# 1AC

### Blockchain---1AC

#### Advantage 1---BLOCKCHAIN

#### Blockchain development is inevitable, but beyond the scope of antitrust---the law’s narrow focus on the ‘firm’ is fundamentally inapplicable, creating an anticompetitive environment that’ll centralize applications and limit uptake

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5 A WIN-WIN THEORY

The creation of a legal fiction around blockchain nuclei will benefit both antitrust and blockchain communities. By facilitating the enforcement of the rule of law, blockchain participants will indeed be able to enforce antitrust laws or be sanctioned when infringing them.

5.1 A Win for Antitrust

The theory of granularity helps create a legal fiction for public permissionless blockchains and private ones (whose governance is not vertical). Surely, other legal fictions will be proposed in the coming years. Regardless of its name, creating a legal fiction is a prerequisite for applying the rule of law to blockchain layer 1. The ability to do so is crucial.

First, the creation of a legal fiction ensures that blockchains do not escape antitrust enforcement for theoretical reasons. This is a prerequisite before discussing the technical barriers to enforce antitrust against illegal practices (see the following chapters). Second, assigning liability to the right entity ensures that whoever controls blockchains will have a strong(er) incentive to comply with legal requirements. The urge to play by the rules is always stronger when one knows that the rules could actually be enforced. As such, antitrust will not only protect actors that lie outside of blockchain ecosystems; it will also protect those inside the blockchain who cannot stop the anticompetitive practices. Antitrust will free blockchain layer 1 from these practices.

5.2 A Win for Blockchain

Creating a distinct legal fiction centered on blockchains’ nucleus will present an important step forward for related ecosystems. First, the creation of such fiction will attribute rights to blockchains’ nuclei. This will legitimize collaboration between blockchain participants in the nucleus that would otherwise have been prohibited. Indeed, I have explained that antitrust law defines a legal fiction (e.g., the firm) and then applies only to the effects that occur outside of it. Decisions that produce an effect outside of the blockchain nucleus will be submitted to antitrust law. In contrast, decisions taken by the nucleus whose effects are purely internal to that entity will be exempt from antitrust scrutiny.98

Second, creating a legal fiction will increase legal certainty pertaining to the application of antitrust law and regulation. Decades of research suggest that doing so will encourage investments,99 and will make entrepreneurs want to “embark” on the creation of innovative products and services.100 Blockchain communities say so themselves: regulatory issues and accompanying legal uncertainty are the most important reasons preventing greater investment and adoption of blockchain technology.101 The sooner a legal fiction is created, the better for the ecosystem. In its absence, one could imagine court decisions holding all blockchain participants liable for wrongdoings, even though most of them will not have the power to prevent these illegal practices.

Finally, the creation of a legal fiction will give the nucleus the right to institute legal actions and claim damages in cases of antitrust violation, whether caused by another nucleus or a non-blockchain entity. Going back to Christopher Stone’s writing, blockchain’s legal fictions will be able to institute legal actions in their name; courts will calculate injury to them, and relief will be run to their benefit. For example, one could imagine that a blockchain layer 1 (illegally) excluded from the market by another blockchain that engaged in predatory pricing could introduce a valid claim before the courts or antitrust agencies. In the following chapters, I will explain how this will play out when it comes to collusion and monopolization practices.

For all these reasons, creating an antitrust-related legal fiction will be invaluable for blockchain ecosystems and, ultimately, for decentralization. It will protect them from illegal practices that could hinder blockchain’s capacity to decentralize the economy. There is no doubt that centralized companies will multiply illegal behaviors toward blockchain ecosystems in the years to come, as we will see in the coming chapters. Being recognized as a legal entity will allow them to protect their interests and innovate toward decentralization.

6 CHAPTER SUMMARY AND BEYOND

In this chapter, 1 have used the theory of granularity to open the blockchain “black box.” First, I have discussed blockchain governance and shown how the influence of different participants neutralize their position. As no block- chain participant can control the blockchain by itself - and ensure its survival - I have explained that a group of participants may want to come together to achieve common goals. By doing so, they free themselves from other participants’ constraints and end up forming the blockchain nucleus.

The blockchain nucleus gives rise to an entity that should benefit from rights, but could also be held liable for illegal conducts. I have shown how this would work by analyzing relevant markets and market power, evaluating anticompetitive practices and assigning liability.

#### Anticompetitive exclusions and lack of legal certainty over the applicability of antitrust dry up investment and innovation, artificially centralizing digital ecosystems---applying antitrust solves

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2 THE SPECTER OF NEUTRALIZATION

I hope to have convinced readers that antitrust law and blockchain contribute to similar, if not identical, objectives (i.e., preserving agents’ ability to act freely in the market, which entails the decentralization of decision-making processes).42 For that reason, one might expect that both communities would work hand in hand to achieve decentralization. And yet, despite pursuing a common goal, blockchain and antitrust may end up canceling each other out. Here’s why.

2.1 One Goal, Two Methods

Blockchain seeks the decentralization of decision making by eliminating intermediaries, while antitrust aims to achieve it by eliminating anticompetitive practices. They converge toward the same objective. That said, one should not be candid about how easy it will be to make them cooperate. First, the Sherman Act is concerned with trusts43 - hence the name “anti-trust”. Since there is no trustee in the sense of a third-party fiduciary in blockchain’s first layers, the target of antitrust laws is absent.44 Blockchain may thus undermine the *raison d'etre* of antitrust law, which will trigger epidermal reactions.

Furthermore, blockchain and antitrust may at times attack each other. Blockchain may be used to implement anticompetitive practices and be enforcement resistant, while antitrust may reinforce the role of intermediaries in the economy (by protecting them from different forms of anticompetitive exclusions) and label various blockchain behaviors as anticompetitive - regardless of the overall usefulness of these blockchain features.

In fact, antitrust law and blockchain ecosystems seek decentralization at two different levels. Antitrust law prohibits certain categories of conduct, creating tensions with tech communities without focusing much on digital architectures. Blockchain, on the contrary, seeks to decentralize by providing its users with a specific digital architecture. It does not prohibit (anticompetitive) practices where code allows. This creates tensions between them, as I show in Part 2 of this book. Their cooperation will require the identification of ways to deal with these mutual provocations, as I will explain in Part 3.

As things stand, both of these communities exhibit what Veblen called “trained incapacity” - the difficulty to think beyond a set of constraints and assumptions. Policymakers tend to believe that the law should be the most important constraint organizing our lives. For that reason, legal rules are often applied without looking for ways to coordinate with other constraints, including digital architectures.45 In the meantime, blockchain communities tend to view legal enforcement as an adversary, and not as an ally. As John Perry Barlow stated in 1996: “I ask you of the past to leave us alone. You are not welcome among us. You have no sovereignty where we gather.” After all, the law liberates, but it also implies illegality, lawsuits, liability assignment and sanctions. The antitrust and blockchain communities will gain from over- coming these biases.

2.2 The (Long) Road Ahead

If we want antitrust and blockchain to collaborate on a long-term basis, we need to talk about the problems that their cooperation will encounter along the way. The challenge before us is intricate.46 On the one hand, it is a matter of getting legal minds to recognize that technology can help achieve objectives that the law cannot achieve on its own. There are three reasons for this. First, blockchain provides a technical approach to the subject. It serves as a framework for decentralizing the economy by default, while antitrust mostly applies ex post by correcting past behaviors.47

Second, antitrust agencies’ detection rate remains low, meaning that illegal behavior often goes unpunished.48 And enforcement is costly, which makes it impossible to pursue all potentially illegal practices. This is particularly problematic in a world where illegal practices can be implemented through coding that quietly and immediately affects billions of users. Also, the rule of law is (unfortunately) inapplicable in some places. This is the case when the state bypasses legal constraints,49 and when jurisdictions are mutually unfriendly and do not enforce foreign laws.50 For example, enforcement of U.S. court judgments abroad can prove especially difficult in light of divergent rules on jurisdiction, requirements for special service of process, reciprocity and some foreign countries’ public policy concerns,51 including in Europe.52

Finally, antitrust law is complex and cannot be fully mastered by all companies - the compliance costs are high and many firms unwittingly infringe the law. Blockchains could therefore supplement antitrust by creating an architecture that leads to fewer anticompetitive practices.

On the other hand, blockchain communities would gain from working with (not against) antitrust law enforcers. That is because antitrust would eliminate practices that artificially centralize blockchain ecosystems and that blockchain architecture cannot stop or prevent. 1 will analyze them in Part 2. Doing so would also provide legal certainty, thus fostering investments and benefiting all the actors involved in commercial activities that rely on blockchain. For these reasons, one should think of antitrust and blockchain as allies - not enemies - as they both seek the same objective, while presenting complementary strengths and defects. Doing so would lead policymakers to promote and implement a new “law + technology” approach that recognizes that the benefits of cooperation outweigh those of one-off confrontations. A game theorist would represent that approach as illustrated in Figure 5.1.

#### Decentralizing the blockchain allows scalable transaction validation

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2 BLOCKCHAIN INTERNAL FACTORS

The evolution of blockchain also depends on internal balances in terms of design and governance. Overall, choices that will be made within each blockchain will prove important for their evolution. As I show, it all comes down to human interactions.

2.1 The Trifecta: Intra-blockchain Evolution

A blockchain trilemma has emerged in the literature over the last several years. It can be summed up as follows: ensuring blockchain’s decentralization, scal- ability and security entails tradeoffs, at least in the short term. Although this makes sense on a technical level, it does not capture the entirety of our subject. Let us take a closer look. I have discussed decentralization at length through- out this book. It is blockchain’s central feature, in terms of both architecture and philosophy. “Scalability” refers to the ability to validate large volumes of transactions rapidly. Last, blockchain’s security hinges upon its ability to maintain integrity: that only desirable transactions take place - for example, by preventing double spending.42

To a certain extent, we have seen together that the mechanisms that ensure decentralization at different blockchain layers may conflict with security.43 This is what Awemany’s story in Chapter 1 revealed. Decentralization implies the distribution of power, limiting the ability to act unilaterally in case of an emergency. At the same time, decentralization can also affect the scalability of blockchain: Proof of Work is decentralized by nature, but it prevents the rapid validation of large transaction numbers. Conversely, a private blockchain can restrict access to the ledger or certain functions, raising security and scalability issues.44

In the long run, however, these three objectives are mutually reinforcing. The more a blockchain is decentralized, the more it stands out from the centralized platforms and services that readers know only too well. By differentiating themselves, blockchains attract users by offering a different value proposition. In turn, this generates scalability. The same goes for security, as the more participants use a public blockchain, the harder it becomes to alter the registry or perform a 51 percent attack. The blockchain trilemma is thus useful for thinking about what needs to be done, but it cannot provide a coherent analytical framework in the long term. It will become less relevant with technical advances, to the point where some blockchains will maximize these three objectives. Those who manage to do so will prosper.

#### Scaling blockchain unlocks its use for energy, waste, and supply chain sustainability---extinction

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Two years ago nobody talked about blockchain. Now the distributed ledger technology behind cryptocurrencies like bitcoin is suddenly everywhere.

Enthusiastic experts predict that in the coming 10 years, blockchain will change the way we do everything, from financial markets to health records to supply chain management, and so much more. It's near impossible to name all the applications for the new technologies, but here are a few that will contribute to making our world a better place (or even save the planet).

Energy

Most visible for average users will be the impact of blockchain on the energy sector. The power grids of today are usually centralized oligopolies dependent on a very small selection of power sources (i.e. a few nuclear plants, augmented by oil and gas).

That means long distribution lines, bad management of demand, and susceptibility to power outages during earthquakes and other natural disasters.

A peer-to-peer blockchain-based energy system would reduce the need to transmit electricity over long distances. It will certainly reduce the need to store energy in inefficient ways, which means fewer batteries, for example, which are expensive and need a lot of raw materials whose extraction often causes massive pollution. Imagine if every house had a solar panel and a wind turbine, or produced electricity from new smart materials on the outer walls.

Add road surfaces that produce kinetic or solar energy, and add in all the existing infrastructure like nuclear plants, oil or coal. Now imagine every one of these sources could trade with every other source, all managed automatically by a computer system, with unfalsifiable records based on blockchain. And everyone gets paid for it into their digital wallet. This is the future of energy.

Waste Recycling

Current systems for recycling are often cumbersome and don't give enough incentives to participate. Even the best intentions fall foul to human greed and laziness.

Here then is the future of recycling: you identify yourself with your smartphone at any recycling station and deposit your empty bottles (or batteries etc.). The system scans what you deposit and credits your electronic wallet.

If done right, this system could enable users in countries without local recycling industries to get paid the same way as users in locations with large recycling operations.

Companies could set up recycling plants and literally collect garbage from anywhere in the world. It would make it easy to transparently track data like volume, cost, shipping data, and profit, and to evaluate the impact of each location, company, or individual participating in the program.

Think one step further and the recycling containers could be fitted with solar drone technology and fly themselves to the recycling center when full.

Supply Chain Management

The way we transport goods around the world is wasteful and damages the environment. Industry 4.0 is bringing us a revolution of already connected devices; 3D printing means more decentralized manufacturing in much smaller batches.

Blockchains can be used to track products from the manufacturer to the shelf and help prevent waste, inefficiency, fraud, and unethical practices by making supply chains more transparent.

They improve shipping ways, volumes, avoid empty shipments and will thus allow for fewer ships and trucks. Combined with drones and solar-powered airships we could even see pollutant-free solar shipments of individual consignments over long distances, secured, tracked and paid for through blockchain technology.

Or think about this: a blockchain enabled 3D-printer as a public service, secured, tracked, and monetized through blockchain.

The food industry is forging ahead hear with the tracking of origin and transportation paths of food.

Environmental Protection

From waste and transportation, it is an easy jump to the overall enforcement of environmental protection. Blockchain is ideally suited to manage records and incentives.

In can be difficult to track the real impact of environmental protection plans, agreements, or even international treaties. Very often incentives are misaligned, or corporate interests and even criminal elements prevent successful implementation.

Blockchain could discourage stakeholders from reneging on their commitments, misreporting progress, or giving in to pressure from nefarious players, because the technology would allow the reliable tracking of important environmental data.

After all, data in the public ledger of the blockchain is transparent and traceable forever. Environmental protection is at its core a contractual problem. Just like blockchain will revolutionize the storage and manipulation of legal records, it will reduce or eliminate fraud and manipulation of environmental schemes.

Development programs

Like environmental protection, development programs are contracts between remote parties that need to be enforced.

When you donate to a charity, non-profit, development program or similar entity, you hardly ever know what really happens with your money. Bureaucracy, corruption, and inefficiency are still common in the charity space. Blockchain technology can ensure that money intended to be a reward for conservation, or a payment to a specific cause, does not disappear into unintended pockets through bureaucratic labyrinths.

Blockchain-based money could even be released automatically to the correct parties in response to meeting specific environmental targets. This is particularly relevant in countries without modern banking structures. In particular, there are several schemes under consideration for the tracking of water usage in very dry areas of the planet.

Carbon Tax

In the current system, the environmental impact of each product is difficult to determine, and its carbon footprint is not factored into the price.

This means that there is little incentive for consumers to buy products with a low carbon footprint, and little incentive for companies to sell such products.

Tracking the carbon footprint of each product using the blockchain would protect this data from tampering, and it can be used to determine the amount of carbon tax to be charged on at the point of sale. If a product with a big carbon footprint is more expensive to buy, this would encourage buyers to buy products that are more environmentally friendly, and would therefore encourage companies to restructure their supply chains to meet the demand for such products.

Such a blockchain-based reputation system would compute a score for each company and product. This would make manufacturing more transparent, and discourage wasteful and environmentally unfriendly practices.

You could automatically see (e.g. by scanning a barcode on a product), if it was made by an environmentally sound low-carbon facility, or a wasteful polluter.

Access to credit

Just as it tracks financial payments and all the data mentioned above, blockchains could be configured to manage access to credit.

This would enable millions of people to escape poverty, by giving them easy access to small amounts of money and start their own business. Unlike the micro-finance banking model, such a credit blockchain would be entirely transparent and thus safe from abuse.

Summary

In short, blockchain technology allows the management of incentives.

Consumers, companies, and governments would immediately see the direct effects of their actions on the planet. The blockchain can be used to transparently track a variety of data like the carbon footprint of each product, the greenhouse gas or waste emissions of a factory, or a company's overall history of compliance to environmental standards.

Companies and individuals can be incentivized to act in an environmentally sustainable way through the availability of information, tokenized credits being issued for taking certain actions, or blockchain-based reputation systems.

There are many hurdles to overcome. We still do not know if the blockchain is really as safe and unhackable as promised. As a cybersecurity consultant I spoke to for this article said: "sooner or later, everything will be hacked."

There are still doubts about the usability of blockchain for micro-transaction, due to the time proof-of-work takes, and the energy cost associated with computing.

The final hurdle is the willingness of governments to change, and the willingness of participants to live in such a transparent world.

But I believe that managing incentives on the micro-level with blockchain could completely change the drivers of our economy, and benefit not only us but the future generations living on our planet.

#### Cryptocurrency will reach a wide rollout---that builds resiliency to survive inevitable existential filters

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TL;DR - An existential risk is the possibility of an event or series of events that could drastically curtail humanity’s potential. A hypothetical global catastrophe could be anthropogenic or non-anthropogenic and internal or external in nature. The adoption of Bitcoin will better position us to address these risks as a society.

EXTERNAL NON-ANTHROPOGENIC

A catastrophic collision with an astronomical object, such as an asteroid impact would be an external non-anthropogenic risk. This has already occurred here several times. During the Permian Triassic period (ending 250 million years ago) an astronomical impact killed 90 percent of the species on Earth. It took tens of millions of years for life on Earth to repopulate and Earth’s intelligence potential to recover.

One interesting external non-anthropogenic risk is Earth’s reflected light, which could be measured by an external intelligence who then come to extinguish us. (The topic of our own signal bringing about this death by misadventure is discussed further below.)

What does this have to do with Bitcoin?

Generally, hard money facilitates greater innovation and technological process. At this point one might argue that if we do not migrate to some degree from Earth as a species, and are subsequently wiped out by an astronomical object impact or a super-volcanic event, the risk becomes anthropogenic in nature. We are a centralized species on a grand scale, and at this point one could say we have through consensus chosen to remain vulnerable to a single vector of attack by staying here.

Bitcoin is not only the hardest money known to man, it is the most responsible from this standpoint. Bitcoin as it currently operates is currency that can provide a monetary framework on which humans can achieve greater capital growth, collaboration, resource allocation, and therefore technological progress. Because the terminal supply of Bitcoin is capped, we can store value in it indefinitely as a society.

66 Million years ago the Cretaceous-Paleogene Extinction Event extinguished the life and intelligence potential of the non-avian dinosaurs. This series of events was external, and broadly non-anthropogenic in the sense that no form of life on Earth at the time contributed to its own demise, but more specifically, at the time of those astronomical impacts the first humans hadn’t split from chimpanzee lineages. This split is thought to have occurred between between 4 and 8 million years ago.

An important distinction between astronomical impacts or super-volcanic events of the past and such events if they were to happen today is that one could argue that our intelligence potential is now mature enough to tackle certain of the external existential risks. Today, the risk posed by an asteroid impact or something similar would still be external in its origin, but at what point does the burden of responsibility to migrate off of the planet fall upon our population? We can surely solve for some external existential risks, and in any case, no one is going to do it for us. You could say that failing to collectively pursue a solution when technically we could have would recategorize a civilization-extinguishing asteroid impact as an external but anthropogenic risk.

At what point do innovation dampening authoritarian states and their mandated broken money cause society to stall at a local optimum? Surely the government has already caused this. It’s only a matter of time before another object strikes the Earth with devastating consequence. I would argue it is irresponsible to continue life here with government money. Government money is an existential risk. Bitcoin is not only a solution, it is a societal responsibility.

INTERNAL ANTHROPOGENIC

Nuclear war is one example of an internal anthropogenic risk. That is, should nuclear war arise, it would be both self destructive, and relatively self contained on a cosmic scale. It follows that biological warfare is an internal anthropogenic risk, the reality of which we as a species can surely understand now. If I were to hazard a guess I would say virtual emergencies and cyber pandemics are next. These self constructed catastrophes are the government’s misguided attempts at proof of work. This is a topic for another time. Do not surrender your ability to think and speak freely.

The second law of thermodynamics can summed thus, processes that involve the transfer or conversion of heat energy are irreversible. The law indicates we have not observed a spontaneous transfer of energy from cold to hot. Another way to think of this is that there is no such thing as cold, only lesser degrees of hot. Nothing cannot transfer. So broadly, within a closed system, the second law of thermodynamics would indicate that all differences tend to level out.

So what has this got to do with Bitcoin?

Well firstly, all hardware is subject to entropy. The distributed nature of the blockchain increases the probability that it will survive centralized entropy. At Bitcoin’s inception, imagine a failure because Satoshi’s computer randomly crashed. Distributed networks are inherently hedged against this particular centralized form of existential risk.

The second law of thermodynamics also suggests that on a grander scale, relatively isolated (centralized) systems will degenerate more and more into disordered states. Proof of work, and network growth are two ways Bitcoin fights against falling into disrepair.

