account, what it consists of and what happens to it is irrelevant. As long as the funds which were put into the bank are redeemable on demand and the bank can fulfill the requests then the fluctuations in money supply need not matter as long as monetary equilibrium is maintained. When people put money into a bank, they aren't spending, so they are saving. These increased savings should translate into a lower interest rate and more lending otherwise this would constitute an inefficient use of people's savings. There's no good reason to have to have every price fall in response to the community deciding to save more. Furthermore, if there was a fixed amount of money and people started spending more, then it's not clear why this wouldn't be another case of the ABCT.

## **11.5 Free Banking**

The Austrian policy proposal to address this problem is to avoid the governmental manipulations of money supply or allow a system in which the monetary system serves to stabilize MV or the total stream of spending. It is possible for a central bank to attempt to take actions which stabilize spending such as the now widely known proposal of "NGDP Targeting" however this solution still suffers from the Hayekian knowledge problem. Another remedy is proposed by George Selgin in his book *The Theory of Free Banking* in which there are no restrictions on banking such as reserve requirements or

insurance requirements. Banks would be able to issue their own money in the form of bank-notes and bank deposits taking in some other kind of money as the real money. The reason this would be superior to a central bank imitation is because private banks can benefit from local knowledge. Competition between banks and the redeemability of notes would prevent inflation but when spending collapses, banks would notice the profit opportunity in making more loans from the increased deposits and subsequently increase the money supply. This is a controversial and important subject so it will be given a more thorough treatment in the next section.

## 12 Free Banking

### 12.1 What is Free Banking?

Free banking is a monetary system in which banks are able to issue their own private currencies with no artificial barriers to entry. Since there is no central bank, the entrepreneurs who run these banks will decide what the supply of their own bank notes and deposits will be. They do this by setting reserve ratios based on market forecasts such as the demand for their bank-notes and bank-deposits, and by appraising future customer spending behavior, as well as the private policies of competing banks.

The private notes and deposits of banks can be either partially or fully "backed" by their reserves. Historically the chosen reserves have been market commodities like gold which have a fairly inelastic supply. However it is possible for anything to be the reserve money such as a frozen supply of government money or other financial assets such as crypto or Bitcoin. The reserves are referred to as "outside money", and the bank notes/deposits or liabilities are referred to as "inside money."

### 12.2 Types of Institutions in Free Banking

Due to the nature of free banking, there would be virtually no limit to the kinds of monetary and financial institutions that would be created spontaneously by imaginative entrepreneurs. However, there are primarily two types of banks that have existed historically: fractional reserve banks and 100% reserve banks. The former is simply a bank whose deposits are not fully backed by reserves and thus creates money "out of thin air", and the latter is a bank that maintains its customers' deposits fully backed by cash/reserves.

There is debate amongst Austrian economists as to whether a free market in money and banking would result in fractional reserve banking or 100% full reserve banking being implemented by market mechanisms. Historically, it has been banks with fractional reserves

that have been the most predominant monetary institutions in the world [18].

### 12.3 The Mechanism

100% reserve banks would have two main types of services for customers: warehousing money and loaning out savings. When such a bank takes in a deposit, it writes out a banknote which represents the actual money being placed in the bank's care and safekeeps it for the depositor until the moment it is being redeemed by the customer. The bank is strictly forbidden from loaning out the money due to it being a bailment contract (where ownership is maintained by the depositor), hence it being called full reserve banking. With time deposits, money is loaned to the bank for a specified period of time and at a specific interest rate so that the bank can make another loan to an entrepreneur at an even higher rate of interest so that it can maintain profit margins.

Fractional reserve banks would operate by issuing credit that is not fully backed by the reserves it holds. It would choose the level of reserves it holds, and these levels would fluctuate based on the rate at which a bank's deposits are spent on goods and services owned by members of other banks. If bank A issues \$1000 in loans with its own brand of notes and it is spent on goods owned by a member of bank B (assume that bank B has made no loan), then that member can present them to bank B for redemption and thus bank B may obtain \$1000 of bank A's reserves directly, or indirectly through a clearinghouse. This is known as the principle of adverse clearings. Banks would accept each other's bank notes at par, and clearinghouses, which are financial organizations created to settle multilateral bank obligations, would net out the discrepancies between banks so that reserves would be transferred to the banks that issued relatively less credit compared to their competitors.

The economic perspective behind free banking is called monetary disequilibrium theory. It is formulated around the idea that supply and demand applies as much to money as it does to normal goods and services. Changes in the demand for money meaning an increase

in the desire to hold money balances require commensurate changes in the supply of money, and vice versa. If not, then the lack of financial intermediation that banks typically provide will result in intertemporal dis-coordination. See the section on Money and Inflation for more details.