Bitcoin uses proof of work to stave off entropy. The system cannot stay dormant. It must continue to use proof of work to advance the state of the chain, and to fight entropy to secure the monetary value all of the users have stored in the network. The U.S. dollar, as many have pointed out, relies on proof of war, or distributed political energies to maintain dominance. Its methodology can be described as haphazard at best.

INTERNAL NON-ANTHROPOGENIC

One internal non-anthropogenic risk is that of a super-volcanic eruption, provided it wasn’t humans who brought about the eruption. Just like with external non-anthropogenic risks, Bitcoin alone cannot prevent them, but it can help humans prepare for them such that we may survive these relatively small intelligence filters the universe throws our way.

Bitcoin allows for fundamental capital accumulation and human innovation, and promotes collaboration to such a degree that we will find an increased collective problem solving power as humans the further Bitcoin adoption spreads. It is worth mentioning that Bitcoin also maintains and appreciates wealth to such a degree that often those of us to chose to live our lives on a Bitcoin standard will experience relatively greater freedoms, and vastly greater amounts of free time than our peers who chose to continue their lives on a fiat standard, and are perpetually working to outpace their chronic debt. Many Bitcoiners will likely forego that newfound free time to work and continue to provide value to others in whatever area interests them, because Bitcoin incentivizes the collaborative accumulation of capital but also the responsible reallocation of it.

EXTERNAL ANTHROPOGENIC

An external anthropogenic risk has the least probability of occurring. This is a problem of reach. Imagine human intelligence being sent into the cosmos and signaling or generally causing an external intelligence or astronomical object to come back to extinguish us. This is a most improbable extinction by misadventure.

The probability that we send messages of consequence into the cosmos that in turn cause some other far-flung intelligence, with knowledge enough to reach us, to come and bring about our own destruction is next to zero, but it isn’t zero.

I would posit that the probability increases every day that Bitcoin survives, with each person that chooses to hold Bitcoin over fiat, because on a fiat standard we are again, stuck at a local optimum at best, and each day the global monetary system devolves further into chaos. The fiat world may continue to be habitable chaos, but our technological progress and our greatest capacity for innovation cannot be achieved on a fiat standard.

A Bitcoin standard is not only our current best bet, it is the only monetary vehicle that will take us from here, or enable us to build technology that can effectively communicate with places in the universe where other intelligence has emerged. The other reason this fatal miscommunication is unlikely to occur is that once through a Bitcoin standard we have manage to build a society that can effectively reach and communicate at greater depths of the cosmos we will at that time have already become a multi-planetary, if not transitory, if not multi-solar system species. The topic of Bitcoin in space and planetary interoperability will be discussed in a later essay.

The most distant human made object from the earth is the Voyager 1, which is over 13 billion miles away. (For perspective, Apha Centuri, the nearest star system to Earth, is 25 trillion miles away.) Human radio signals have announced our presence and our intelligence to the cosmos since around 1900. The first human radio signals have all ready traveled 114 light years, that is 681,920,540,000,000 miles. Although the reach of our radio signals is very great, the probability of us being heard and subsequently extinguished is negligible. External anthropogenic risks are the least of our concerns at the moment.

As Bitcoin adoption grows, it serves to promote advances in artificial intelligence and nanotechnology. External anthropogenic risks will become more relevant to human intelligence at a much later time. External non-anthropogenic risks are similarly out of our hands for the time being. That is, at the moment there is nothing we can do to prevent the Sun from becoming a red giant star and subsuming the Earth.

But we do already have the monetary technology upon which to engineer solutions to some of these problems. We have the potential as humans to prevent internal global catastrophes, both those set on by us and not. Survival and longevity is arguably our greatest task as a species. Adopting Bitcoin, and protecting this network is proceeding with diligence and a long eye toward the future in all of our political and scientific affairs. The existential risks of living are great, though it is human nature for our ambitions to out pace our current abilities. The only evidence of life is change. To change is to exit fiat currency, it is to use Bitcoin instead.

#### Federal antitrust signals a balanced, light-touch approach that reinvigorates U.S. global leadership on blockchain

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The internet is what it is today—with its ability to connect people across countries, time zones, and cultures—thanks to the friendly regulatory climate it was born into. Sadly, the regulatory climate of 2021 is far less welcoming to disruptive technologies. This is bad news for the future of U.S. innovation and the emerging blockchain industry.

Whether Washington takes a heavy-handed or a light-touch approach to crypto regulation over the next few months could make a multitrillion-dollar difference over the next few years. To understand how much we stand to lose as a result of bad blockchain policy, it’s first important to understand just how much we have gained as a result of good internet policy in the ’90s.

It’s easy to forget that the success of today’s internet behemoths was anything but certain in the early years of the tech boom. During the Dotcom Bubble of the late '90s, for example, many companies were dismissed as scams (and some of them were). But even the most promising companies were still seen as speculative bets, and their stock prices were subject to extreme volatility.

It’s also easy to forget that the very concept of the internet was foreign to most people in its early years. By today’s standards, it was slow, overly complex, and difficult to use by anyone without a strong technical background. Many dismissed the internet as a fad, including Nobel Prize-winning economist Paul Krugman, who made this prediction in 1998: “By 2005 or so, it will become clear that the internet’s impact on the economy has been no greater than the fax machine’s.”

Noted.

“A scam,” “a fad,” “a bubble,” “overly complex,” “too volatile.” Does any of this sound familiar? History doesn’t rhyme so much as it plagiarizes. And it’s impossible to ignore that the crypto skeptics of today use the same vocabulary as the internet naysayers of yesteryear.

Now imagine if U.S. policymakers had heeded the words of the internet’s critics in the mid-to-late ’90s. Imagine if they had cracked down on e-commerce, digital publishing, and fledgling social media platforms to preserve the old way of doing things. Imagine if they had shaped regulations to stem the free flow of physical goods, ideas, and information made possible by the internet.

The American people would have missed out on trillions of dollars in economic opportunity—and the bounties of the digital age would have gone to countries with more tech-friendly policies.

This is the risk we face today.

We find ourselves at the dawn of a new age of American innovation. Like the internet before it, crypto has the potential to redefine everything we know about how business, politics, media, finance, and even relationships work. But if legislators give in to crypto’s critics by taking a draconian approach to regulation, the U.S. will fail to reap the economic rewards of this world-changing technology—and entrepreneurs will flee to friendlier shores.

Even now, the stage is being set for a blockchain brain drain. Take the Senate-passed infrastructure bill, which includes a provision that would define crypto miners, validators, and even software developers as “brokers,” requiring them to report information to the IRS about anonymous blockchain participants that they would have no way of obtaining. In effect, this provision would kill the nascent DeFi (decentralized finance) industry and make it almost impossible for everyday Americans to invest in new cryptocurrencies. In other words, this latest move sends a hostile message to blockchain advocates: “We don’t want you here.”

At best, the Senate proposal belies a gross misunderstanding of how cryptocurrencies work; at worst, it exposes regulatory capture and the willingness of legislators to give in to special interests.

Sadly, the threat of bad regulation doesn’t end there. SEC Chair Gary Gensler has expressed his belief that many digital assets are not commodities but securities and should be regulated as such. Following this same logic, he’s signaled his intent to crack down on the use of stable coins—cryptocurrencies pegged to the value of the U.S. dollar. Americans are using stable coins to earn 4 to 8 percent APY on their savings through various lending programs. But the SEC wants to put a stop to these lending programs, ostensibly “to protect investors.” (What’s unclear is which government agency will protect investors from the unlimited money printing that is devaluing their dollar savings at a rate of 5.3 percent per year.)

Washington has gotten off on the wrong foot when it comes to crypto. But it’s not too late to correct course.

Regulation of crypto is not necessarily a bad thing. In fact, it’s a key step on the path to mainstream adoption. It’s critical, however, that policymakers shape regulation in a way that minimizes the risks of this new technology without eliminating its benefits. Congress found a way to do this with the internet in the ’90s. Section 230—while far from perfect and in need of reform today—paved the way for a flexible regulatory environment that allowed for many online companies to thrive. In the famous words of Jeff Kosseff, Section 230 contains “the 26 words that created the internet” (and, it’s worth adding, “trillions of dollars in economic wealth”).

Indeed, regulatory clarity is key to extracting maximum value from the emerging crypto economy, whether that value comes from DeFi protocols, decentralized forms of social media, tokenized assets, NFTs, or some other application of blockchain technology that we can’t even imagine today.

As policymakers seek to find the right balance on regulation, they should remember that the U.S. didn’t become the tech capital of the world by choking innovators with red tape. The U.S. became what it is today by taking a prudential approach to regulation—one that enabled the entrepreneurial spirit.

This is the same entrepreneurial spirit that inspired the private sector technological advances that made the Apollo moon landing possible. It’s the same spirit that brought about smartphones millions of times more powerful than the Apollo 11 guidance computers. And it’s the same spirit that has motivated a group of visionaries to push the boundaries of the digital frontier through blockchain technology.

Will Washington’s leaders stifle that spirit to the detriment of our economy and our reputation as a global leader in innovation? Or will they nourish that spirit to usher in the next chapter of the digital revolution?

Let’s hope they choose the latter.

#### That allows international standard-setting that leverages it for public benefits internationally

Lou Kerner 18, Head Crypto Analyst at Quantum Economics, Partner at Blockchain Coinvestors Acquition Corp, MBA from the Stanford University Graduate School of Business, BA in Economics from UCLA, “A Call For U.S. Leadership in Crypto”, Medium, 7/6/2018, https://loukerner.medium.com/a-call-for-u-s-leadership-in-crypto-4b74d6deb4ad

Despite the striking fact that most of the programmers the U.S. has ever known are alive and working today, despite the fact that the U.S.’s technical capabilities are growing exponentially, despite that, the vast stretches of the unknown and the unanswered and the unfinished still far outstrip our collective comprehension.

No man can fully grasp how far and how fast we have come, but condense, if you will, the 50,000 years of man’s recorded history in a time span of but a half-century. Stated in these terms, we know little about the first 40 years, except at the end of them man had learned to use the skins of animals to cover them. Then 10 years ago, under this standard, man emerged from his caves to construct other kinds of shelter. Five years ago man learned to write and use a cart with wheels. The printing press came this year, and two months ago, the steam engine provided a new source of power. Last month electric lights and telephones and automobiles and airplanes became available. Only last week did we develop penicillin and television. Two days ago the internet browser was introduced. And earlier today, Satoshi wrote his white paper.

This is a breathtaking pace, and such a pace cannot help but create new ills as it dispels old, new ignorance, new problems. Now, when refer to “Crypto”, I mean the four technologies (blockchain, cryptocurrency, smart contracts, and zero knowledge proof), which collectively enable decentralization, all fueled by community. Surely these technologies promise disruption and high reward.

So it is not surprising that when it comes to Crypto our government would have us stay where we are a little longer to rest, to wait. But this city of New York, and this country of the United States was not built by those who waited and rested and wished to look behind them. Technological breakthroughs are driven by those who move forward — and we will continue to do so.

If this capsule history of our progress teaches us anything, it is that man, in his quest for knowledge and progress, is determined and cannot be deterred. The development of Crypto will go ahead, whether the U.S. regulators joins in or not. And I believe Crypto is one of the great adventures of all time, and no nation which expects to lead the world in technology can expect to lead while staying behind in the development of Crypto.

Our forefathers made certain that the U.S. rode the first waves of the industrial revolutions, the first waves of modern invention, and the first wave of the internet. This generation does not intend to founder in the backwash of the coming age of Crypto. We mean to be a part of it — we mean to lead it. For the eyes of the world will increasingly look at Bitcoin and blockchain and beyond. And those of us in Crypto are working to see it governed by a banner of freedom. We have vowed that we shall not see Crypto filled with scammers, but with scalable protocols that make the world a better place.

Yet the promise of Crypto can best be fulfilled if we in this Nation are there, and leading the way. In short, our leadership in technology, our hopes for a better future, our obligations to ourselves as well as others, all require us to make this effort, to solve these mysteries, to solve them for the good of all men, and to become the world’s leading Crypto nation.

We set sail on this new sea because there is new knowledge to be gained, and new rights to be won, and they must be won and used for the progress of all people. For Crypto, like all of technology, has no conscience of its own. Whether it will become a force for good or ill depends on [hu]man[s], and only if the United States occupies a position of pre-eminence can we help decide how this new technology evolves. I do not say that we should or will go unregulated against the misuse of Crypto any more than we go unprotected against the hostile use of cyber warfare. But I do say that Crypto can be developed and mastered without repeating the mistakes of past regulatory overreach.

Crypto’s development deserves the best of all [hu]mankind and its opportunity for community. But why, some say, Crypto? Why choose this as our next computing platform? And they may well ask why climb the highest mountain? Why, 75 years ago, fly the Atlantic?

We choose to to develop Crypto, and do the other things, not because they are easy, but because they are hard, because the goal of decentralization will serve to organize and measure the best of our energies and skills, because that challenge is one that we are willing to accept, one we are unwilling to postpone, and one which we intend to win.

It is for these reasons that I’m concerned by the inaction of our government to provide greater regulatory clarity. In the last months, we’ve seen progress in scaling like the Lightning Network. We’ve seen securities infrastructure like Templum and OpenFinance and Polymath being built.

To be sure, from a regulatory standpoint, we are behind. But we should not stay behind. This year, we should make up and move ahead. The growth of our science and education will be enriched by new knowledge of Crypto, by new decentralized governance mechanisms, by new token economics.

The Crypto community itself, while still in its infancy, has already created a great number of new companies, and tens of thousands of new jobs. Crypto is generating new demands in investment and skilled personnel, and New York and the U.S. can share greatly in this growth.

To be sure, all this comes with uncertainty of the role of government and fiat in the future. I recognize that the belief in Crypto’s potential is in some measure an act of faith , for we do not now know what benefits await us.

But I believe that we can develop a decentralized currency that can be used as a means of exchange. I believe we can leverage blockchain technology to provide identity for the 23 million children on this planet without identity papers. I believe we can use these technologies for voting purposes, and ensuring our elected officials follow through on their promises.

However, if we’re going to do all those things, and countless other positive things for mankind, then we must pass accommodating regulations. I‘m encouraged that New York and the United States are playing a big part in the development of Crypto,. With more regulatory clarity, we can solidify our leading position in Crypto, the greatest adventure on which [hu]man[ity] has ever embarked.

#### Globally collaborative blockchains prevent nuclear war from miscalc, accidents, and arms racing AND build global co-op, stopping existential threats

Dr. Lyndon Burford 21, PhD in Politics and International Relations from the University of Auckland, Visiting Research Associate at the Centre for Science and Security Studies at King’s College London, Member of the New Technologies for Peace Working Group, a Part of the Vatican’s COVID-19 Commission, “Could Blockchain Technology Help Advance Nuclear Disarmament?”, Medium International Affairs Blog, 2/19/2021, https://medium.com/international-affairs-blog/could-blockchain-technology-help-advance-nuclear-disarmament-6efaab35e277

New and maturing technologies are often seen as possible drivers of conflict, not least in the context of rising nuclear risks. In 2019, for example, the UK House of Lords Select Committee on International Relations concluded, “The risk of the use of nuclear weapons has increased, in the context of rising inter-state competition, a more multipolar world, and the development of new capabilities and technologies.” In a recent policy report published by the Centre for Science and Security Studies at King’s College London, I explored the flipside of that coin. The trust machine: blockchain in nuclear disarmament and arms control verification looks at how blockchain technology could help to reduce nuclear risks, by strengthening systems to verify the dismantlement of nuclear warheads.

The ‘trust machine’

Blockchain is best known as the technology that underpins the cryptocurrency Bitcoin, but it already has a wide range of alternative uses in areas such as medicine, transport, manufacturing, finance and governance. During the COVID-19 crisis, blockchain was used to produce a cheap, reliable solution for contact tracing. In Syria, blockchain is being used to create a permanent record of potential war crimes, increasing the security and integrity of the data and strengthening its admissibility as evidence in future war crimes prosecutions.

Contests of legitimacy and value: the Treaty on the Prohibition of Nuclear Weapons and the logic of…

Blockchain is a de-centralized, digital record-keeping technology. It combines cryptography and social/economic incentives to build a shared, permanent, and virtually un-hackable record of events, without needing to trust a third party authority to manage the data. Unlike Bitcoin, which is a ‘public’ network that allows anyone to interact with it, a private blockchain creates a ‘permissioned’ network of participants who collectively store and manage data in a way that allows them to maintain extremely high confidence in the integrity of the data. The result is a shared, digital record of events — a blockchain — that is practically immutable, establishing a single, collective, and irrefutable ‘truth’ about the nature and sequence of events within the network. In a post-truth world, blockchain thus offers an invaluable technical foundation for cooperation among parties that have a limited basis to trust each other, leading to its nickname, ‘the trust machine’.

Blockchain as a disarmament mechanism

At present, extremely low levels of international trust hamper efforts to advance nuclear disarmament. The ongoing development of new nuclear weapons, warheads and increasingly capable ballistic missile defences are undermining the theories and practices of deterrence, and point to the resurgence of a spiral of mistrust that characterized the Cold War nuclear arms race. Developing robust, multilateral verification tools and processes could help to mitigate the trust deficit. It would enable countries to pursue their shared interests in nuclear disarmament — reduced costs, less chance of escalation and nuclear use, greater scope to cooperate on global threats like climate change and pandemics — by increasing confidence that other countries are fulfilling their disarmament commitments in good faith. One way to strengthen verification would be to use a private blockchain to manage and store the data that a disarmament process creates.

In a verified disarmament process, parties need to track and record things like the status and movements of individual inspectors and weapon parts, and the status and material holdings of different facilities. These activities create large amounts of data that need to be stored in a secure, permanent and transparent manner that also allows for its easy retrieval by permissioned actors. The core attributes of blockchain correspond closely to these requirements. The technology would allow parties to maintain very high confidence in the immutability of verification data, creating a strong technical foundation for future cooperation from a shared, trusted baseline.

International collaborations like the 25-country International Partnership for Nuclear Disarmament Verification and the Quad Nuclear Verification Partnership (made up of Norway, Sweden, the United Kingdom and the United States) are already exploring how nuclear-armed and non-nuclear-armed states can cooperate in verifying the dismantlement of nuclear warheads without revealing sensitive information. Blockchain could complement their approach, enabling countries to create a permanent, immutable record of verification data.

Nuclear weapons threaten the survival of humanity and divert tens of billions of dollars each year away from efforts to address other collective security challenges like mitigating and adapting to climate change and responding to pandemics like COVID-19. As such, we all share an interest in disarmament processes that can reduce the likelihood of deliberate or accidental nuclear explosions and free up urgently needed resources for other global security priorities. We owe it to ourselves and to future generations to consider all options that could help to advance nuclear disarmament. In addressing the regular obstacle of distrust between the nuclear powers, blockchain is one technological option that we should be exploring.

#### Policy must be certain and originate at the federal level to signal U.S. commitment to accommodative blockchain policy

Michele Benedetto Neitz 21, Professor of Law at the Golden Gate University School of Law, Member of the California Blockchain Working Group, Affiliated Scholar at LexLab at the U.C. Hastings College of the Law, “How to Regulate Blockchain's Real-Life Applications: Lessons from the California Blockchain Working Group”, Jurimetrics Journal, 61 Jurimetrics J. 185, Winter 2021, Lexis

A. Why Create Laws Related to Blockchain Technology?

1. Protecting the Public from Harm

Blockchain technology is a complicated field, and innovation in this space is developing rapidly. This innovation will occur regardless of a legislature's reluctance or willingness to draft laws to regulate this industry. As state and federal legislators are struggling to define a regulatory scheme, members of the public who are excited about the possibilities of investing in something new like digital assets may suffer from harm.

This has, of course, already happened in various ways. In a recent high-profile example, members of the public were invited to invest in initial coin offerings (ICOs), buying tokens as a way to invest in start-up companies. 25 One study reported that approximately 78 percent of the ICOs offered in 2017 were actually scams. 26 In the United States, 33 percent of ICO investors believe that ICO operators "deceived them or withheld information from them." 27 The ICO market significantly cooled as federal prosecutors and the SEC began aggressively taking action against leaders of fraudulent ICOs, demonstrating how regulatory enforcement can indeed protect investors from harm. 28

[\*190] However, cryptocurrency scams are persisting beyond the ICO craze. The FTC recently warned the public that scammers are continually finding new ways to "trick people." 29 Members of the public are clearly at risk of a multitude of foreseeable--and unforeseeable--problems as applications of this technology develop, including fraudulent investments, breaches of privacy on blockchain platforms, digital identity theft, and insufficient data protection. Given these threats to the public, it is not appropriate for regulators to dawdle as blockchain applications continue to rapidly advance.

2. Attracting Innovation

While they work to protect the public, legislators and regulators can also use laws to signal their commitment to attracting blockchain-related companies to their locations. Some jurisdictions, including countries like Estonia and Switzerland 30 and U.S. states like Wyoming, 31 have already implemented regulatory schemes designed to win the interjurisdictional competition for blockchain business. 32

The resulting tension between protecting the public while promoting innovation lies at the heart of regulating digital assets and other applications of blockchain technology, as discussed in more detail in Section III.A. Despite the need for blockchain-related regulation, numerous challenges exist for lawmakers seeking to draft laws in this area--starting with the fact that the word "blockchain" does not have a commonly understood definition.

B. The Legislative Definition Problem

What is the legal definition of blockchain? This simple question has proved to be exceedingly difficult to answer. States considering blockchain legislation have focused on different characteristics of this new technology, meaning that "[d]efinitions in legislation introduced in 2018 in California, Florida, Nebraska and Tennessee differ[ed] from those of industry groups and from each other." 33 In some cases, the definitions were in conflict. 34 These inconsistent definitions [\*191] are problematic, as they "actually introduce legal uncertainty where it did not previously exist, and invite unnecessary and expensive litigation." 35

A clear definition of blockchain is necessary for legislative purposes as well, as it is required to help a jurisdiction create clear policies. 36 Moreover, a state's definition should enable policymakers and the public to focus on "the most unique value that the technology can deliver. It should be accessible to and understandable by the public, and yet technically specific enough to ensure that the [jurisdiction] can reap maximum benefit." 37 With such a high bar, legislators have understandably struggled to construct a working definition for this new technology.

The California Blockchain Working Group, after much discussion and debate, created a new definition of blockchain in 2020 for state legislative purposes:

"Blockchain" is a domain of technology used to build decentralized systems that increase the verifiability of data shared among a group of participants that may not necessarily have a pre-existing trust relationship.

Any such system must include one or more "distributed ledgers," specialized datastores that provide a mathematically verifiable ordering of transactions recorded in the datastore. It may also include "smart contracts" that allow participants to automate pre-agreed business processes. These smart contracts are implemented by embedding software in transactions recorded in the datastore. 38

The New York Senate took a simpler approach, defining blockchain as "a mathematically secured, chronological, and decentralized consensus ledger or database, whether maintained via internet interaction, peer-to-peer network, or otherwise used to authenticate, record, share and synchronize transactions in their respective electronic ledgers or databases." 39

Both of these definitions are technically correct, and they both reflect the policy decisions of their respective states. For example, California deliberately used the more flexible term "datastore," instead of "record" or "log," to reflect the verifiability of data shared amongst participants, the many use cases of this type of ledger, and the fact that many datastores could exist at once. 40

[\*192] One could argue that the lack of a uniform statutory definition is partly responsible for the patchwork nature of state blockchain regulation. After all, without a similar definition, it is nearly impossible to set policy goals and pass parallel legislation in multiple jurisdictions. However, the problem of inconsistent definitions is just the tip of the iceberg of interjurisdictional competition. 41 This competition is unlikely to subside even if the federal government or the Uniform Law Commission enacted a well-accepted, standardized definition of blockchain technology.

C. The Fast Pace of Blockchain Technology Development

Law always moves slower than technology. 42 This is partly because lawmakers and agencies can "struggle to capture emerging technologies in dusty regulatory frameworks." 43 For example, securities laws drafted in the 1930s could not have anticipated the sale of digital assets. 44 Even more recently drafted laws and regulations relating to the Internet do not fit blockchain technology. 45 Lawmakers must decide whether to fit this revolutionary technology within existing legal frameworks or start all over with new legislative schemes.

The constantly evolving nature of blockchain technology presents another challenge. This "industry is in its early stages of maturation," making it difficult to determine the initial policy choices that would lead to effective regulation. 46 There are also technical concerns still lurking within blockchain technology, such as locating the "weak points" that might be "gamed by bad actors," which could give rise to unanticipated legal problems. 47

Finally, even at this early stage, lawmakers must consider which aspects of the technology are important enough to regulate. Some of these are obvious, such as cryptocurrency and other forms of digital assets that involve sales to members of the public. But even within this category, it is "still too early to tell exactly which of the drivers of digital asset excitement is dominant," putting [\*193] "regulatory bodies in a tough position." 48 In this way, the wide variety of blockchain projects and the speed at which they are developing creates an additional barrier to effective regulation.

As an example, imagine a developer creates a brand-new digital asset and offers it to the public. How should regulators approach the regulation of this asset? Should regulators first consider the substance of the project, its connection to a decentralized ledger, its effect on consumers' privacy and security, or its potential to evade anti-money laundering and "[k]now [y]our [c]ustomer" laws 49 (or all of the above)? An effective regulatory scheme would need to include rules that are flexible enough to manage future technical developments as well as today's technologies. Otherwise, laws may need to be reconsidered and amended whenever a new technical application emerges.

D. Blockchain Technology's High Learning Curve for Lawmakers

Blockchain technology can be complicated and intimidating, and few lawmakers have training in computer science. A 2016 survey found only that only four of the 535 members of Congress had formal computer science degrees. 50 While the technical aspects of blockchain can be difficult to explain, most legislators can learn enough to understand the fundamentals. 51

New York's State Senate offers a case in point. The Senate's technical advisor reported that in 2019, "staffers and senators asked basic questions about blockchain and distributed ledger technology, prompting [the technical advisor] to develop an explainer presentation." 52 One year later, in 2020, many of the senators "appear more comfortable with the technology, which helps them see the value of [potential] legislation." 53

Legislators need not dive into minor technical details of blockchain to be able to regulate it. It is more important for legislators to focus on the function of blockchain and its practical applications, asking not "what is blockchain?" but [\*194] "what can blockchain do?" 54 Policymakers should focus on the use cases of blockchain, rather than its underlying technology. 55

Professor Angela Walch offered prescriptive recommendations for regulators learning about blockchain, advising them to cultivate their expertise (including self-education), consult with other regulators, follow the activity of standards organizations and academia, and "[w]atch and [l]earn" as the technology stabilizes. 56 Professor Walch also counsels lawmakers to "[a]dopt a [c]ritical [m]indset" in this educational process, to ensure they are not unduly influenced by hype or unreliable sources. 57

Legislators could also learn more about blockchain through the use of legislative working groups or task forces. For example, California's Blockchain Working Group drafted a report in accessible language, enabling state legislators to learn more about the technology and its potential applications for California in one comprehensive document. 58 The federal government has tried to follow this path. In 2019, a bipartisan group of senators proposed a bill directing the Secretary of Commerce to establish a federal Blockchain Working Group in 2019. 59 However, the bill, entitled the "Blockchain Promotion Act," is still currently in committee. 60

As a law professor who taught the first Blockchain and the Law class in San Francisco, I can anecdotally report that blockchain and cryptocurrencies are not easy concepts for nontechnical learners to grasp. However, over the course of one semester, my law students (most of whom did not have any technical training beforehand) were able to draft final reports and presentations not just describing the technology, but also analyzing the use cases deploying the technology. With a bit of time and effort, state and federal lawmakers can understand the potential for blockchain to transform their jurisdictions.

II. FIVE FACTORS FOR LEGISLATIVE CONSIDERATION

In light of the difficult nature of regulating blockchain, this Part offers five factors lawmakers should consider as they work to draft blockchain and crypto regulation.

[\*195] A. Policy Decision: Innovation vs. Protecting the Public Interest

In an ideal world, governments would be able to promote both innovation and the public interest. In reality, however, legislators usually need to debate and choose whether they will prioritize innovative technological development or consumer/public protection. This is especially true in the context of blockchain, since the public perception of blockchain varies widely. Many members of the public first heard of blockchain through Bitcoin, the digital currency. But early illegal use cases of blockchain technology also made headlines, including the infamous Silk Road darknet marketplace 61 and repeated cases of fraudulent theft through Initial Coin Offerings. 62 While the technology is neutral, blockchain can be used in malicious ways that harm the public. 63 Even well-meaning technology can implicate privacy and data protection concerns. 64

It is therefore "essential for both the industry and society that consumers and the capital market are protected from abuse." 65 No state or federal jurisdiction should enable blockchain technology to develop without guardrails to protect the public. The question is where those guardrails should lie. If states wait too long to regulate, the public may be harmed, and the costs of imposing requirements on industries that have already been established will be too great. However, if states develop restrictive regulations too early or the laws "become onerous," 66 businesses will relocate to more friendly jurisdictions. States in this position risk killing off innovation or pushing it to other states. 67 [FOOTNOTE] Blockchain businesses will move for regulatory reasons. See Daniel Kuhn, The Cryptocurrency Act of 2020 Is 'Dead on Arrival,' Washington Tells Sponsors, COINDESK (Mar. 11, 2020, 1:19 P.M.), https://www.coindesk.com/the-cryptocurrency-act-of-2020-is-dead-on-arrival-washington-dc-tells-sponsors [https://perma.cc/AP8X-KULR] ("Many projects are simply choosing to move elsewhere" because of regulatory uncertainty.). [END FOOTNOTE]

Part of the reason blockchain technology's applications are so challenging to regulate is that it "is difficult, if not impossible, for regulators to construct a framework that achieves clear rules, market integrity, and financial innovation." 68 This complex question explains the spirit of experimentation among states discussed in Part V, with some choosing restrictive regulatory structures, some choosing permissive approaches, and others choosing the middle. Regardless [\*196] of a jurisdiction's ultimate direction, legislators drafting blockchain legislation must evaluate how to protect the public while encouraging creative technological development.

B. Ethical Considerations

California was the first (and so far, the only) state to consider ethical considerations in the early stages of regulation. This author published the first law review article analyzing ethics in the blockchain industry in December 2019, 69 and also served as the primary drafter of the Ethical Considerations section in California's Blockchain Working Group report. 70

Depending on the type of blockchain at issue, numerous ethical issues may come up for regulators. For example, the increasing centralization of permissionless blockchains and the rise of permissioned blockchains may raise concerns about personal ethics, such as bias and conflicts of interest. As trends suggest that governance of blockchain systems is moving toward centralization, 71 individuals may have power to influence decisions made on that blockchain. If so, there is a potential for that individual's bias and conflicts of interest to come into play. 72

Although ethical discussions around blockchain appear slower to develop than the technology itself, several paradigms have been put forth advocating ethical considerations in this industry. 73 For example, the World Economic Forum recently asked participants and policymakers to sign on to its "Presidio Principles," an agreement to consider transparency and accessibility, agency and interoperability, privacy and security, and accountability and governance. 74 MIT's Digital Currency Initiative included the topic of blockchain ethics at its 2019 "Cryptoeconomics Systems Summit." 75

[\*197] In addition, the Beeck Center for Social Impact + Innovation at Georgetown University published the "Blockchain Ethical Design Framework," with a focus on six "root issues": "governance, identity, access, verification and authentication, ownership of data, and security." 76 This structure more specifically applies to developers, and is not a code of conduct or a legislative model, but it reiterates the idea that "we all share the responsibility to . . . demand intentional ethical approaches in the design and application of data and technology for social good." 77

California's Blockchain Working Group considered ethical issues related to social impact, including fairness, equity, accessibility, trust and transparency, and sustainability. 78 The Group proposed an ethical framework for the adoption of blockchain technology that is directed toward lawmakers as well as industry players. 79 This framework encompasses three main principles:

i. Address key ethical design goals

a) Seek societal benefit: Maximize good and minimize bad. b) Equity: Does this benefit all Californians, or only a few? c) Efficiency and effectiveness: How can we achieve ethical design and use cases without slowing innovation?

ii. Consider ethical uses of blockchain technology

a) Fairness: Is this technology designed and deployed in a fair, nondiscriminatory manner? b) Accessibility: Design to include the most vulnerable user. c) Responsibility: Anticipate and design for all possible uses. d) Sustainability: Create technology to advance sustainability, public health, and corporate social responsibility.

iii. Minimize unintended consequences

a) Are there unintended biases or conflicts in the design or use of this technology? 80 [\*198] b) Are any populations being unintentionally harmed by the way this technology is developing? c) Does this technology promote violations of local, national, or international law? 81

This useful framework offers guidance to regulators seeking to make sure they do not inadvertently violate ethical considerations, especially with hastily drafted legislation. Two examples illustrate the usefulness of this approach. First, it could be relatively easy to create a certification process for blockchain developers who provide services to the State of California. But will that certification process limit approval to developers with degrees from elite institutions? This type of action would raise equity concerns, as the blockchain industry should be working more toward diversity in gender, cultural backgrounds, and perspectives of industry participants. Second, could companies who advance environmentally sustainable blockchain development receive tax credits from the state? Although different jurisdictions may embrace different ethical principles, legislators should discuss these issues as they contemplate ways to regulate this new technology.

C. Transparency

Since "the rule of law requires transparency," 82 jurisdictions in the United States are governed by transparency laws. The federal government's administrative agencies must abide by the Administrative Procedure Act, which (among other things) orders federal agencies to act "transparently and fairly." 83 California's Bagley-Keene Act requires state boards or commissions (including working groups) to "publicly notice their meetings, prepare agendas, accept public testimony and conduct their meetings in public unless specifically authorized to meet in closed session." 84

Legislators are likely already aware of the government transparency laws in their jurisdiction, but there are other reasons transparency is especially important in the context of blockchain regulation. First, all stakeholders should be given the opportunity to weigh in on laws governing this nascent industry. 85 The industry players on the front line have valuable perspectives to share with legislators, and input from various stakeholders will create more efficient regulation. Moreover, the technology is moving quickly, and there may be applications of blockchain in development that legislators do not even know about yet. As the Cryptocurrency Act of 2020 revealed, 86 drafting laws without the collaboration of diverse stakeholders is ineffective.

[\*199] Second, although blockchain technology may eventually touch all areas of business, members of the public may be unaware of blockchain technology's potential. Legislative debates could double as community education opportunities, allowing people who would not ordinarily be interested in blockchain to attend Working Group meetings, task force briefings, and other public discussions of this new technology. Such meetings could be advertised to nontechnical professions and community organizations, and should be held in easily accessible public places and online. Legislators themselves could reach out to their nontechnical constituents and offer ways to connect them to educators and leaders in the blockchain industry. Such transparency could create a culture of innovation in a particular jurisdiction, while increasing public credibility for whatever regulations eventually develop.

D. Interjurisdictional Competition

States have been competing with each other since the beginning of the republic, and the competition has not decreased as our economy has become more complex. 87 In corporate law, interjurisdictional competitions are a common affair. The state that "wins" the race, creating the environment to attract the most businesses to that state, can secure both tax revenue and additional jobs for state residents. Delaware indisputably won the fight for corporate charters among states, with over 1.5 million legal entities, including 67 percent of all Fortune 500 corporations, incorporated there. 88 The reasons for Delaware's success include specialized legislation that is updated each year to adapt to technical and other changes, as well as a corporate-specific chancery court that can move cases quickly along. 89

When Limited Liability Companies (LLCs) were created in Wyoming in 1977, another interjurisdictional race was on. 90 Despite concerns that interstate LLCs would have problems without uniform LLC statutes among the states, "most states enacted LLC statutes before efforts to develop standardize statutes came to fruition." 91 As a result, only twelve states ultimately adopted uniform acts, and there is less uniformity for LLC statutes than for other business forms. 92

The same is happening now with statutes related to blockchain technology. States who can win the race to attract blockchain businesses to incorporate and domicile in their state can earn more than just increased tax revenues from start-up companies. Such a state could also create a reputation for being friendly to [\*200] technological innovation, a reputation that would have impacts beyond blockchain technology. For this reason, some states (including Wyoming, the first state to draft LLC statutes in 1977) jumped out first to enact permissive blockchain-and crypto-friendly regulations. 93

Before enacting regulations, however, state legislatures should ensure they are clear on the policies underlying those regulations. For example, as discussed in Section II.A above, states should consciously strike a balance between protecting the public and encouraging innovation. Without establishing prioritized policies in advance, a state may win the interjurisdictional competition in the short term but create unintended consequences, such as unnecessary litigation or public harm, in the long term.

E. Uniformity

As a member of the California Blockchain Working Group, this author asked industry leaders in late 2019 what they preferred to see in blockchain regulation. Each of them clearly and unequivocally stated that uniformity of regulation across the United States would be good for business. It would be much easier for blockchain businesses to plan and expand their operations if states were aligned on regulatory issues, particularly in the area of digital assets.

The Uniform Law Commission (ULC) has made several attempts to create a standardized approach to digital asset regulation. 94 In 2017, the ULC proposed the Uniform Regulation of Virtual-Currency Businesses Act to provide "a statutory framework for the regulation of companies engaging in 'virtual-currency business activity.'" 95 An accompanying "Supplemental Act" in 2018 provided rules related to commercial law and the Uniform Commercial Code. 96

These model acts had a short and controversial lifespan. No state enacted the model legislation, and only a handful of states introduced it. 97 Wyoming actively resisted the ULC's request to withdraw Wyoming's pending blockchain [\*201] legislation in favor of adopting the ULC's approach. 98 Wyoming's legislators noted that the ULC's model acts had not yet been enacted by any jurisdictions, and explained why they considered Wyoming's regulatory approach to be the superior one. 99 One month later, the ULC recognized the need to convene a committee to study how the Uniform Commercial Code could be amended in order to "deal with emerging technologies." 100 The ULC urged "states to refrain from enacting legislation pending the result of the committee's work," 101 an act suggesting that the ULC recognized flaws in its proposed acts. 102 Given the ongoing interjurisdictional race described in Section II.D, it seems absurd to ask states to wait on enacting blockchain legislation.

As of December 2020, only one state (Louisiana) had passed a virtual currency licensing statute based on the ULC's uniform act. 103 It is clear that, much like the race for corporate and LLC charters, the uniformity train has left this station. In the absence of federal legislation or effective model acts, states have already invested time and energy into drafting new laws. States like Wyoming, which has "actively decided to lead the charge in ensuring solvent, blockchain based" companies, 104 will not willingly give up their leading positions in this area.

III. THE CURRENT UNEASY MIX OF FEDERAL AND STATE BLOCKCHAIN REGULATION

Federal and state regulators are struggling to keep up with the fast pace of blockchain technology development. This Part will demonstrate how this struggle is creating a wide variety of regulatory approaches.

[\*202] A. Patchwork Agency Regulation

The federal government's attempt to regulate blockchain technology, particularly cryptocurrencies, is (to put it bluntly) a mess. Federal authorities interpret laws relating to blockchain and cryptocurrencies differently. 105 This confusing, piecemeal approach is epitomized by the struggle to determine how to even classify digital currency for regulatory purposes. The Internal Revenue Service (IRS) views cryptocurrency as property, the Securities and Exchange Commission (SEC) classifies such currencies as securities, and the Commodity Futures Trading Commission (CFTC) considers cryptocurrency to be a commodity. 106 There is clearly a need for a unified methodology, even just within blockchain's narrow use case of cryptocurrencies, but this confusion is not a surprising result when "neither Congress nor the SEC has formally elucidated which digital assets are securities and which are not." 107

Different agencies are sending different messages, creating "regulatory whiplash." 108 Some, like the CFTC, are inclined toward experimentation to support blockchain and cryptocurrency development, while others are more cautious. 109 All of the agencies seeking to regulate blockchain technology and its applications would benefit from consideration of the five factors listed in Part III. Below is a short explanation of three distinctive agency approaches.

[\*203] 1. SEC Safe Harbor Provision--A Work in Progress

The SEC missed its chance to establish a clear regulatory framework early in the life span of blockchain technology, instead adopting an approach characterized by delay and a series of reversals on important decisions. 110 The SEC's delay "simultaneously encouraged unscrupulous actors to take advantage of ambiguous regulations" and issue fraudulent tokens to Americans, while "driving away conscientious developers and entrepreneurs" to places with more developed laws. 111 The SEC's attempt to clarify its position in a limited area with the April 2019 issuance of a "Framework for 'Investment Analysis' of Digital Assets" has been called "too little too late." 112

In the meantime, SEC Commissioner Hester Peirce has earned the nickname "Crypto Mom." 113 In early 2020, she offered her take on the legislative problems related to blockchain technology, saying "[i]t is important to write rules that well-intentioned people can follow. When we see people struggling to find a way both to comply with the law and accomplish their laudable objectives, we need to ask ourselves whether the law should change to enable them to pursue their efforts in confidence that they are doing so legally." 114 Peirce clearly views law and regulation as a way to promote, not thwart, the development of blockchain and its use cases.

In February 2020, Peirce proposed a safe harbor provision for firms in the cryptocurrency space selling tokens to the public. 115 Peirce described her proposal as recognizing "the need to achieve the investor protection objectives of the securities laws, as well as the need to provide the regulatory flexibility that allows innovation to flourish." 116 The safe harbor proposal includes disclosure requirements for issuers and good faith obligations to ensure that token issuers are not fly-by-night companies. It also sets forth rules related to the purpose of token issuances and efforts to create liquidity for token users. 117

[\*204] The idea underlying the proposal is to "give new projects some breathing room where they can do their work without fear of being fined, arrested or having their offices raided." 118 This also filters "out the bogus projects that have no intention of building a workable, decentralized product." 119 Peirce appears to be seeking a way to protect consumers from unscrupulous token issuers while allowing companies to move forward with technical developments.

Many members of the blockchain industry welcomed the safe harbor proposal. The General Counsel for a cryptocurrency exchange declared, "Today we both congratulate and thank SEC Commissioner Hester Peirce . . . . This is a great day for the blockchain industry and the United States." 120 But the proposed safe harbor is just that: a proposal. It is not yet law, and may never become law. 121 Even so, the willingness of Commissioner Peirce to think outside of the box with this proposal has reinforced her reputation (and her nickname) within the blockchain community.