When the demand for money falls, it often means that individuals are spending more. When this occurs, bank notes and deposits of a given bank are likely to be obtained by a member of a competing bank, thus shifting reserves from the former to the latter through a clearinghouse or similar note exchange. Given its reserve ratio, the first bank should raise interest rates and call back loans which will reduce the supply of its liabilities and thus money so that there will be no bank run. Similarly, when the demand for money rises (which often equates to higher savings), banks see their reserve levels rise above the level they set privately. They realize they should lower interest rates and issue their liabilities to credit-worthy borrowers so as not to incur the opportunity cost of holding onto "excess reserves" instead of loaning them out for a profit.

## **12.4 How Does it Differ from Central Banking?**

The main distinction between the two is that central banks conduct a monetary policy whereas all member banks within a given country must work within that framework, while on the other hand a free banking system is simply a monetary system in which banks can set their own policies.

A central bank concerns itself with economic aggregates such as gross domestic product, the price level, unemployment, etc., but a free market in money and banking only considers its profitability and market share. Because of this, a free market is better positioned to allocate credit and thus resources efficiently because it does not have any "lags" in policy (given a certain amount of discretion) which, from a central banking perspective, require a) recognition of an economic problem, b) implementation of that policy which requires



decisions to be made, and c) the effectiveness of that policy. Central banking succumbs to the element of time that is necessary for its policies to prevent or mitigate economic disruptions.

The free banking mechanism mentioned above is superior in that it is not subject to these limitations, nor does it require as much time for private clearinghouses to work when changes in the demand for money occur. Furthermore, a free banking system does not have nor requires a "lender of last resort" which historically central banks have been. Instead, option clauses allow banks that need liquidity a certain amount of time to delay redemption's so that they can acquire the necessary reserves (commodity money) while compensating depositors for the delay by paying a premium dictated in the deposit contract. If depositors liked they could also buy deposit insurance from the bank at an extra cost guaranteeing complete redemption even if the bank becomes insolvent. However, this need not be the case since the clearing house sometimes provides the role of a lender of last resort whereby member banks can go to borrow from other banks in case they need money.

## **12.5 Free Banking in the Austrian Framework**

The Austrian claim that credit can be extended when voluntary savings rise poses no inherent problem for a fractional reserve free banking system. If the supply of savings rises, *ceteris paribus*, then interest rates should fall in accordance with loanable funds theory. When this happens, a bank operating on fractional reserves which sees its reserves increase can extend loans to credit-worthy borrowers. This will not inherently cause a boom because the necessary heterogeneous resources and labor required to expand production in the higher order stages of production are no longer being utilized by consumer goods industries since individuals are spending less on consumption.

If banks appraise the situation correctly, there can be no artificial boom even though credit is being extended with being fully backed by specie. The situation is akin to one

in which person A buys a bond from person B. This makes A the creditor, and B the debtor/borrower. B then uses the money to buy equipment to produce a product which yields him an income that he uses to pay back the principle (including interest) to A, keeping the residual as profit. In this case, there is no increase in the supply of money, only a transfer of funds from A to B.

With fractional reserve banking, there would be an increase in the supply of money if B borrowed his bank in which A was a depositor. However, the situation is essentially the same since A is not using the funds because they wish to consume at a later time, meanwhile B uses the newly created money to expand his business. Both examples are what is called credit intermediation.

It is possible for banks to over-issue credit at times, and thus create considerable price inflation and a boom, but this would be largely mitigated by competition from more responsible and prudent banks.

## **12.6 A Brief History of Free Banking**

Free banking systems were predominantly in the 19th century with varying degrees of success. Among the most notable examples according to economists are Scotland in the 18th and 19th century, the U.S. before and after the civil war until the turn of the century, Australia in the late 19th century, and Canada from the 1860s until World War 1. Banks in these systems were relatively free from government intervention, enabling commerce through credit channels in which fractional reserve banks operated.

However, with recurring financial crises and increasing regulation resulting from them, these and other countries moved away from free banking by establishing central banks. The U.S. was the last major country to do so, creating the Federal Reserve system in 1913.

## **12.7 Pros and Cons of Fractional Reserve Banking**

### **12.7.1 Pros**

- More fluid credit intermediation
- Economizes on reserves by increasing supply of bank notes/deposits
- No barriers to entry
- Allows banks to combat monetary disequilibrium

### **12.7.2 Cons**

- Varying degrees of risk of losing deposits from a bank run
- Higher likelihood of price inflation and the boom-bust cycle

## **12.8 Pros and Cons of 100% Full Reserve Banking**

### **12.8.1 Pros**

- No risk for depositors to lose their money

### **12.8.2 Cons**

- Significantly lower ability for credit intermediation
- Higher cost of mining specie
- Less efficient at preventing monetary disequilibrium
- Shocks from large gold discoveries

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