2. The Federal Reserve's Digital Dollar

The Federal Reserve revealed in February 2020 that it was working toward a potential central bank digital currency (CBDC). 122 A CBDC, colloquially [\*205] known as a "digital dollar," is not a token based on a decentralized blockchain. 123 It would instead be a "debt notation on a centralized ledger maintained by the Federal Reserve," which would use a centralized database to track consumer or business balances. 124 Individuals could "access funds through digital dollar wallets, which would also be managed by the Fed." 125

Although the digital dollar is different from a crypto asset on a blockchain, the policy issues at hand are quite similar. The Federal Reserve recognizes that these policies include financial stability and legal considerations, such as privacy concerns and protections for data and digital identity safety. However, the Federal Reserve clearly wishes to be on the cutting edge of the digital dollar debate, with one of its members noting that "it is essential that we remain on the frontier of research and policy development regarding CBDC." 126

At the time, there was pressure on the Federal Reserve to begin researching a digital dollar. China is creating a digital yuan, 127 and some argue that the United States is already "falling behind" other countries in developing a CBDC. 128 In addition, the surprise release of Facebook's Libra in 2019 (now rebranded as "Diem") apparently inspired the Federal Reserve to accelerate its research on the potential of a CBDC. 129 The arrival of the COVID-19 pandemic expedited the discussion, as millions of people around the world moved toward cashless payments. 130

The discussion of a digital dollar jumped quickly during the pandemic from the Federal Reserve to Congress. Drafts of congressional emergency pandemic relief legislation in March 2020 included a digital dollar concept to speed up the delivery of stimulus payments. 131 A Congressional Task Force on Financial [\*206] Technology held hearings on the issue in June 2020. 132 Indeed, "the question might be not if digital currencies will find their way into the financial system, but when--and how." 133 As federal lawmakers move toward the creation and regulation of a CBDC, they should be pondering how to encourage innovation while protecting consumers. In addition, anyone involved with the CBDC should consider transparency issues involving the input of multiple stakeholders, as well as ethical considerations such as concerns for unbanked populations.

3. Treasury Department Regulations to Increase Cryptocurrency Transparency

Unlike SEC Commissioner Hester Peirce and the Federal Reserve, U.S. Treasury Secretary Steven Mnuchin has taken a more cautious (and arguably negative) approach to cryptocurrency. 134 In February 2020, Secretary Mnuchin told the Senate Finance Committee that the Treasury Department would be enacting "stricter regulations around digital currencies to help expose 'secret' accounts and other nefarious activities." 135 Although Mnuchin acknowledged that "[w]e want to make sure that blockchain technology moves forward," he also noted that "[w]e want to make sure cryptocurrencies aren't used for the equivalent of old Swiss secret number bank accounts." 136

The goal of Treasury regulations will be to "ensure law enforcement can see where the money is flowing, and that it's not used for money laundering." 137 A March 2020 press release from the Treasury Department announced that the Department had held a meeting of "industry thought leaders and compliance [\*207] experts" on the issue of cryptocurrency regulation. 138 The press release also explained that as these regulations develop, Treasury will remain focused on preventing illegal conduct by "money launderers, terrorist financiers, and other bad actors." 139 The repeated use of such negative terms indicates the Department's adverse stance toward cryptocurrencies, as well as an example of lawmakers and regulators "still cling[ing] to an outdated trope where cryptocurrencies are used to underwrite criminal activity." 140

What can we make of this patchwork approach to regulation among U.S. federal agencies? Some may argue that it is better for the federal government to allow the blockchain industry and cryptocurrency markets to evolve before finalizing a regulatory structure. There can also be benefits to regulatory divergence, such as enhanced innovation as agencies compete to become the preferred regulator in a particular field. However, the absence of "intelligent rules and regulations that provide a clear and predictable framework for investors, issuers, and their lawyers" is complicating that evolution. 141 How can lawyers advise clients--such as start-up companies desiring to operate in the cryptocurrency sphere or offer tokens to investors--if it is unclear how such assets would be regulated? Policymakers are not sufficiently considering important factors, including transparency and uniformity, under this current approach.

Perhaps the problem is a lack of unity among federal agencies, who appear to be tripping over themselves to get in on the digital asset regulatory action. Federal policymakers may be concerned that they are not yet educated enough to make cohesive decisions about overarching regulatory frameworks, or they are waiting for Congress to step up. In any case, this confusion at the federal level is wreaking havoc on the blockchain industry in the United States. Innovative companies must risk inadvertently violating regulations (and having to pay the ensuing fines) just to push the industry forward. 142 Alternatively, companies are choosing to leave the U.S for other jurisdictions with better regulatory [\*208] clarity. 143 Piecemeal regulation among federal agencies is "not a substitute for transparent legislation or judicial rulings to guide market participants." 144

### Antitrust---1AC

#### Advantage 2---FTC

#### FTC credibility is tanked by both unwillingness to launch bold antitrust AND a track record of losing in court, but Khan’s appointment is a window to revamp its policy

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Since taking over at the FTC, Khan has quickly begun to remodel it. Some of these changes look like technical internal reforms, while others are major policy statements. Almost all have been fiercely opposed by Republicans and the business community.

In the past few weeks, Khan has begun holding commission meetings in public - something Democrats say makes the commission more open to scrutiny, but which the two Republican commissioners say makes it harder for them to negotiate compromises.

She has banned staff from making public appearances such as conference panel sessions, saying the commission has too much work to do. She has passed a rule which allows FTC staff greater leeway to pursue investigations in certain priority areas, giving them the power to issue their own subpoenas for documents and testimony.

Khan is also promising to help rewrite the US merger guidelines, a complex set of documents laying out what kinds of evidence regulators look for when deciding whether a merger is illegal.

And, in a pair of crucial decisions, she and her fellow Democratic commissioners voted to rescind two key FTC policy statements.

The first was written in 1995 during Bill Clinton's first term as president, and deemed that companies that had previously proposed unlawful mergers no longer had to notify the FTC before completing future transactions in the same market.

By undoing that policy, Khan said she hoped to stop companies simply trying again and again to complete a merger even after it had been rejected by regulators. The second statement was written in 2015 during the Obama administration and set down limits on when the FTC would prosecute a company for socalled "unfair methods of competition".

"These changes are going to make dealmakers think about things differently," says one senior Democrat working for the commission. "They are not filing an application, we are investigating as to whether there is a violation of the law. That is a fundamentally different way of thinking about things."

Meanwhile, the White House has given the FTC the even bigger task of helping rewrite the rules that underpin the American economy. Under the terms of a sweeping order signed by Biden last month, the commission has been asked to devise rules which would ban companies from stopping employees moving to rivals, and prevent pharmaceutical companies from paying generic rivals not to enter a certain market for a period of time.

The moves have delighted progressives, who say Khan's willingness to push through reform quickly shows she is serious about putting the commission back at the heart of Washington rulemaking and enforcement.

"The commission has been lazy," says Matt Stoller, director of research at the American Economic Liberties Project and a former colleague of Khan at the Open Markets Institute. "It has been a place where you send political cronies who don't have to do any work if they don't want to.

"This is such a different form of politics from the normal bullshit."

Republican concerns But if the reforms have pleased Khan's supporters, they have worried conservatives who say the commission lacks both the legal authority and the institutional capacity to do what is being asked of it.

For example, Khan says she wants to renew the commission's appetite for bringing cases against companies for "unfair methods of competition" - a vague category of corporate behaviour which allows the FTC to act even when there is no merger in question or when a company is not large enough to be a monopoly. She and fellow progressives argue that by not pursuing such cases the FTC has taken away one of its most powerful weapons.

Such behaviour is often very hard to prove, however. When the FTC charged Abbott Labs in 1994 with trying to rig a bid to supply the Puerto Rico government with infant formula, for example, it alleged the company's choice not to bid in one of the rounds provided evidence of collusion with rivals. Abbott Labs' lawyers, however, successfully used game theory to explain why a "no bid" could in fact have made rational economic sense.

More controversial is the idea that the commission is going to start writing wide-ranging new rules of its own, as envisioned in Biden's competition order. This would test the limits of the FTC's powers in both court and on Capitol Hill, critics say, and could end in Congress clipping its wings as it did in 1980 when the FTC was forced to subject its rules to Congressional review.

Sean Heather, senior vice-president for antitrust at the US Chamber of Commerce, says: "The FTC is writing its own rules and acting as prosecutor, judge and jury. This is deeply concerning for a regulatory agency with broad powers."

Christine Wilson says: "I believe competition rulemaking is institutional suicide."

If Khan wanted an indication of how courts might view her approach, she got one within weeks of taking over the commission. In June, a federal judge dismissed the commission's complaint against Facebook, its most high-profile in years.

The commission had argued the social media company had engaged in anti-competitive conduct for years, including by buying up potential rivals such as WhatsApp and Instagram. In June, however, a federal judge ruled the commission had failed to prove that Facebook had monopoly power.

Khan's critics worry that if the commission loses a series of high-profile court cases it will fatally undermine its authority. "If you lose enough cases your credibility evaporates," says William Kovacic, a former Republican chair of the commission. "You can lose it all - not right away, but you can lose it all."

For Khan's supporters, however, this criticism borders on the absurd. "Don't you think the FTC is already seen as weak?" says Rohit Chopra, a Democratic commissioner.

Progressives argue the FTC has for years only enforced competition rules against large companies in a fraction of the cases it should have. "Do you think there are only 10 anti-competitive mergers a year?" says Chopra. "I'm not sure it can get any worse."

"The FTC can put together legal teams that can match the best in the bar, punch for punch, in a major case," says Kovacic. "But the number of those teams is a couple, it is not 10."

For years the commission's budget and staffing levels have been chipped away. It now has roughly 50 per cent of the staff it had in 1980 and is currently trying to review a record number of mergers. In the first nine months of this fiscal year, the FTC received 2,573 notifications ahead of a large merger - already 50 per cent more than were received in the whole of last year.

Last week, the commission published a statement warning that it would not be able to review all mergers within 30 days of a notification being made, as required by law. Instead, the FTC said, if it had not had time to review a merger before it took place, it would reserve the right to take action even after it had been completed.

The commission is also facing an uphill battle to retain staff. Some people say they feel demoralised by the pace of change and irritated they have not yet met their new chair - something Khan's allies say is an unfortunate result of the pandemic. "There are only so many times you can hear that your institution has failed for years before you start to doubt your place in it," says one staff member.

#### Specifically---blockchain is a key priority

Dr. David Morris 21, PhD in Media Studies from the University of Iowa, Former Academic Sociologist of Technology, CoinDesk’s Chief Insights Columnist, “Biden’s New FTC Chair Could Be a Big Web 3.0 Ally”, The Crypto Daily News, 6/16/2021, https://thecryptodailynews.com/2021/06/bidens-new-ftc-chair-could-be-a-big-web-3-0-ally/

Yesterday, the Biden administration named Lina Khan, a 32-year-old Columbia Law professor, as the brand new head of the Federal Trade Commission. Khan, who would be the youngest FTC head ever, is called a fierce critic of massive tech monopolies like Amazon. While there’s typically a knee-jerk resistance to regulation and regulators amongst blockchain advocates, Khan’s considerations make her a potential ally on huge points like privateness. Her antimonopoly work might additionally create substantial market alternatives for brand new sorts of tech companies – together with these constructing decentralized techniques and “Web 3.0.”

Enforcing U.S. antitrust regulation is a main a part of the FTC’s mandate, and Khan might be greatest identified for serving to redefine simply what a “monopoly” is. She has been essential, together with throughout seven years on the Open Markets Institute, in growing and selling the concept a firm could be a monopoly even when its practices drive prices down – even, the truth is, if its product is free to customers. That principle largely hinges on how the companies collect and use knowledge: Khan has been among the many loudest critics of the way in which Amazon makes use of knowledge gathered by its storefront, akin to by leveraging sales data to compete with third-party sellers who’re, a minimum of buyers, its prospects.

#### Failing to control blockchain violations will outstrip federal enforcement capacity, making traditional antitrust completely ineffective

Drew Stanko 21, JD Candidate at St. John's University School of Law, BS in Economics from Villanova University, “Recent Developments and the Need for Nuance”, Journal of Civil Rights & Economic Development, 4/8/2021, https://www.jcred.org/shortreads/efforts-to-modernize-antitrust

I. IS NEW SCHOOL OFFICIALLY HERE?

In January 2007, the Economic Analysis Group at the Department of Justice Antitrust Division published a Discussion Paper entitled "Does Antitrust Need to be Modernized?" The paper reviewed whether "globalization and rapid technological change" necessitated changing federal antitrust laws. This Discussion Paper has proven prescient; it identified as a "key issue" the growing need for improving antitrust enforcement of alleged exclusionary conduct related to intellectual property.

Bipartisan support for antitrust reform has grown immensely since January 2007 due to heightened market concentration and Mergers & Acquisitions (M&A) rates in an increasingly complex digital economy. Senator Amy Klobuchar introduced antitrust reform legislation in February that would provide substantial funding increases to the FTC and the DOJ Antitrust Division, and the Biden Administration appears to be supporting efforts to modernize antitrust enforcement.

Recently, President Biden indicated intent to name two prominent "New School" antitrust attorneys and scholars, Lina Khan and Tim Wu, to positions in his administration. Kahn, who rose to prominence as a student at Yale Law School for "Amazon's Antitrust Paradox" and has since held positions at the Open Markets Institute and the FTC, will reportedly be nominated to serve as the Commissioner of the Federal Trade Commission. Wu is famous for coining the term "net neutrality" and authoring "The Curse of Bigness: Antitrust in the New Gilded Age," and he will serve on the National Economic Council as a special assistant to the president for technology and competition policy. Kahn and Wu have helped establish and develop the "New School" of antitrust jurisprudence, and both have taught related courses at Columbia Law School. Generally, the New School aims to prioritize "innovation, entrepreneurship, privacy, freedom of the press, and economic and civil liberties" rather than strictly focusing on "consumer welfare."

II. SENATOR KLOBUCHAR'S COMPETITION AND ANTITRUST LAW REFORM ACT:

Senator Amy Klobuchar, who spoke passionately about her concerns related to antitrust enforcement throughout her Presidential campaign, introduced antitrust reform legislation in February.

Sen. Klobuchar's proposal, the Competition and Antitrust Law Reform Act, aims to "give federal enforcers the resources they need [to] . . . strengthen prohibitions on anticompetitive conduct and mergers, and make additional reforms to improve enforcement." In order to accomplish these goals, the proposal would provide increased funding for the DOJ Antitrust Division and the FTC and would create a new FTC "Market Analysis" Bureau. While these structural and administrative reforms may receive bipartisan support, Sen. Klobuchar's proposal would also substantially alter the legal standards used to evaluate antitrust challenges under the Sherman and Clayton Acts, a change likely to be met with pushback by conservative economists and lawmakers. Sen. Klobuchar's proposal aims to accomplish important goals, but some argue the Sherman and Clayton Act amendments included in the legislation would "add friction to M&A Activity, stalling capital markets, reducing innovation and investment, and frustrating economic growth."

1. CLAYTON ACT REFORMS

Senator Klobuchar's proposal would modify the Clayton Act to "restore its original intent by amending it to include reference to 'exclusionary conduct.'" The legislation would define exclusionary conduct as "any conduct that would materially disadvantage . . . actual or potential competitors, or foreclose the ability of or incentive to compete." Currently, antitrust challenges require the plaintiff provide prima facie evidence that alleged anticompetitive effects of proposed mergers would result, and "proponents of the merger are then permitted to rebut by providing evidence that the merger will not have the feared anticompetitive effects."

The amendments would shift the presumption that "exclusionary conduct" presents a violative "appreciable risk" where such conduct is taken by a firm with a market share greater than 50% or otherwise wields significant market power. In turn, the burden would be on firms to prove the procompetitive market effects of the challenged conduct or merger rather than on the challenging entity to establish the anticompetitive impacts of the conduct that would result.

While it is important that antitrust reform efforts prioritize enforcement of anticompetitive exclusionary conduct, the legislation arguably defines the term overbroadly. Accordingly, the proposal may result in disincentivizing innovation that would ultimately benefit consumers and the overall economy. By presuming the illegality of any conduct taken by large firms that disincentivizes market entry or competition, the proposal risks unintentionally penalizing firms for achieving beneficial economies of scale or otherwise innovating to provide higher quality products more cheaply than competitors. Arguably, threatening firms with costly antitrust litigation whenever they undertake innovative conduct that negatively impacts competitors risks disrupting market incentives and stalling economic growth.

2. SHERMAN ACT REFORMS

Similarly, the Sherman Act would be modified to allow civil penalties of either 15% or 30% of a firm's US revenues for anticompetitive exclusionary conduct. Sen. Klobuchar has indicated that civil penalties are necessary because the existing remedies—injunctions, equitable monetary relief, and private damages—have not sufficiently deterred anticompetitive conduct. This may be true, but civil penalties of this size likewise risk stifling and disincentivizing innovation.

3. FUNDING ENFORCEMENT AGENCIES, FINANCING NEW "MARKET ANALYSIS BUREAU"

While the Sherman and Clayton Act reforms are unlikely to garner significant support from conservative lawmakers, the funding increases and creation of the FTC Market Analysis Bureau are more likely to win bipartisan support.

Increasing the funding available to the FTC and the DOJ would enable the agencies to hire more attorneys and would finance the creation of the Market Analysis Bureau. The MA Bureau would supplement the FTC's existing Competition, Consumer Protection, and Economics Bureaus. It would be tasked with conducting market, industry, and retrospective merger analyses aimed at helping the FTC develop a better understanding of the competitive conditions and underlying economic dynamics affecting complex markets. The creation of the MA Bureau is likely to gain support because it would demonstrate a commitment to ensuring continued reliance on empirical analyses rather than judicial or political discretion. Accordingly, these reforms would likely bolster enforcement efforts without necessarily adopting the "Big is Bad" approach that has historically divided lawyers and economists.

III. MODERNIZING ANTITRUST ECONOMICS

The Market Analysis Bureau would theoretically improve enforcement agencies' understanding of the economics underlying complex markets. This would provide enforcers with the tools needed to prosecute anticompetitive conduct that may have otherwise skirted enforcement due to the difficulty of establishing the negative economic effects of the conduct in question.

The complexity of the digital economy and increasing market concentration has made it more difficult for prosecutors to prove these anticompetitive results, but advances in machine learning and computational antitrust may assist in identifying and consistently enforcing antitrust violations.

While computational antitrust is certainly in its nascent stages of development, the early returns from Stanford's new Computational Antitrust Project are promising. The project's seminal article, authored by Project Director Thibault Schrepel, defines computational antitrust as a "new domain of legal informatics which seeks to develop computational methods for the automation of antitrust procedures and improvement of antitrust analysis." There are more than fifty global antitrust enforcement agencies participating in the project, including both the US FTC and the DOJ Antitrust Division.

Schrepel situates computational antitrust within "Antitrust 3.0," which he explains "is emerging but remains incomplete." At the core of Antitrust 3.0 is the goal of developing consistent enforcement frameworks designed to combat anticompetitive conduct in digital markets.

IV. OUTLOOK

In "The End of Antitrust History Revisted," Kahn "reviews" Wu's The Curse of Bigness and explains that the "task facing reformers is to translate their critiques into a positive vision, including legal rules and analytical frameworks." These analytical frameworks will be critical to ensuring that antitrust law promotes free market economics, rather than subjects firms to inconsistent judicial interpretation and prosecutorial discretion.

The majority of federal antitrust law applicable today was authored prior to 1915, and the unique challenges associated with prosecuting exclusionary conduct in digital markets have presented concerns for nearly twenty years. While bipartisan support for antitrust reform and emerging scholarship both provide legitimate reason to be optimistic about efforts to modernize federal antitrust law, it is important that reforms are nuanced enough to confront the complex problems they are enacted to address.

Accordingly, while Senator Klobuchar's proposal is certainly "well-intentioned," the budgetary reforms and creation of the Market Analysis Bureau should be separated from and passed without the proposed Sherman and Clayton Act amendments included in the legislation. The newly-appointed experts in the Biden Administration should be afforded the requisite resources to capitalize on the promise of New School antitrust jurisprudence and the development of Antitrust 3.0. By providing these resources, those leading antitrust modernization efforts will be equipped with the tools needed to create nuanced legal frameworks that reflect modern critiques and ensure consistent enforcement practices.

#### This will create a legitimacy crisis that threatens the foundational credibility of the FTC

Dr. Thibault Schrepel 19, PhD in Antitrust Law from Université Paris-Saclay, LLM in International Law and Legal Studies from the Brooklyn Law School, Associate Professor of Law at VU Amsterdam University, Faculty Affiliate and Creator and Director of the Computational Antitrust Project at the Stanford University CodeX Center, “Collusion by Blockchain and Smart Contracts”, Harvard Journal of Law and Technology, 33 Harv. J. Law & Tec 117, Fall 2019, Lexis

V. CONCLUSION

Blockchain is a new and yet little-explored territory. It is, amongst other things, the Amazon 228 of tomorrow's collusive agreements: full of different life forms and new possibilities, the technology will give rise to unidentified creatures and dangerous species that we do not really know how to approach.

I have first shown that blockchain will be used to enhance the functioning of collusive agreements as we know them and that new forms of collusion linked to the technology conditions of access and use will appear as well. Second, blockchain will increase the stability of collusive agreements, providing them with a good life. Depending on whether the blockchain is public or private, a double paradox could emerge. One paradox is related to the visibility of all practices to colluders while ensuring their opacity to non-colluders. The other is associated with the fact that collusive agreements will be more robust during their lifetime by eliminating a large proportion of deviant behaviors, but will die in more brutal ways.

For these reasons, one can expect an increase in the number of collusive agreements along with an increase in their profitability, but not necessarily in their duration. The number of leniency applications may also drop because blockchain will reinforce trust during the lifetime of collusive agreements. This is largely due to the potential use of smart contracts because once again, "[o]ne of the greatest checks on crime is not the cruelty of punishments, but their inevitability," 229 which is precisely what smart contracts provide by automating punishments.

[\*164] The time has now come to detect collusion by blockchain and smart contracts, however difficult that may be. I have shown that some blockchains are more likely to induce collusive agreements than others. Antitrust and competition authorities may start with focusing their efforts on these blockchains and creating safe harbors for the others, for instance, by ensuring that no sanction will be imposed under antitrust and competition law for a specified number of years. Antitrust and competition authorities may also, when sending questionnaires to undertakings, ask whether they use blockchain, and if so, what type of blockchain, using which consensus, and for what purpose.

But perhaps it is even more urgent to adapt existing legal toolboxes before they become entirely ineffective, which implies considering a "law is code" approach and, generally speaking, transforming part of antitrust and competition law to become allies to blockchain core developers rather than mere threats. 230 It is said that "it is tempting, if the only tool you have is a hammer, to treat everything as if it were a nail." 231 As true as this statement is, all we have in existing laws is one size of pliers. With the wrong tools, the most sophisticated technology requiring great precision will not be as adjusted as it could be. Antitrust and competition agencies are currently not equipped to fight collusive agreements by blockchain. This may cause a legitimacy crisis for antitrust and competition law that may become ineffective sooner than expected. Indeed, it is more than likely that the use of current regulatory tools will be prevented by the technical characteristics of blockchain. Agencies further need to start analyzing code and software programming. Without doing so, most illegal activities on blockchain will remain safe. The same is true for all practices outside of blockchain which use the Internet. To date, antitrust and competition agencies refuse to analyze the programming of platforms and software. This creates a legal loophole and encourages companies to commit anti-competitive strategies precisely here. 232

Without fundamental research on this subject, palliatives will continue to be present, risking the survival of blockchain 233-- or antitrust [\*165] and competition law. 234 Some propose the creation of an identity management system so that the real identities of blockchain users can be revealed. 235 Others have suggested "adding a regulatory node in the blockchain" to spy on it 236 or imposing fines to the core developers when blockchain is used for illegal activities. 237 Going even further, it has been said that public blockchains "governed by international institutions from the legal tradition" such as the United Nations should be created. 238 But in fact, these solutions are either ineffective or would jeopardize the utility of the technology as its applications rely on the key characteristics that I have exposed in our introduction and that would be challenged by these various initiatives. Let us recall first and foremost that blockchain is a fundamental technology that may create good for the world. 239 The creation of safe harbors 240 and regulatory sandboxes 241 will enable competition agencies to respond quickly to the challenges posed by blockchain, but in the end, only a re-conceptualization of the law will provide a satisfactory answer. 242 Without it, antitrust and competition law will face a second legitimacy crisis arising from the absence of decentralized regulatory mechanisms. After all, how can decentralized transactions be properly regulated by pyramidal rules and institutions?

#### Failure of FTC crushes the effectiveness of the agency

William E. Kovacic 15, Global Competition Professor of Law and Policy at the George Washington University Law School and Non-Executive Director of the United Kingdom Competition and Markets Authority, “Creating A Respected Brand: How Regulatory Agencies Signal Quality”, George Mason Law Review, 22 Geo. Mason L. Rev. 237, Lexis

Introduction

One determinant of a government agency's effectiveness is its reputation, or "brand." Much like a commercial enterprise, an agency develops a brand that signals quality to various observers. A good reputation can help the agency recruit skilled personnel, gain deference from courts, build credibility with business managers, and build popular support that can yield larger budgets and enhancements to its powers. An agency with a strong brand stands a greater chance of being effective than one with a weak brand.

This Essay considers how branding can affect the performance of the Federal Trade Commission ("FTC") and other agencies responsible for economic regulation. It analyzes how investments in building a good brand enable the regulatory agency to signal quality to various observers - insiders such as agency staff and outsiders such as businesses, consumer groups, courts, and legislators. Part I of this Essay defines the concept of a brand for public agencies. Part II then discusses why an agency's brand can be important to its effectiveness and identifies what types of agency activities either enhance or degrade an agency's brand.

The examination of agency branding has several purposes. One aim is to improve our understanding of how public agencies build a reputation, and to study the role of reputation in determining effectiveness. A closely related goal is to give public officials a better understanding of how they should approach the task of deciding what their agencies must do to prosper.

A further aim is to underscore the impact of institutional design and managerial incentives on agency performance and to illuminate how design choices and incentive schemes influence the development of a well-respected, coherent agency brand. Various design choices - for example, whether to give the competition agency a single function or a multi-purpose substantive mandate, whether to govern the agency by a single executive or [\*238] by a board, whether to integrate the tasks of prosecution and adjudication in a single body or to unbundle them among distinct entities - affect the capacity of the agency to enhance the quality of its brand. Incentives that give incumbent leaders reason to make investments in long-term agency capacity and quality have the same effects.

I. Brands and Public Institutions

Public institutions, such as competition or consumer protection agencies, build reputations or "brands" that the agency's own employees and external observers associate with the agency. 1 Brands perform two functions for the public agency. The first function is informational. 2 A good brand conveys a good sense of what an agency does. It communicates, at least in a general way, the scope of the agency's responsibilities and the aims that motivate the agency in the exercise of its powers.

A brand also signals institutional quality. For an agency such as the FTC, the foundations for a good brand are sound substantive programs (e.g., cases, regulations, reports), sound procedures (e.g., meaningful disclosure of information, rigorous testing of evidence, regular assessment of outcomes), strong capabilities (e.g., deep expertise in economics and law), and a healthy culture (e.g., thoughtfulness, integrity, courage, and a commitment to continuous improvement). 3 For several reasons, explained below, a strong brand is a valuable asset for a regulatory agency.

#### Robust competition enforcement’s key to naval and air power that prevents great power war AND spurs diverse city innovation

Ganesh Sitaraman 20, Professor of Law at Vanderbilt University, JD from Harvard Law School, MPhil from the University of Cambridge, AB from Harvard College, “The National Security Case for Breaking Up Big Tech”, The Knight First Amendment Institute at Columbia University, 1/30/2020, https://knightcolumbia.org/content/the-national-security-case-for-breaking-up-big-tech

An alternative approach to innovation is one that relies less on protectionism for national champions and more on market competition and on public investment in research and innovation. Competition, as noted already, can be a powerful motivator for innovation. When big tech incumbents face little competition, society forgoes the innovation benefits that come from competition. Who knows if Instagram or WhatsApp could have dethroned Facebook’s primacy and developed even more new and innovative products? Facebook’s moves to acquire those firms prevented us from ever finding out. What small businesses might emerge if they didn’t have to compete with Amazon Basics on Amazon’s Marketplace? Unwinding mergers and separating platforms from companies that do business on the platform would help spur competition and lead to innovation.

Some might argue that robotics, AI, and quantum computing are so resource-intensive that an ecosystem of smaller companies engaged in fierce competition would mean that no company would have the resources available to invest in those next-generation technologies. There are a few responses to this argument. First, it is not clear that breaking up and regulating big tech would prevent those firms from having the considerable resources to develop the technologies of the future. Facebook would still have billions of users, even without Instagram and WhatsApp, for example. Amazon’s platform would still have enormous market power.

Second, and more importantly, part of the answer is that the decision to break up and regulate tech companies should be accompanied by public investment in R&D. One of the primary arguments for the national champions view is that monopolists have the resources to be able to invest in innovation because they do not face competitive pressures. 65. Baker, supra note 58, at 578 (describing the Schumpeterian view and linking it to R&D capacity). But any system of innovation operates against a backdrop of laws and public policy. 66. Some scholars have suggested that resolution to the Schumpeter-Arrow debate depends on an industry-by-industry assessment. See, e.g., Mark A. Lemley, Industry-Specific Antitrust Policy for Innovation, 3 Colum. Bus. L. Rev. 637, 651–52 (2011). But it is not clear that industry-by-industry assessments on antitrust enforcement alone can resolve this debate. Industries operate under different policy background conditions — including, for example, intellectual property rules, industrial policy, and R&D funding—and it may be that the optimal path is for policymakers to revisit policy choices in multiple areas. The ability to capture the gains of innovation depends on intellectual property law. The possibility of winning government contracts for frontier projects that require innovation is determined by procurement policies. And, of course, an alternative to monopolist investment in R&D is public investment in R&D. These policy choices all shape the innovation ecosystem, and it is not at all obvious why society has to accept national champions instead of thinking about revising these laws and policies more broadly. Given the emphasis that proponents of national champions place on research and development, it is worth noting that historically, as Mariana Mazzucato has argued, government has been a significant driver of innovation through its research and development efforts. 67. Mariana Mazzucato, The Entrepreneurial State: Debunking Public vs. Private Sector Myths (2013). Today, one could easily imagine the government spending considerable sums of money on R&D in artificial intelligence, robotics, quantum computing, augmented and virtual reality, and other technological research.

Public investment in research has a variety of benefits. First, because it is not tied to the profit motive and business model of a single company, it covers a wider range of subjects, leading potentially to innovations that would otherwise go undiscovered. Public investment extends to basic research that does not have immediate or foreseeable commercial applications. It could also include research into areas that might challenge the incumbency and business models of existing companies.

Second, and relatedly, public investment into research is less likely to be geared toward improving surveillance capacity. As long as the biggest companies have surveillance, personalized targeting, and behavioral response at the heart of their business models, research and innovation within those companies will likely be geared, in no trivial part, toward improving those activities. A digital authoritarian country might see that as a valuable public goal, but it is not at all clear why a free and democratic society should. Public-sponsored research might instead be directed toward a variety of socially beneficial uses other than continual improvement of individual monitoring and behavioral reactions. Notably, as there are more opportunities in research outside of the big tech companies, many talented people might choose to work on a wider range of problems.

Third, public investment in R&D has the potential to spread the benefits of technology, innovation, and industry throughout the country. At present, much of the country’s technological and intellectual prowess is concentrated in a few regions, the most prominent being northern California, Seattle, and Boston. Geographic inequality has a variety of negative consequences—economic, social, and political. 68. Ganesh Sitaraman, Morgan Ricks & Christopher Serkin, Regulation and the Geography of Inequality (draft on file with the authors).But, as economists Jonathan Gruber and Simon Johnson show in their book Jump-Starting America, there is no reason that public investment couldn’t spur successful economies in dozens of mid-sized cities all over the country, with spillover benefits for their regions. 69. Jonathan Gruber & Simon Johnson, Jump-Starting America: How Breakthrough Science Can Revive Economic Growth and the American Dream (2019). Unlike government action, technology companies have no reason to develop the capacities of all regions of the country. Amazon’s so-called competition for its second headquarters is a good example. After much public attention, the company settled on New York City and a suburb of Washington, D.C., two superstar cities.

Artificial intelligence, of course, requires considerable data in order to improve precision and accuracy. One of the arguments for big tech is that such companies alone are able to collect this data and use it. But there is no reason why this has to be the case either. Consider two alternate possibilities. First, the United States could create a public data commons that would be highly regulated to protect privacy. The public data commons would include publicly available data from a variety of government sources, and qualifying businesses, local governments, or nonprofits could train their machines using this data. Any new data they collect from users could then be fed back into the data commons (de-identified), so that the data commons improves in quality and quantity of data over time. 70. Ben Gansky, Michael Martin & Ganesh Sitaraman, Artificial Intelligence is Too Important to Leave to Google and Facebook Alone, N.Y. Times (Nov. 10, 2019), https://www.nytimes.com/2019/11/10/opinion/artificial-intelligence-facebook-google.html [https://perma.cc/7LUR-H3RT].Second, we could imagine requiring big tech companies to make their data available in interoperable formats. If these companies effectively have a monopoly power over data, then they could be regulated as monopolies—and one condition of their continued protection as monopolies could be enabling access to the datasets. Again, there is no legal or regulatory reason why these kinds of policy options are impossible. And in either case, they would enable a larger number of players to innovate than does the status-quo, stand-pat approach to protecting big tech from competition.

Big Tech and the Defense Industrial Base

Concentration in the tech sector also threatens the defense industrial base due to higher costs, lower quality, less innovation, and even corruption and fraud. 71. On some of these concerns, see, e.g., Jacques S. Gansler, William Lucyshyn & Michael Arendt, Competition in Defense Acquisitions, Univ. Md. Ctr. for Pub. Pol’y & Priv. Enterprise (Feb. 2009) (noting that competition is essential in the defense sector for economic efficiency, innovation, quality, and performance). Each of these dynamics has already been a problem for America’s over-consolidated defense industrial base. As technology becomes more and more central to defense and national security, it is likely that these same dynamics will replicate themselves with big tech companies. This will become a national security threat, both directly, in terms of the quality and speed of procurement, and indirectly, by reducing innovation and functionally redirecting defense budgets from research spending to higher monopoly profits.72. Id. at 2 (“Competition within the defense market is not only necessary to efficiently meet day-to-day military needs, but is also the lynchpin for successful military modernization—as a means for spurring innovation of transformational technologies and for bringing the best weapons to the battlefield quickly and affordably.”).

Conventional economic theory suggests that monopolists have the ability to increase prices and reduce quality because consumers are captive. When it comes to defense spending, the Government Accountability Office commented in 2019 that “competition is the cornerstone of a sound acquisition process and a critical tool for achieving the best return on investment for taxpayers.”.At the same time, the GAO observed that “portfolio-wide cost growth has occurred in an environment where awards are often made without full and open competition.” 75. Id. at unnumbered page preceding table of contents.Indeed, it found that 67 percent of 183 major weapons systems contracts had no competition and almost half of contracts went to a handful of firms. Of course, consolidation also means that the Defense Department is in a symbiotic relationship with these big contractors. Some startup executives wanting to sell to the government thus see the Pentagon as “a bad customer, one that is heavily skewed in favor of larger, traditional players,” and they don’t feel like they can break into the sector.76.

Standard stories about political economy and capture also suggest that these firms will have outsized power over government..As Frank Kendall, the former head of acquisitions at the Pentagon, has said, “With size comes power, and the department’s experience with large defense contractors is that they are not hesitant to use this power for corporate advantage.”. In the defense context, that means monopolists retain power (and profits), even if they overcharge taxpayers and risk the safety of military personnel in the field.

In an important article in The American Conservative on concentration in the defense sector, researchers Matt Stoller and Lucas Kunce argue that contractors with de facto monopoly at the heart of their business models threaten national security. They write that one such contractor, TransDigm, buys up companies that supply the government with rare but essential airline parts and then hike up the prices, effectively holding the government “hostage.” They also point to L3, a defense contractor that had ambitions to be a “Home Depot” for the Pentagon, as its former CEO put it. L3’s de facto monopoly over certain products, according to Stoller and Kunce, means that it continues to receive lucrative government contracts, even after admitting in 2015 that it knowingly supplied defective weapons sights to U.S. forces.

Consolidation also threatens U.S. defense capacity. The decline of competition, according to a 2019 Pentagon report, leaves the military vulnerable to “sole source suppliers, capacity shortfalls, a lack of competition, a lack of workforce skills, and unstable demand.” 81. U.S. Dep’t of Def., FY2018 Industrial Capabilities Annual Report to Congress 52-54 (May 13, 2019).With a limited number of producers, there is less talent and knowhow available in the country if there is a need to build capacity rapidly. 82. Id. at 53 (describing that, for a sole source manufacturing in the naval context, “it is difficult to recruit and retain qualified personnel to operate the equipment because technical schools have stopped training on the equipment, given its age.”).In 2018, the Defense Department released a report on vulnerable items in the military supply chain, including numerous items in which only one or two domestic companies (and, in some cases, zero domestic companies) produced the essential goods.83. U.S. Dep’t of Def., Assessing and Strengthening the Manufacturing and Defense Industrial Base and Supply Chain Resiliency of the United States (Sept. 2018).

How did the United States lose so much of its industrial base? The combination of consolidation and global integration is part of the story. As Stoller and Kunce argue, companies consolidated in the 1980s and 1990s while shifting emphasis from production and R&D to Wall Street-demanded profits. Globalization then allowed them to shift production overseas at a lower cost. The result was to gut America’s domestic industrial base—and, in many cases, to shift it to China, which engaged in a decades-long strategic plan to develop its own industrial base. The result, in the words of the 2018 Defense Department report, is that “China is the single or sole supplier for a number of specialty chemicals used in munitions and missiles.” In other areas too, the risks of losing access to critical resources are real. Describing the problem of limited carbon fiber sources, the same Pentagon report notes, “[a] sudden and catastrophic loss of supply would disrupt DoD missile, satellite, space launch, and other defense manufacturing programs. In many cases, there are no substitutes readily available.”84. Id. at 49.

As technology becomes more integral to the future of national security, it is hard to see how big tech will not simply go the way of the big defense contractors. Corporate mottos not to “be evil” are long gone, 85. Tanya Basu, New Google Parent Company Drops ‘Don’t Be Evil’ Motto, Time (Oct. 4, 2015) https://time.com/4060575/alphabet-google-dont-be-evil [https://perma.cc/T5SN-GEXP].and big tech companies spend millions on conventional Washington, D.C., lobbying efforts. 86. Amazon, Apple, Facebook, and Google spent a combined $55 million on U.S. lobbying in 2018. Cecilia Kang & Kenneth P. Vogel, Tech Giants Amass a Lobbying Army for an Epic Washington Battle, N.Y. Times (June 5, 2019), https://www.nytimes.com/2019/06/05/us/politics/amazon-apple-facebook-google-lobbying.html [https://perma.cc/AV7V-67BY].Over time, as contracts move to tech behemoths, there will no longer be competitive alternatives, and the Pentagon will likely be locked into relationships with big tech companies—just as they currently are with big defense contractors. 87. See, e.g., William E. Kovacic & Dennis E. Smallwood, Competition Policy, Rivalries, and Defense Industry Consolidation, J. Econ. Perspectives, Fall 1994, at 91, 92 (“As the industry shrinks, many horizontal mergers will feature acute tension between claimed efficiencies (such as cost reduction) and the weakening of competition as a procurement discipline.”).Some commentators suggest that robust antitrust policies are a problem because only a small number of tech companies can contract for defense projects. 88. Jon Bateman, The Antitrust Threat to National Security, Wall St. J. (Oct. 22, 2019), https://www.wsj.com/articles/the-antitrust-threat-to-national-security-11571784197 [https://perma.cc/7BJK-GRK9].But there is another way to look at it: The goal should be to encourage competition in the tech sector so that there are multiple contractors available. As former secretary of homeland security Michael Chertoff has said, defending the antitrust case against Qualcomm, “a single-source national champion creates an unacceptable risk to American security—artificially concentrating vulnerability in a single point. … We need competition and multiple providers, not a potentially vulnerable technological monoculture.”89.

The consequence of consolidation in tech is that taxpayers will likely see higher bills even as innovation slows due to reduced competition. Worse still, every taxpayer dollar that goes to monopoly profits—whether in the form of higher prices or fraud and corruption—is a dollar that is not going toward innovation for the future. A concentrated defense sector means not only less innovation due to the lack of competition in the sector; it means that funding that could have been available for innovation instead gets redirected via monopoly profits to the pockets of big tech executives and shareholders.

Conclusion

It is perfectly understandable why big tech companies don’t want to be broken up or regulated. They are profitable, growing, and powerful. It is also perfectly understandable why they deploy national security arguments to defend against the prospect. National security arguments have long been a trump card in law, policy, and politics, forming an exception to the normal rules that govern the economy.

But if we take seriously national security imperatives in a time of great power competition, the case for shielding big tech from competition is surprisingly weak. Tech companies are not competing with China so much as integrating with China, and their integration comes with threats to the United States. The best route to broad and transformative innovation is competition coupled with public spending on R&D–not concentration into monopolies. Rather than threatening national security, breaking up big tech will help bolster it.

#### Decline of naval power causes nuclear war

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More Ships Allow for More System Management

Institutions write strategy documents, in no small part, to plead for more resources, selling their centrality to U.S. security. But much of the maritime services’ case, however self-serving, happens to be true, backed up by data on 270 interstate maritime conflicts. The data show that U.S. naval power correlates to a strong downward effect on the frequency and escalation of maritime conflicts (Figure 1) and that maritime conflicts are increasing relative to territorial disputes. The future of conflict is likely to be maritime. This is especially the case if one holds the liberal belief that great-power competition is as much a matter of international system maintenance, conflict management, and public goods provision as it is direct military confrontation between superpowers.

The most likely friction points between China and the United States will be at sea, in the air, and in space: the global commons. China is involved in 10 ongoing maritime disputes (Russia in nine). But that leaves 77 disputes around the world — 80 percent — that do not involve a great-power opponent of the United States. Actively managing, if not resolving, these potential crises is an important part of maintaining a liberal order, making the world safer for commerce, and making other states more amenable to U.S. leadership. A hallmark of U.S. liberal grand strategy is dispute resolution and conflict management, and in the modern era, these clashes occur more often at sea than on land. Territorial disputes (e.g., Kashmir and Nagorno-Karabakh) have declined over the past two centuries, but contentious maritime claims (e.g., the Spratly Islands and the Aegean Sea) have increased significantly.

One major reason why maritime disputes will continue to increase is climate change. Unlike the most recent National Security Strategy, National Defense Strategy, and National Military Strategy, the sea services explicitly acknowledge its existence. The maritime strategy observes that climate change threatens “coastal nations with rising sea levels, depleted fish stocks, and more severe weather” and also claims that “[c]ompetition over offshore resources, including protein, energy, and minerals, is leading to tension and conflict.” Both statements are on firm empirical ground. Data show that climate volatility, especially variability in rainfall, exacerbates the risks for militarized clashes at sea. Warmer oceans increase scarcities in many fisheries stocks by changing migration patterns, increasing fish mortality rates, and changing water acidity levels, and thus, we may see greater escalation over contested fishing grounds in the future. The use of maritime militias by countries like China, Vietnam, and the Philippines to defend fishing grounds is not surprising as states expand security measures to protect their citizens’ access to fish stocks.

There are, of course, many causes for the relative increase in disputes at sea, but it is undeniable that the rise in maritime disputes correlates to a decline in U.S. naval tonnage as a percentage of the world’s navies (Figure 1). Rising sea powers as diverse as Russia, Egypt, Indonesia, India, Iran, and North Korea have sought to expand sovereignty over maritime spaces, increasing risks for future conflicts. These regional conflagrations are risky, too, because major power wars often arise through alliance ties and the failure of extended deterrence.

The data show that, while maritime crises rarely escalate to open military conflict, naval power is the only maritime capability that deters escalation. No matter how capable or large a state is in terms of broader measures of power, naval forces are essential for this task.

Erik Gartzke and Jon Lindsay argue in a forthcoming article in this series that states that build more surface ships and submarines and challenge their neighbors’ maritime sovereignty claims fight in more militarized conflicts. By this logic, naval investments by China, Japan, and Taiwan would increase the risks for clashes at sea, and these have occurred. But, rather than the growth of individual fleets, it is the regional naval *balance*, and the role played by the United States in it, that matters most. Senkaku/Diaoyu conflicts have not resulted in war largely due to naval parity between these actors and the capability balance that the United States offers. The data show, more generally, that maritime disputes between evenly matched naval powers are more likely to be settled through peaceful negotiations. This supports the strategy’s claim that “[a]ctivities short of war can achieve strategic-level effects. The maritime domain is particularly vulnerable to malign behavior below the threshold of war and incremental gains from malign activities can accumulate into long-term advantages.” Plenty of evidence exists to support a larger fleet regardless of who is in the White House.

#### City-based innovation prevents extinction

Greg Clark 21, Group Advisor for Future Cities at the HSBC Group, Former Research Scholar at the London School of Economics and Political Science, Degree from the University of Cambridge, Former Harkness Fellow at Columbia University, “Global Cities Desperately Need New Leadership Models”, 12/8/2021 https://hbr.org/sponsored/2021/12/global-cities-desperately-need-new-leadership-models

The world’s population centers are the critical places for the future of our planet. Where people settle and how they coexist with the planet will define the endgame in the story of human life. Will we spoil our habitat or remake it?

Whether we think of such cities as consumption markets, infrastructure hubs, innovation ecosystems, decision-making centers, sharing platforms, or visitor destinations does not really matter. They are all these things—and much more. We have come to call them “cities” because they serve and seek to empower citizens, but this word is now so overused and sometimes so contentious that it may just be better to think of them as population centers—places where people are concentrated. In the quest to avoid human extinction, such places are ontologically important.

On this planet, there are some 10,000 cities where we humans make our home, according to Cities in the World, the European Commission, and the Organisation for Economic Co-operation and Development.

Meanwhile, the United Nations World Population Prospects says we are on the road to 9 billion city dwellers by 2080. Currently, about 600 cities drive our global economy and fuel our national treasuries, 200 cities are the centers of national policy and lawmaking, and 100 cities are the hubs of corporate enterprise.

Anyone who wants to argue against the idea of an urban world needs to articulate the alternative. How would you distribute and serve 9 billion souls without using cities as the primary platforms? What are the environmental and social consequences of alternative models?

We know, from all the amassed science of success, that leadership is critical to how countries and companies survive and thrive. We read books about national heroes and about great corporate leaders. But we focus less frequently on how population centers are led and guided by wise people and what the leadership imperative is for a place that is not a nation and not a business venture. The leadership of cities is a niche discussion.

In our post-pandemic, climate-alarmed world, being a city leader is just about to become the most important job on the planet. The next 50 years will be a great reckoning, and it has already started. Can we equip our cities to avoid the extinction of our species?

Three ideas should drive our quest:

Cities are seriously underpowered. Most of our cities are subjected to an inadequate version of democratic government that leaves them with the wrong municipal geographies, insufficient financial resources, weak policy frameworks, short-term mandates, and overly dominant national governments that do not understand the interactions of different forces locally in a given place. National governments recognize the opportunity of a century of urbanization but are largely unwilling to couple it with the decentralization of power it requires. So cities are orphaned by nation-states.

Place leadership is a collective task. Public bodies, civic groups, asset owners, investors, and businesses must work together with citizens to shape choices and frame change. Cities are both a means to optimize the interplay of different changes, such as in energy, transport, environment, and public health, and also a platform for collective behavior change among citizens and businesses. Cities can motivate and inspire the changes we need, because they enable and require sharing of the same place for multiple purposes by large numbers of people. Place-based leadership can induce innovation.

Soft power is therefore essential for cities to succeed. Cities need to be convening platforms for innovation and joint endeavor. They cannot achieve the changes required without building and driving coalitions. The more collaboration, the more easily the big reforms that build greater formal competence are acquired. Well-orchestrated soft power leads to reforms that generate hard power.

We can already see a new generation of city leadership platform types beginning to emerge in multiple locations.

Over the past 20 years, Manchester, U.K., has steadily built a grand coalition of nine neighboring municipalities working together with universities, investors, and businesses committed to a place-leadership agenda that has enabled the delegation of new authority, the acquisition of new financial powers, and the creation of new leadership structures in a “combined authority” for the city region.

The Greater Sydney Commission is a new kind of city regional leadership platform where civic leaders are selected for their expertise to shape a long-term agenda beyond the short-term mandates and political cycles, but are accountable to and influential upon them.

Barcelona Global has been established as a coalition of corporations, institutions, entrepreneurs, academics, skilled migrants, and investors who want to help shape the Barcelona of 2050. The coalition is working at the spaces within and between the formal levels of governance: municipal, state, national, and European Union.

In China, the emergence of the great city clusters in the megaregions of the Greater Bay Area, the Yangtze River Delta, and the Jing-Jin-Ji region shows a new scale for subnational leaders to oversee and coordinate networks of interdependent cities.

In Colombia, we observe proactive citizen leadership in Medellín and civic-minded business leadership in Bogotá, fostering new tools and platforms for place leadership to emerge.

As we emerge from a global pandemic, the quest for effective city leadership is more important than ever. New models of shared leadership are finally arriving, but is it too late? We need these models, as well as other innovative ideas and approaches, to become the fabric of our global urban infrastructure in order to have successful cities. Our collective future depends on it.

#### The plan solves:

#### 1. Updating---prohibiting violations in the infrastructure level establishes a collaborative relationship between blockchain and antitrust that infuses technological principles into legal enforcement

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1.2 Enforcement

1.2.1 Not this...

Enforcement is the second pillar of a collaborative approach between law and tech, antitrust and blockchain. I realize that this may seem counterintuitive; enforcement is, by definition, confrontational. In reality, distinct types of enforcement can lead to varying degrees of confrontation: some harm the entire blockchain, while others target the sole perpetrators of illegal practices. One should avoid the former, as it would reduce blockchain’s usefulness and thus deprive policymakers and regulators of an important ally. It is in the interests of both communities to encourage the latter.

I concluded the first part of this book by underlining that making law and tech work toward the same objective implied bearing with some assaults by each on the other. This means that blockchain communities should not only tolerate antitrust sanctions, but also facilitate them, because they ultimately lead to further decentralization. It also means that antitrust agencies and courts should direct their enforcement activities in a specific way. Overall, they should seek to preserve blockchain. This will be challenging, as agencies generally conduct their enforcement activities one case after the other, without such a long-term objective. That being said, agencies could still achieve the overall goal of enabling blockchain technology to flourish while ensuring case-by-case enforcement.

For that, agencies should avoid enforcement activities against practices that directly arise from the intrinsic characteristics of a blockchain. For example, public permissionless blockchains distribute information throughout the marketplace, including the number of transactions implemented by specific users, the fees being paid and so on. This transparency could lead to antitrust concerns, especially when it comes to tacit collusion.14 Nevertheless, because this essential feature makes markets more fluid and mitigates information asymmetry,15 enforcement activities should not be directed at it.

The same goes for the opacity that blockchains create. As we have seen together, the identity of a blockchain’s participants and the content of their transactions are protected by encryption. Yet one should not consider this a relevant element in European competition law for presuming the intention to collude (moral component), for systematically making cartelization on block- chain a restriction “by object” rather than “by effect,” or for easing the burden of proof on antitrust agencies. Doing so would deter legal uses of blockchain.

More generally, it is important to underline that all blockchain participants agree to the same set of rules. That should not be seen as an illegal agreement between them, even though it affects their economic behavior. Agreeing to the same rules is, in fact, necessary for blockchain’s survival, as it creates consistency in the blockchain ledger in the absence of central coordination. It solves the Byzantine Generals Problem, according to which a central power is always needed to coordinate actions and maximize outcomes. That applies to forks, which should only rarely be seen as illegal (as I discussed in Chapter 8), because they create checks and balances within each blockchain. Let me reiterate that without consensus regarding the rules and their modification, the whole system would collapse, as the ledger integrity could not be maintained. All practices engaged by the blockchain nucleus to ensure survival, such as their forks and modifications of the core client, should thus be presumptively legal as far as antitrust enforcement is concerned.

1.2.2 ...but that!

I recommend that antitrust agencies focus their enforcement activities on practices that affect the “real space”, and on practices that defeat blockchain’s purpose.

As I discussed in Chapters 9 and 11, the first type of practice covers the use of blockchains to support firms’ efforts to collude or monopolize markets. These practices have a strong and direct impact on consumers. Detecting this type of behavior will require proactive actions by antitrust agencies. If they engage in such actions, enforcement in the field will increase consumer welfare.

The second category concerns practices that centralize blockchain ecosystems artificially. More specifically, agencies should target practices that centralize the infrastructure level of a blockchain. As I have explained, that level has a critical influence on the decentralization of other levels. Prohibiting artificial forms of centralization at that layer will free most of the ecosystem from coercive forms of power. In doing so, it will make blockchain a more potent ally to antitrust law. Furthermore, this type of enforcement will prove increasingly important over time. If blockchain adoption continues to increase, it could very well become a key infrastructure for the world economy. At that point in time, the artificial centralization of blockchain will become antitrust agencies’ top enforcement priority.

Overall, directing enforcement activities toward these two types of practices would free blockchain, and its economic ramifications, from the most restrictive practices without diminishing its usefulness or creating resentment within blockchain communities. Antitrust would thus become the ally of blockchain ecosystems and would start being perceived as such.

#### 2. Leadership---going bold builds FTC’s brand and secures a foothold for future experimentation

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Introduction

A core failing of today's administrative state and modern administrative law scholarship is the lack of imagination as to how agencies should operate. On the conventional telling, public agencies follow specific grants of regulatory authority, use the traditional tools of notice-and-comment rulemaking and adjudication, and are checked by judicial review. In reality, however, effective administration depends on entrepreneurial leadership that can spearhead policy experimentation and trial-and-error problem-solving, including the development of regulatory programs that use non-traditional tools.

Entrepreneurial administration takes place both at public agencies and private entities, each of which can address regulatory challenges and earn regulatory authority as a result. Consider, for example, that Energy Star, a successful program that has encouraged the manufacture and sale of energy efficient appliances, is developed and overseen by the Environmental Protection Agency ("EPA"). 1 After the EPA established the program, Congress codified it and, eventually, other countries followed suit. 2 By contrast, the successful and complementary program encouraging the construction of energy efficient buildings, the well-respected Leadership in Energy and Environmental Design ("LEED") standard, was developed and is overseen by a private organization. 3 After it was developed, a number of governmental authorities endorsed it and [\*2013] have encouraged LEED-certified construction projects with both carrots 4 and sticks. 5 Significantly, although neither the Energy Star program nor the LEED standard were originally anticipated by any regulatory statute, both have had tremendous impacts.

The Energy Star and LEED case studies exemplify the sort of innovative regulatory strategies taking root in the modern administrative state. 6 Despite the importance of entrepreneurial administration in practice, scholars have failed to examine the role of entrepreneurial leadership in spurring policy innovation and earning regulatory authority for an agency (or private entity). 7 This oversight is most unfortunate in the case of technologically developing fields where experimental regulatory strategies - as opposed to traditional notice-and-comment rulemaking or adjudication - are often essential. 8 In short, administrative law needs an account of agency action that explains why entrepreneurial leadership matters in government and how agencies should operate. 9

[\*2014] This Article: explains that the conventional view of agency behavior - following the specific direction of Congress or the President and using notice-and-comment rulemaking or adjudication processes - does not capture how public agencies and private entities develop innovative regulatory strategies and earn regulatory authority as a result. In particular, this Article: explains how governmental agencies like the EPA and private entities like the United States Green Building Council ("USGBC") (which oversees the LEED standard) depend on entrepreneurial leadership to develop experimental regulatory strategies. It also explains how, in the wake of such experiments, legislative bodies have the opportunity to evaluate regulatory innovations in practice before deciding whether to embrace, revise, reject, or merely tolerate them. To be sure, such experimental strategies are not always preferable to traditional administrative rulemaking and adjudication, but considering experimental strategies and evaluating whether they would be more effective than traditional regulatory approaches is.

Legal scholarship on experimental regulation is well-developed in the context of states serving as laboratories of democracy. 10 Scholars have not, however, discussed the significant role that federal agencies and private bodies can play in experimenting with regulatory strategies in advance of congressional action. 11 Scholars have also failed to examine the role of entrepreneurial leadership in developing successful experiments. This Article: does just that, highlighting the importance of entrepreneurial leadership in government, discussing a number of [\*2015] emerging regulatory experiments, and suggesting how Congress should evaluate such experiments.

This Article: proceeds in four parts. Part I examines the traditional model of regulation and the emerging alternative models of agency action through co-regulation, developing best practices through convening, and encouraging private regulation. In so doing, it underscores that entrepreneurial leadership and a culture of experimentation and trial-and-error learning is essential to developing the best solution. Part II discusses the relevant criteria for evaluating such experiments and examines potential objections to the earned regulatory authority model. Part III discusses four case studies of experimental regulatory strategies: (1) the USGBC's development of the LEED standard; (2) the Federal Trade Commission's ("FTC") oversight of information privacy and data security practices; (3) the National Institute of Standards and Technology's ("NIST") development of a strategy for cybersecurity readiness; and (4) the Department of Health and Human Services' ("HHS") oversight of electronic health records. In all of these cases, the private body or federal agency acted to oversee an emerging technology or issue (often in advance of explicit congressional direction and guidance), allowing Congress to observe the strategy in action and evaluate it after the fact. Part IV examines the concept of policy entrepreneurship, explaining both the barriers and opportunities it faces in the modern administrative state.

I. The Traditional Model and Emerging Realities

The traditional model of regulation relies on notice-and-comment rulemaking and agency adjudication. 12 Under this model, the output - the starting point for traditional administrative law analysis - is generally a form of positive law developed and enforced by a government agency through traditional tools (rulemaking or adjudication). 13 As Professors Charles Sabel and William Simon have observed, this model, "pejoratively called command and control, is identified with rule-bound bureaucracy and deference to ineffable expertise." 14

The traditional model can be depicted neatly as a hierarchy. 15 Congress sets a specific policy direction and empowers an administrative agency to implement that policy. The agency, in turn, uses either its rulemaking or adjudication authority to implement that direction. Finally, owing to the agency's expertise and congressional authorization, courts review the agency's action with deference.

[\*2016] Driven by technological changes and globalization, regulatory agencies increasingly are looking to alternative regulatory strategies, many of which fit under the "New Governance" label. 16 In some cases, innovative regulators experiment with new approaches to address emerging issues and fill gaps in the existing regulatory regime. In other cases, an agency might experiment with a co-regulatory strategy (where the agency integrates its authority with private sector efforts); exercise its authority in creative ways, such as developing best practices through convenings; or rely on private regulation. In that last category, as is the case with Energy Star, the government agency (or private entity, for that matter) can certify compliance with best practices, thereby sharing valuable information with the public and shaping norms of behavior. 17 In each of the above examples, the regulatory agency acts not within a hierarchy, but within a network. 18

[\*2017] The traditional, hierarchical model follows a familiar, step-wise approach to regulation. 19 The first step is establishing a standard of conduct. 20 The second step is implementing that standard of conduct, generally through a monitoring regime. 21 The final step is enforcement, in which parties are sanctioned for any failures to comply with the rules. 22 This model of regulatory action still holds strong in some areas, but it is no longer - and should not be - the exclusive strategy for addressing emerging policy issues.

In the emerging, networked environment, regulatory agencies find themselves with a range of options and tools for developing standards of conduct, monitoring behavior in the marketplace, and enforcing or encouraging compliance. The conversation around such emerging solutions has taken a number of forms, sometimes under the headings of "responsive regulation," "experimentalism," or "New Governance." However framed, there is a pressing need for more adaptable approaches that can operate effectively in technologically changing environments or in fields where the circumstances differ across geographic (or other) contexts. 23 To address emerging challenges, regulatory agencies will increasingly be called upon to experiment with non-traditional regulatory strategies, requiring legislatures to monitor and evaluate the effectiveness of innovative regulatory initiatives after the fact.

A. The Limits of the Traditional Regulatory Approach

The traditional model of regulation is coming under strain in the face of increasing globalization and technological change. 24 Consider, for example, the traditional model of drug and medical device approval used by the Food and Drug Administration ("FDA"). The legacy model of regulation envisioned the FDA reviewing a drug and making an up-or-down decision on whether to approve the marketing of the drug. 25 By putting all of the pressure on the front [\*2018] end (ex ante), the legacy model creates two sets of challenges: (1) the pre-approval process takes a long time, costs a lot of money, and, in some cases, unnecessarily delays access to potentially beneficial drugs; and (2) the lack of a post-approval review process allows drugs to "be marketed despite evidence that they were doing unanticipated harm." 26 Unfortunately, the second type of error - a lack of responsiveness to on-the-ground realities - reinforces the first type of error, creating more pressure on the FDA to withhold approval until it satisfies itself that the relevant drug or device will not cause harm. 27

Congress is well aware of the limits of traditional ex ante regulation. In the food and drug arena, it has worked to update the FDA's model of regulation. In the Food and Drug Administration Amendments of 2007, for example, Congress gave the FDA increased flexibility to approve drugs and require ongoing research as to how the drugs work, called for an improved Adverse Event Report System at the agency, and mandated a framework for monitoring drug efficacy in practice. 28 More recently, the FDA established fast-tracks for approving drugs and medical devices that promise life-saving breakthroughs. 29 As the FDA explained with respect to the medical device review process, "reducing premarket data requirements while increasing postmarket requirements for devices subject to a [Pre-Market Approval], when appropriate, can assist the FDA in making medical devices available to patients sooner than if following the traditional premarket review pathway." 30

[\*2019] This Article: , while sympathetic to the need to reform existing regulatory structures, does not focus on this issue. 31 Rather, it explains how considerable flexibility for a range of alternative options exists within current structures and is already being used by agencies and private entities to great effect. As such, this Article: describes the underappreciated model of earned regulatory authority, calls for a more self-conscious use of this model, and explains how agencies can spearhead and implement this model successfully through entrepreneurial leadership and a culture of trial-and-error problem solving. 32

The role of a more imaginative approach to regulation relates back to the "responsive regulation" movement led by Ayres and Braithwaite. On their account, regulatory strategies can be conceptualized as an "enforcement pyramid," with "persuasion" on the bottom and "license revocation" at the top (as the regulatory equivalent of the death penalty for a regulated firm). 33 In all cases, a responsive regulation approach emphasizes dialogue and engagement around the impact of regulatory efforts in practice. 34 In so doing, it underscores that regulators need not always use their traditional tools (notice-and-comment rulemaking and adjudication). Rather than reflexively adopting traditional approaches, regulatory agencies can (1) embrace and oversee self-regulation (enforced self-regulation or co-regulation), (2) convene stakeholders to develop best practices, or (3) persuade parties to develop private regulatory initiatives. The next three Sections discuss each strategy in turn.

[\*2020]

B. The Promise of Co-Regulation

Even when using its traditional authority, an agency can operate more nimbly and effectively by integrating its efforts with private bodies who have expertise in the field. Where that integration involves the explicit embrace, oversight, and enforcement of actions by private bodies, the model of regulation is aptly described as "co-regulation." 35 For a successful use of co-regulation, consider the FCC's use of frequency coordinators to assign rights to use the wireless spectrum. As I have explained previously:

One notable self-regulatory program that the FCC has overseen is the use of frequency coordinators, which manage voluntary cooperation in the use of point-to-point microwave links and private land mobile radio systems. In that context, the coordinator evaluates requests for new licenses and certifies that such new licenses will not cause undue interference to established users. Consequently, while the FCC is the authority that grants or denies licenses as a formal matter, it routinely relies on and defers to the judgment of the frequency coordinator. This deference to the frequency coordinator facilitates cooperation around the use of the relevant licenses. 36

The importance of this co-regulation model is that the FCC's delegation of authority enables practical problem-solving on the ground by the frequency coordinator. As Dale Hatfield, a former Chief Engineer at the FCC, explained, this system works because it encourages the local engineers to "sit down together, solve these problems, and say let's figure out how to do it," limiting the need for the FCC to use its backstop authority. 37

The FTC's partnership with the Better Business Bureau's National Advertising Division ("NAD") operates in a functionally similar fashion to the FCC's use of frequency coordinators. 38 Notably, the NAD has developed an [\*2021] effective model of dispute resolution around misleading advertising issues, deciding an array of issues and referring cases, where necessary and appropriate, to the FTC. 39 Because the NAD has developed such a trusted program, FTC leaders have praised its work and relied on it to carry the laboring oar in this area, 40 leaving the FTC's residual authority as a backstop. In particular, the NAD refers cases to the FTC where a party refuses to participate in its process or comply with a decision. 41

Learning from the NAD model, the European Union is working with the European Advertising Standards Alliance to develop a similar approach to overseeing false advertising claims. 42 In this case, however, the governmental authority is actively involved in developing and supporting this body rather than integrating its work after the body developed on its own. 43 In short, government can either embrace existing bodies as part of a co-regulation strategy or stimulate and steer the development of new ones.

C. The Role of Best Practices and Agency Convened Efforts

For many regulatory agencies, the opportunity to act as a "convenor," to develop best practices, and to create "soft law" or norms is an important part of their mission. As former FTC Chair Bill Kovacic explained with regard to the FTC, "Congress gave the FTC capacity to serve as a convenor - to engage in a diverse array of activities that facilitate norms development," including "what we now call "soft law' measures (e.g., self-regulatory standards, proposed guidelines)." 44 In particular, Congress specifically authorized the FTC to collect information and develop reports on topics not immediately related to cases or regulatory matters before the Commission. 45 In Kovacic's view, the FTC has used its convening authority effectively, "improving understanding, building consensus, and supplying focal points for norms development" through thoughtful reports that distill key issues. 46

[\*2022] For a range of agencies, the role of developing and championing best practices is on the rise, 47 reflecting a number of trends. First, many agencies find themselves without sufficient authority to promulgate binding rules as new technologies emerge. Second, even where an agency may have formal authority, it might be reluctant to use it in the face of an emerging technology where it needs to act more quickly than formal notice-and-comment rulemaking allows. Third, the agency may lack sufficient confidence that a prescriptive rule is warranted and thus leaves open a range of options, merely narrowing the field of possibilities and pointing entities in the right direction. 48

To develop best practices effectively, an agency must invest significant resources in the enterprise. Stated generally, this effort involves "horizontal modeling rather than hierarchical direction" and is "a method of regulation in which central administrators provide advice and disseminate information, instead of mandating a one-size-fits-all regulatory scheme." 49 In an increasing number of cases, best practices focus not only on U.S. firms, but also those across the world, requiring that the regulatory agency coordinate its international counterparts. 50 Moreover, to develop emerging best practices, it is important that agency staff take the time to learn the details of "the regulated entities first-hand, develop a strong sense of emerging processes, and … [share] knowledge of these processes with staff at other locations." 51

Where an agency (or a private entity) identifies and disseminates a best practice, it acts as a "norm entrepreneur." 52 As discussed in Part III, the FTC has performed this role in the online privacy and data security contexts, articulating and recommending a set of best practices. 53 One virtue of this role - like soft law more generally - is that it may well make the adoption of more formal regulation less necessary. 54 To the extent that the articulation of the relevant [\*2023] norm itself does not overcome the collective action problem and catalyze compliance with a norm, a certification regime (like Energy Star) for those who are compliant (along with naming and shaming) might do so.

One path for catalyzing compliance, which can be labeled as "jawboning" or "threats," involves the use of apparent legal authority - say, opening up an investigation - to achieve a desired result. In a provocative article, Professor Tim Wu defends the use of "threats," calling for norm entrepreneurship by agency leaders and the development of limiting principles for the practice. 55 In criticizing Wu's argument, some commentators have characterized it as condoning lawless conduct. 56 In that spirit, I previously criticized the FCC's use of its merger review authority to secure outcomes in other contexts that were not specifically related to the merger. 57 I also called the FCC's use of "arm twisting" controversial when done without full transparency and a willingness to take formal action. 58 Finally, I noted that the tactic is "dangerous" if the agency is not willing and able to follow through with formal regulation if the called-for behavior does not take place, as the meaningless nature of the threat will become plain and the agency will lose credibility. 59

Any agency that develops best practices should be aware of the potential risks of such an effort. For starters, if an agency's identified best practices are allowed to become stale, some private actors might stick with them and fail to improve their practice. Second, given that there is no judicial oversight of best practices development, 60 it is important that agencies pre-commit to a level of procedural regularity and fairness in how they develop them. Third, without either carrots or sticks related to best practices, an agency may find it difficult to generate attention or catalyze compliance. 61

[\*2024]

D. Private Regulation

As exemplified by the LEED building standard, a private regulatory initiative can drive behavior toward a social goal. Given the need to respond to emerging issues more adaptably than traditional regulatory processes allow, public agencies may be tempted to rely on private bodies. 62 In the internet environment, for example, a range of issues are managed by multi-stakeholder organizations, which use "dialogue to develop voluntary norms and best practices." 63 Similarly, in the environmental field, a range of "private activity generates pressure on environmental behavior without resulting in a statute, regulation, agency enforcement action, or court decision for review by scholars and policymakers." 64

The role of private, multi-stakeholder efforts in internet governance is the U.S. government's official policy. 65 Since the development of the internet's basic technical standards in the 1980s and 1990s by groups like the Internet Engineering Task Force ("IETF") and the World Wide Web Consortium ("W3C"), "these entities have largely established the norms and standards for the global internet, but they are little known to the general public." 66 The U.S. government recently fully embraced this model, recognizing the need for internet policy and governance issues to be developed in an adaptable and global fashion. 67 This embrace includes supporting the Internet Corporation for Assigned Names and Numbers ("ICANN") as an independent, international body to oversee the internet's numbering system. 68

In the internet context, two private regulatory efforts bear notice, as both exist in tandem with legal and regulatory oversight. First, the Copyright Alert System (overseen by the Center for Copyright Information) was a cooperative effort between broadband providers and content providers focused on addressing [\*2025] piracy in peer-to-peer networks. 69 This initiative, which existed for four years, 70 provided some measure of guidance to the broadband industry on what sort of "repeat infringer" policy was reasonable. 71 In light of recent court decisions holding a broadband provider liable for failing to develop an appropriate repeat infringer policy, the guidance from this organization could be considered best practice and protect a provider from liability, 72 although its cessation of operations may limit its impact. Second, the Broadband Internet Technical Advisory Group ("BITAG") is a multi-stakeholder organization that seeks to define best practices and broadband network management ahead of any FCC action under its network neutrality regime. 73 In its most recent regulatory decision on network neutrality, the FCC highlighted its openness to "obtaining objective advice from industry standard-setting bodies or similar organizations," specifically citing BITAG as an example. 74

Both the Center for Copyright Information and BITAG relied on a mix of industry representatives and public interest advocates and operated in an open, transparent, and consensus-based manner. 75 Like frequency coordinators and the [\*2026] NAD, the bodies confronted the challenge of earning their legitimacy and claim to regulatory authority. If such efforts succeeded, the FCC and copyright courts would regard their guidance as meaningful, just as the FTC and courts do with respect to the actions of the NAD. 76

In the environmental realm, the Marine Stewardship Council ("MSC") is an instructive case study on how a multi-stakeholder private regulatory initiative can have a major impact. The MSC, founded by the World Wildlife Fund and Unilever, was launched to address the concern about fisheries operating in a sustainable fashion. 77 As one commentator explained, "the MSC administers standards for sustainable fisheries, updates the standards periodically with input from a stakeholder advisory group, evaluates fisheries, and allows those fisheries that meet certain criteria to label their fish as MSC-certified." 78 The MSC standard focuses on three core concerns: (1) maintaining sustainable fish stocks; (2) minimizing any adverse environmental impact; and (3) managing the fishery effectively, including compliance with relevant legal requirements. 79 Under the MSC-administered regime, independent private auditors must assess compliance with the relevant standards and compliant products can be labeled as such. 80 Indeed, the MSC regime allows any organization with concerns related to certification to make a formal objection during the certification process. 81

[\*2027] The MSC provides a powerful example of how private regulation can work even when not reinforced by public regulation. 82 By 2012, sixty percent of the fish caught in U.S. fisheries for human consumption were MSC-certified and major corporations, such as Wal-Mart and McDonald's, had committed to selling only MSC-certified, wild-caught fish. 83 Moreover, the MSC's private regime drove compliance with the nonbinding Code of Conduct, developed by the United Nations Food and Agriculture Organization, by making it part of its requirements. 84 After surveying this regime and formal regulatory efforts to address the issue, one commentator concluded that the MSC model was more successful than traditional regulatory efforts in this area and that "private regulation is best situated to address the complex problem of fisheries depletion." 85

In short, private regulatory efforts, such as those led by multi-stakeholder organizations, can influence private behavior whether they operate in tandem with public regulatory oversight or in a vacuum created by a lack of regulatory oversight. Whether they operate in the backdrop of public oversight or as a standalone effort, private bodies need to establish their legitimacy to influence behavior on the ground. To do so, they must have sufficient independence from those they oversee, enabling both regulators and consumers to trust their judgments (including determinations of compliance). 86

[\*2028]

E. Hacking the Bureaucracy

In most situations, Congress and agencies think along traditional lines and agency leaders continue on the established path of agency regulation, under-utilizing the alternative models discussed above. 87 There are a number of reasons for this dynamic, including the power of "path dependency and bureaucratic entrenchment." 88 Even more powerfully, the incentives for policymakers are often to avoid Type 1 errors - those visible errors of commission - that arise when trying a new strategy that might fail. By contrast, the hidden Type 2 errors - ones of omission - are permissible and a regular feature of bureaucratic inertia. 89

On one account, the challenge of leading a bureaucracy is captured by the reality that governmental employees, who enjoy civil service protection, can tell their politically-selected leaders, "I was here long before you arrived and will be here long after you are gone." In practice, such explicit defiance is the exception. Regardless of whether bureaucratic inertia is willful or based on an entrenched tradition governmental agencies are built to continue the same course. Consequently, any course corrections require energetic leadership. 90 And governmental employees are generally conditioned "to be quiet, take orders, and do their jobs in a repetitive way." 91 On the positive side, governmental employees tend to have a service orientation and are mission driven, meaning [\*2029] that effective engagement around the mission and purpose of the agenda can catalyze innovation and collaboration. 92

Bureaucratic inertia and autopilot administration not only prevent innovative programs from being developed, but also can lead existing programs to be administered badly. Take, for example, the development of the healthcare.gov website. After Congress passed the Affordable Care Act, a health care economist, David Cutler, encouraged the White House to treat the administration of the law more like "launching a start-up than passing a law." 93 In particular, Cutler made clear that the default strategy - using the existing personnel at the Center for Medicare and Medicaid Services ("CMS") - for administering the law was a recipe for failure. 94 In an assessment ignored by the White House, he explained that CMS "is demoralized, the best people have left, IT services are antiquated, and there are fewer employees than in 1981, despite a much larger burden." 95

Cutler's call for an entrepreneurial approach to implementing the Affordable Care Act was rejected by President Obama. 96 Perhaps fearing the need to manage political warfare with House Republicans or responding to the HHS' interest in protecting its turf, President Obama agreed to, in Cutler's words, pile "new responsibilities onto a broken system." 97 As this episode underscores, even when the current system is flawed, the pressure to use it is powerful. As a result, the healthcare.gov website cost $ 800 million to develop, whereas Twitter, which serves a similar number of users and is of comparable complexity, cost only $ 60 million. 98

The redeeming part of the healthcare.gov story is that it demonstrates that treating a government project like a startup can work. After the failed rollout of healthcare.gov (which only enabled six people to sign up for insurance on its first day), President Obama essentially embraced Cutler's recommendation, [\*2030] authorizing Todd Park, Mikey Dickerson, and a team of entrepreneurs to operate in a new structure that was called "tech surge." 99 This project, like a good startup, approached the challenge of building an effective website from first principles. Rather than ask how the government had done IT projects before, the team innovated (for government) in a number of important ways, including using Amazon Web Services to support the site. 100 In developing the new website, it broke from the traditional bureaucratic process of "waterfall" development (where every step is prescribed and locked-in) and used "agile" development (where the process is iterative and evolves along the way). 101 Finally, the team built a login system for $ 4 million (with annual maintenance costs of $ 1 million) to replace the initial version that did not work well and cost $ 250 million to build (with $ 70 million annual maintenance costs). 102

In an important legacy of this effort, Park and Dickerson continued to work in government after fixing healthcare.gov, developing the new U.S. Digital Service ("USDS"). 103 The goal of the USDS is to lure a range of talented technology professionals to the federal government, including data scientists, product managers, and product designers. 104 The USDS, in turn, provides guidance to government agencies on questions like how they can use Amazon Web Services. 105 In short, the USDS supports entrepreneurial leadership in government; and as Park said, it develops "people who can hack the technology, as well as people who can hack the bureaucracy." 106

The healthcare.gov story now has two parts. The first is the cautionary tale about government's traditional inertial default setting - that is, to do things as they were done before. The second underscores that entrepreneurial leadership [\*2031] in government is both possible and important, and can lead to transformative results. 107

The positive legacy of the healthcare.gov story is that entrepreneurial leaders in government can free their agencies from "the mental grip of conventional structures on the capacity to consider alternatives." 108 In so doing, such leaders can facilitate the development of alternative regulatory strategies. Similarly, governmental agencies face the challenge of overcoming the institutional bias that "experts may myopically focus on issues within their area of expertise and thereby fail to recognize that a decision would benefit from accessing other bodies of knowledge or ways of thinking." 109 In short, an important role of entrepreneurial leadership in government is to examine issues through the lens of first principles. 110

The concept of policy entrepreneurship recognizes that an entrepreneurial mindset and skillset can be applied to governance to foster innovative results. Professor Adam Sheingate, for example, defines the concept as the "skillful manipulation of politics [that] somehow results in the creation of a new policy or a new bureaucratic agency, creates a new institution, or transforms an existing one." 111 This type of leadership can also be seen in the development of, for example, the MSC program, the FTC's oversight of online privacy, and the Energy Star program. In a world where the best solutions may well require new models of regulation, it is critical that agency leaders experiment with new solutions. 112

[\*2032] A significant hurdle for entrepreneurial leadership in government - and a foundation of the inertial default setting - is the lack of acceptance of failure as an outcome. In practice, this means that governmental agencies often reflexively turn to traditional regulatory models and do not consider untested alternatives (often out of fear of failure). 113 This instinct mirrors the old private sector saw that "nobody got fired for buying IBM." 114 Citing the fear of failure and risk aversion, former Massachusetts Governor Deval Patrick explained, "there may be no industry less susceptible to innovation than government." 115 There are, however, exceptions, including the Defense Advanced Research Projects Agency ("DARPA"), which makes a conscious effort to promote a "risk-taking and failure-tolerant culture." 116

In the entrepreneurship environment, failure is a normal state, providing data, an opportunity to iterate, and a spur to refine a product offering. 117 Consequently, entrepreneurs celebrate the need to "fail fast" on new experiments by trying them on a small scale and determining as quickly as possible whether they can work. 118 As two advocates of innovation in government put it, "[a] [\*2033] culture of innovation means continuously exploring and adopting new processes in an ecosystem where risk is incentivized, not precluded." 119 Similarly, entrepreneurial leadership in government authorizes calculated risk-taking and, more importantly, provides cover for trial-and-error learning when the trials do not produce the envisioned results. 120 Unfortunately, leaders who support experimentation and are willing to accept the inevitable failures, are the exception, not the rule. 121

The basic entrepreneurial methodology of experiment-measure-iterate is captured in Eric Ries's classic book, The Lean Startup. 122 A core thesis of the book, widely accepted in the entrepreneurial community (and ignored by most legal scholars), 123 is that companies should develop and market a "minimum viable product," solicit feedback from actual customers, and improve it based on that data. 124 At Facebook, this philosophy was adopted and embodied in its mantra, "done is better than perfect." Citing that mantra, one commentator explained that "had Facebook waited so much as a year to perfect its model, the company might very well be where MySpace is today." 125

The Ries philosophy is famously captured in a feedback loop representing the cycle of innovation. 126 The core idea is to embrace experimentation, gather data [\*2034] (whether it signals success or failure), and iterate. 127 The lean startup model, represented by the following diagram, focuses on taking ideas from prototype to feedback to improvement: 128

This lean startup model echoes the style of software development championed by open source software, which calls for releasing code that can be viewed and improved by a community of users and developers. In what Eric Raymond dubbed "Linus's Law," in honor of the founder and coordinator of Linux, the open source maxim is "given enough eyeballs, all bugs are shallow." 129 This approach has spread far beyond open source, enabling "business webs where focused companies partner others to innovate and create value." 130 Although this [\*2035] approach and a commitment to prototyping and testing solutions is novel in government, it is starting to take root, with promising results. 131

With respect to the fear of failure, government operates quite differently than the entrepreneurial world. In government, the perceived costs of failure are sufficiently high that many governmental leaders decline to introduce a new initiative for fear it will fail or refuse to admit that an existing program is failing, even though that admission is a necessary predicate for improvement. To be sure, there are cases like the initial healthcare.gov rollout where the failure is readily apparent and must be fixed. In other cases, however, governmental leaders stand by programs where the data backing up its effectiveness is either uncertain or doubtful.

For an instructive case of governmental leaders refusing to acknowledge the limitations of a program, consider the case of the EPA's Performance Track program. When created, the program was supposed to highlight those companies with stellar environmental records. 132 In practice, however, it ultimately became, as EPA Administrator Lisa Jackson put it, "just one of those window-dressing programs that has little value." 133 Similarly, the EPA Inspector General criticized the program as ineffective, noting that it did not provide "a new model for achieving" its stated goals and very few companies met their stated goals. 134 Nonetheless, the Bush Administration did not make any real changes to the program before the Obama Administration cancelled it. 135

The Performance Track program story, like the failure to acknowledge the failings of the healthcare.gov website earlier, underscores that the hesitancy to acknowledge failure is a major challenge in governmental administration. If governmental leaders refuse to acknowledge failures, they undermine the ability to learn - and iterate - from mistakes and instead allow failed programs to [\*2036] continue during a period of denial. 136 Or, as Lawrence Summers put it while reflecting on the healthcare.gov debacle, it is crucial to resist the "overwhelming temptation for everyone involved [in a project] to circle the wagons and promise rapid repair so as to hold critics at bay." 137

Another challenging dynamic for governmental leaders to address is the impact of unconscious bias. It is normal for those involved in a project to believe that it is working, following what Nobel Laureate Daniel Kahneman calls "confirmation bias." 138 As one commentator put it, a challenge for those evaluating regulatory experiments is that those "deeply involved in the implementation of a particular regulation are likely to see the benefits of such a project far more clearly than the costs." 139 As commentators have explained, there are a number of strategies for overcoming this bias, including using red team-blue team exercises, appointing a Devil's Advocate, and creating a process for deliberate decisionmaking. 140 Of course, as happened in the Performance Track situation, new leadership is able to bring a fresh perspective. Ideally, however, existing leaders can step back and ask, "if a new leader came in and took a fresh look, what would she do?" 141

[\*2037] The role of entrepreneurial leadership in encouraging candid reflection and criticism is essential. As former FTC Chair Bill Kovacic and David Hyman explain, agencies develop an institutional culture and a reputation (or a brand, as they put it). 142 In some cases, that brand can be one of reliability and commitment to data-driven decisionmaking. An important role of an entrepreneurial leader is to develop and maintain that commitment. In the case of Underwriters Laboratory ("UL"), for example, its early leadership did just that, building up "UL's reputation for reliability by creating organizational structures, administrative routines, and oversight systems designed to prevent mistakes and misconduct." 143 To get past the natural status quo bias, an entrepreneurial leader should welcome diverse ideas, criticism, different options, and experimentation. 144 In Part II, to explain how policy entrepreneurship can earn regulatory authority, I discuss how experimental initiatives need to establish their effectiveness, legitimacy, and accountability to be embraced as lasting regulatory regimes.

### Plan---1AC

#### PLAN

#### The United States federal government should prohibit anticompetitive practices by nucleus participants at the root layer of blockchains.

### Solvency---1AC

#### SOLVENCY

#### Prohibiting anticompetitive practices by the blockchain nucleus of creates a principled basis to apply antitrust to distributed ledgers without overbroadening liability for all users

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2 BLOCKCHAIN’S LEGAL FICTION

In this section, I introduce the theory of granularity and outline how it enables the application of antitrust law to blockchains. Transactional by nature, that theory aims to explain public permissionless blockchains beyond the simple cost reduction framework. It seeks to translate accurately the governing reality of such blockchains, creating for the purpose a new legal fiction that encapsulates blockchain without forcing it into inadequate boxes.

2.1 Dynamics of Blockchain Governance

The theory of granularity, to which one may want to provide a semantic explanation, frames blockchain governance as a new transactional institution. By doing so, it fills the gap created by the impossibility of applying the theory of the firm to public permissionless blockchains.

2.1.1 Semantic explanation

In “The Nature of the Firm”, Ronald Coase distinguished between organizations and organisms.3 While firms are organizations, blockchains are clusters of organisms that, by nature, are spontaneous. Their functioning must be analyzed and understood this way so that antitrust and competition law can be properly applied when necessary.

The present chapter introduces the theory of granularity for the purpose. Generally, the notion of granularity defines the size of the smallest element in a system - that is, an organism. Thus, this theory aims to analyze the role played by each component of a blockchain. Unlike the firm, where vertical control is exercised over its components, blockchains are made up of horizontal governance mechanisms. This reinforces the importance of each organism, as one cannot merely assume that they will follow one coordinated direction.4 One must then study blockchain’s smallest organisms, the role they play and their dynamism.5 It is only by analyzing the granularity level that blockchain governance can be properly understood.6

2.1.2 Understanding blockchain governance

Blockchain is a space in which different forms of power are being exercised. However, unlike the firm, in which one exercises a power of command and control, I have explained that no single actor can entirely control a public permissionless blockchain.7 As a result, multiple interests can compete within the same blockchain; they may even be opposed. Blockchain “contribute[s] to the realization of a number of individual objectives which no one knows in their totality”8 For that reason, one must study the different types of power that are generally found within public permissionless blockchains to understand which interests may eventually prevail over others. In doing so, we should keep in mind that “people who think the purpose of blockchains is to completely expunge soft mushy human intuitions and feelings in favor of completely algorithmic governance (emphasis on ‘completely’) are absolutely crazy.”9

I study blockchain power games by analyzing what I have described as the fifth blockchain level in Chapter 4: the governance layer. That level sits on top of more technical ones, and it appears to be central in defining the activities at the levels above. Furthermore, different constraints come into play in blockchain governance - namely, economic, political, logical, sociological, architectural and legal ones. Understanding how these constraints interact is a challenge; but it is essential in order to get a grip on who holds control over blockchain layer 1 and how that power is exercised over other participants.

A distinction between all three categories of public permissionless blockchain participants is helpful in this regard - namely, between founders or core developers (I will often present them together for the sake of simplicity), users and miners. I show that although each blockchain has its specificities, the above-mentioned groups will use the same mechanisms to express their preferences,10 and will encounter the same limits if they act on their own. Eventually, their powers may suffer from four constraints that Lawrence Lessig described with his “pathetic dot theory”: law, markets, social norms and architecture.11

As for private blockchains, I have explained that they mimic that structure to different degrees, depending on their original design. The closer they are to public permissionless blockchains, the less the theory of the firm will be transposable to them. The following developments then become relevant for public permissionless as well as private blockchains.

2.1.2.1 The power of founders and core developers'2

Blockchain founders and core developers are those who implement the original rules of a blockchain.13 They design the code software and determine which consensus protocol will be used.14

Although core developers work on the fourth level of blockchain - its infra- structure - they interact with other blockchain participants at the fifth level. Indeed, one may stress that the blockchain architecture limits their power, as they lose any form of direct control over other participants once they put the blockchain online.15 For most blockchains (but not all!),16 founders and core developers cannot unilaterally impose any changes17 or control who may propose protocol updates.18 For instance, any Bitcoin Improvement Proposals must be voted upon, according to miners’ computing power, before they get implemented.19 Indeed,“[t]he nature of Bitcoin is such that once version 0.1 was released, the core design was set in stone for the rest of its lifetime,”20 unless the majority agrees to change it.

The more participants are included in those voting procedures, the more decentralized that blockchain layer is.21 The opposite is also true. For instance, Decred22 and Tezos23 are cryptocurrencies with more centralized governance systems. One of Tezos’ principal characteristics is the ability to amend its consensus when necessary.24 The presence of off-chain and side-chain governance mechanisms, usually controlled by developers, should also be closely studied.25

It remains that core developers do not control who can use the blockchain at the platform layer26 or who can build applications on top of it.27 That is because blockchain founders and core developers cannot impose changes on the blockchain code, interface, application, data or benefice.28 Their main role is thus close to that of “advisors,”29 but their influence is limited by blockchain participants’ desire to maximize their own benefit, which may lead them, should they disagree with core developers, to refuse the implementation of new rules, to move to a rival ecosystem or to fork the blockchain.30 Social norms further limit them because they may fear not being influential enough to prevent hard forks.

Hard forks result in backward-incompatible software updates. When they do not obtain a sufficiently broad consensus among miners,31 hard forks cause the chain to split in two, permanently. Indeed, miners who do not follow the new block validation requirements will be unable to add their blocks to the latest version of the blockchain, as the core client will automatically reject them as non-compliant. Instead, a new chain of blocks will form, creating a split: two chains following different rules. These forks limit the core developers’ willingness to act against the interests of other participants.32 And core developers may also fear soft forks, although to a lesser degree. Soft forks happen when new rules are implemented, but when the blocks following the original rules are not rejected from the chain. These modifications are backward-compatible, accommodating miners who implement the change and those who do not. Nevertheless, one should underline that these limits on core developers’ power are linked to the decentralized nature of blockchain governance, which is not a necessary feature, but needs to be enacted.33 New blockchains may appear in which greater power is given to the founders and core developers.34

However, such blockchains will suffer from two inherent limits. First, the extent to which a (re)centralized blockchain could thrive remains to be seen.35 Such blockchains could deplete trust by confining power in the hands of a few, thus disincentivizing users from joining them. Second, a (re)centralized block- chain could function less efficiently than a truly decentralized one, because all its participants would no longer be in a position to improve it. This lack of efficiency, even if it only concerned certain types of transactions, could hinder these blockchains - which probably explains why, to this day, they have not prospered.

2.1.2.2 The power of users36

On permissionless public blockchains, users propose new transactions. Anyone can become a user.37 Users exercise substantial power over the blockchain, since their decision to use it (or not) is central to the blockchain’s economic and social value.38 Their influence extends from influencing transaction fees39 to providing additional value by developing and using applications running on top of the platform layer.40 They can also force hard forks on the blockchain.41 However, their power is limited by the fact they cannot (easily) exercise coordinated control, as their actions are highly decentralized and spontaneous.42 This creates an architectural limit and makes their behavior primarily dependent on prices.43

2.1.2.3 The power of miners44

On permissionless public blockchains, miners validate transactions assembled into blocks. Any participant can become a miner.45 Miners follow the rules encoded in the fourth blockchain level (e.g., the Bitcoin Core client).46 They can comply with a different set of rules, but they will then waste computing power by producing an orphaned block, thus losing potential rewards. Following the main client’s rules is miners’ dominant strategy.47 If they coordinate their behavior, miners can influence a blockchain by realizing a 51 percent attack,48 thus forcing a soft fork.49 The risk is higher when miners are grouped into mining pools.50 In such a scenario, the blockchain protocol is changed to loosen the rule-set enforced by full nodes.51 Such a change occurs when enough hashing power, or energy expended to mine a cryptocurrency, is devoted to it.52 The power of miners to start soft forks is nonetheless limited by both the blockchain’s architecture53 and social norms - they must convince blockchain participants operating as nodes to run the new version of the software.54 Miners also suffer from market constraints, as initiating a soft fork may decrease the value of the tokens they own.55 The price mechanism also guides their actions, creating a strong market-related constraint. Finally, even if a fork were created, the new community would have the strenuous task of convincing other users to join it.56 For example, Bitcoin had been forked over 100 times at the time of writing. Over 30 of them are considered failures, while another 29 projects are no longer capable of transacting. Among the remaining forks Just a few are considered valuable.57

2.1.3 The blockchain power game

This overall balance of power, common to all public permissionless block- chains, is the general analytical framework (as illustrated in Figure 7.1) within which to analyze whether one of these groups, on a case-by-case basis, has sufficient influence to qualify as control under antitrust or competition law.

On top of all that, core developers, users and miners may also store a copy of the blockchain ledger. When doing so, their computers are labeled as light nodes if they store only a subset of the blockchain ledger and full nodes if they store a copy of the entire blockchain.58

Although these nodes are passive and cannot be designated as actors in the blockchain, they ensure its integrity. This role carries power. First, blockchain participants who are nodes may alter their copy of the blockchain.59 Second, they may also (threaten to) validate blocks in which there is double spending.60 Their job is indeed to prevent users from spending the same token twice by allowing miners to verify the proposed transaction against a list of previous unspent transaction outputs. They protect blockchains value. However, their power is mainly limited by the fact that they cannot either control or influence transactions.61

This is the blockchain power game. It is well balanced, and technical solutions (called “layer 2” solutions) are constantly provided to maintain that balance. But these solutions are insufficient to maintain balance when different groups of blockchain participants come together to escape these constraints to the detriment of the broader ecosystem. When this occurs, they are exercising control over the blockchain.

2.2 The Blockchain Nucleus

Thus far, the theory of granularity has allowed me to determine the different forms of power enjoyed by blockchain participants. I must now detail how to identify a legal fiction controlling the blockchain.62 To this end, I explain what a blockchain nucleus is and then analyze its influence over other blockchain participants. 1 then describe how to define such a nucleus.

2.2.1 Usefulness and challenges

2.2.1.1 The nucleus

None of the three types of blockchain participants - core developers, users and miners - can impose their power on other groups to the point of taking complete control over the blockchain. Blockchains are indeed decentralized. They prevent the exercise of vertical power, and this differentiates them from firms in which a group, or sometimes even an individual, can control the other participants and “force them to collaborate,” so to speak.

That being said, even with horizontal and decentralized governance, a group of participants may achieve a form of control over the blockchain by collaborating, by circumventing (some of) the constraints imposed on them,63 and by changing them in the long run.64

I contend that such a coalition exists for each blockchain (at least, for the surviving ones),65 and I call it the nucleus. The nucleus includes all the participants who have a personal interest (albeit transiently) to collaborate toward the same long-term goal: ensuring the blockchain’s survival.66 Its members do not compete as they are, together, trying to maintain and expand their blockchain. Their short-term interests may diverge from time to time67 - for example, when two miners are racing to mine new blocks.68 Still, they seek to ensure blockchain integrity and systematically promote the same blockchain instead of other ones.

2.2.1.2 Usefulness

Assessing which participants have joined forces and are thus part of the nucleus is essential to determine who ultimately controls the blockchain. Put differently, it leads to identifying the participants that can be held liable for a breach of antitrust law when it is shown that they have anticompetitively exerted their influence.69 Identifying the nucleus amounts to creating a legal fiction to which the law can be applied, but also to which rights can be granted (see Figure 7.2).

The nucleus should indeed become a legal fiction that can be liable for anticompetitive practices, but also able to claim damages. In that regard, determining the nucleus size will prove central. It will prove useful in cases of anticompetitive practices directed at a blockchain nucleus. When a legal entity - whether a blockchain nucleus or a firm - infringes antitrust law and causes damages to another nucleus, the latter must have the means to introduce a legal action, stand by its rights and claim damages. Assigning liability and granting rights to blockchain ecosystems are thus two sides of the same coin.

3 DEFINING THE NUCLEUS SIZE

Courts and antitrust agencies will face the task of determining the nucleus size. The further away a participant will be from the nucleus’s center, the more difficult it will become to genuinely include her or him in the nucleus. With distance, it will prove harder to show that she or he could have influenced other participants’ behavior. Only a case-by-case analysis can elucidate this question. This analysis should nevertheless be based on concrete and quantifiable frameworks to ensure legal certainty, limit legal errors and reduce regulatory costs. To this end, agencies should focus their investigation on economic agents’ ability to exert a horizontal power of command and control. They should also consider their capacity to interfere with the blockchain’s economic value and influence norms.70

Let me be more specific. The first element that should be factored in to determine which participants are part of the nucleus is the technical ability to exert a horizontal quasi-power of command and control. One must assess each blockchain’s architectural characteristics to determine whether a few users may impose such decisions on others. The more a group of users can control others, the more they can single-handedly contribute to the block- chain’s survival, and therefore be considered part of the nucleus. In fact, the original design of a blockchain can give one of the three groups of users more or less power. It can put them in charge of implementing the execution of transactions, designate them as miners or even enable them to change the design a blockchain’s design unilaterally. Some blockchains might also use several mechanisms based on the platform layer to create governance (whether off-chain or side-chain).71

The second element is the ability of each participant to interfere with the blockchain’s economic value.72 When some users govern the pricing structures, the blockchain’s attractiveness or economic incentives, they have indirect control over the blockchain. This ability can be assessed by looking at technical elements. For instance, the capacity to change the size of each block, which may alter the number and types of transactions, is a sign of control. The same goes for the power to propose modifications to the core code to attract new participants. Finally, the more a participant has invested in the blockchain, the more he has an incentive to control its economic value.73 For that reason, previous investments in a blockchain can show agencies where to look for the nucleus.

The third element is the ability to influence a blockchain’s norms.74 Here, “norms” are defined as the “constraints imposed not through the organized or centralized actions of a state, but through the many slight and sometimes forceful sanctions that members of a community impose on each other”75 - that is, the unwritten rules that one often feels compelled to follow.76 The more a participant can incentivize others to behave in a certain way - on pain of rejection from the community - the more they exercise control over the blockchain’s general direction.77 For example, when core developers can influence other participants into accepting all of the modifications they would like to apply to the core (e.g., by arguing about the necessity for technical upgrades, security failures, bugs...), they effectively pilot part of the blockchain.

4 THE THEORY OF GRANULARITY IN ACTION

The theory of granularity would enable agencies to identify a blockchain’s nucleus. It would thus permit the creation of a legal fiction to which antitrust can be applied. In turn, this would impose new obligations upon blockchain participants while simultaneously giving them new means to challenge anti- competitive behavior. This theory would make it possible to analyze relevant markets and market power in antitrust proceedings. The theory of granularity would also make it possible to impute anticompetitive practices to a given set of blockchain participants.

#### Antitrust is limited by application only to the ‘firm’, defined by vertical control---modifying this with targeted prohibitions prevents blockchain centralization

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The second part of this book is dedicated to artificial centralization - namely, anticompetitive behaviors that take place on blockchains or are facilitated by them. 1 contend that studying these practices is essential to make blockchain and antitrust law function as allies; indeed, no sustainable cooperation is possible without addressing (and preparing for) the situations in which mutual aggressions will occur.

To this end, I first analyze the extent to which antitrust laws are currently applicable to blockchains. I show that the theory of the firm is central to modern antitrust (Chapter 6) and that it cannot be transposed to all blockchains. For that reason, I propose a new approach - dubbed “the theory of granularity”- which allows for the creation of a legal fiction, placing blockchain’s activities (back) under the rule of law (Chapter 7). I explain that implementing that approach would benefit all the players in the blockchain ecosystem. This would clear the way for law enforcers to apply the rule of law and, in turn, would help eliminate the most harmful practices and encourage investments. Once the question of applicability has been cleared up, I turn to how antitrust law could be applied to anticompetitive practices. To this end, I begin by looking at collusive practices, whether they concern the blockchain itself (Chapter 8) or make use of the blockchain to affect the “real space” (Chapter 9). 1 explain that these practices tend to centralize decision making power and thus contribute to the “artificial” centralization of different levels of block- chain ecosystems and the economy.

Part 2 closes by examining abuses of market power. I first show that the analysis of market power on blockchain raises several difficulties, and I offer suggestions to overcome them (Chapter 10). I then analyze the practices that may result from such power and show that they are heterogeneous (Chapter 11). I draw a risk map. Finally, I conclude by studying different forms of blockchain concentration (Chapter 12). I draw a distinction between hostile and mutually agreed concentrations and explain how these may recentralize blockchain.

6. The theory of the firm

1 LEGAL FICTIONS

The concept of “legal fiction” is central to all legal systems, although regulation and court decisions refer to it only infrequently. I first explain its meaning by taking a brief detour through... trees and forests. I then show why it is useful for the present study.

1.1 Trees as a Legal Fiction

Christopher D. Stone is a law professor in the United States. In 1965, after a stint at the University of Chicago,1 he joined the University of Southern California Law School, where he taught several subjects, including public international law and property law. One day in the fall of 1971, as he was nearing the end of a class, he asked his students the following question: “What would a radically different law-driven consciousness look like?” As he walked out of the classroom, down the corridor to his office, he wondered why he had asked such a strange thing. “How could a tree have rights,” after all? Days went by, and still he continued to wonder. He soon became convinced that the answer to his question should be positive and decided to make it known.

In October that same year, he got in touch with the Southern California Law Review's editor in chief. The Supreme Court had taken up a case, Sierra Club v. Morton, that touched upon his question. Although Stone did not think he would be able to publish his article before the case went to trial, he hoped that Justice William O. Douglas - who had agreed to write the preface to a symposium issue of the Review - would at least see the draft of his article. His strategy paid off. Although the Supreme Court decision did not follow his thesis, Justice Douglas wrote a dissent in which he held that: “Contemporary public concern for protecting nature’s ecological equilibrium should lead to the conferral of standing upon environmental objects to sue for their own preservation. See Should Trees Have Standing?”2 In 1974, Stone published a book in which he developed his theory further.

1.2 The Concept of Legal Fiction

Christopher Stone’s book is a pillar of modern thinking on the subject. Of course, the argument concerning what is a legal person - or a legal object to which rights are attributed - did not originate in the 1970s. Since medieval times, scholars have considered what rights should be attributed to corpo- rations3 - a debate they centered on the question of legal fictions. A “legal fiction” is presumably defined as a fact created by courts or legislation to help legal ruling.4 Stone poses three conditions for the creation of a new one:

They are, first, that the thing can institute legal actions at its behest, second, that in determining the granting of legal relief, the court must take injury to it into account; and, third, that relief must run to the benefit of it.5

A company meets these criteria. Legal systems have recognized them as a legal fiction for hundreds of years.6 Corporations are, in the words of John Sherman, “artificial person[s] without fear of death, without a soul to save or body to punish;”7 and yet they are at the center of our modern economies. Not only has the law “been able to exploit to its advantage and to maximize for its needs” the fact that corporations are persons; but also, they can file legal actions, suffer from damages and benefit from relief. One can find traces of that recognition in the Rolls of British Parliament in 1444: “they [the Master and Brethren of the Hospital] by that same name mowe be persones able to purchase Londez and Tenementz of all manere persones.” Here, the Hospital was recognized as a legal fiction.

As for the process of establishing legal fictions - once the criteria are known to be met - three methods have been used,8 whether by the courts (in common law) or by the legislature (in civil law). The first is by assertion, where one thing is declared to be true. For instance, one may say that corporations are persons. The second is by assumption - more specifically, by an irrefutable presumption that may morph into a legal fiction. For instance, one may say that corporations are presumed to be persons. The third is by deeming. Here, X is deemed to be Y, which creates a disconnect between the reality before deeming the fact, and after.

1.3 Legal Fiction and Blockchain

If legal fictions are so convenient, why not create a multitude of them? The first objection is the necessity to agree on the desirability of the objective they ought to achieve. When courts use legal fictions to deny minorities their fundamental rights, the objective is achieved, but society does not come out better.9 The second objection relates to the balance of power. Bentham called legal fictions “the stealing of legislative power” when courts create them. The third objection relates to the difficulty of creating a coherent legal system. Companies are legal persons, and although they can be charged with criminal activity, these crimes are committed by physical entities (persons). One must therefore put in place adequate measures to ensure that any illegal activity by a firm can be put to an end (that its perpetrators cease to act). The fourth and final objection concerns the systematization of the law. The creation of legal fictions leads to the elimination of case-by-case analysis, at least partially. For instance, a firm will always be a legal person. That may create difficulties because it entails giving the firm all the fundamental rights given to us, humans.

On the other hand, creating legal fictions significantly improves legal certainty. First, this applies to the entities directly concerned, which as legal fictions may bring actions under their own name and can thus be compensated for any damage they might unjustly suffer. It also creates legal certainty for all those who interact with these legal fictions, as trading partners can indeed bring legal actions against them. It helps when legal fictions rather than individuals benefit from illegal practices and cases where several individuals are responsible for a behavior. In short, although the creation of legal fictions is an exercise that requires precision, it unlocks a range of potential interactions that can greatly benefit society.

I intend to explain that creating a new legal fiction for blockchains is essential to their decentralization. I have argued that decentralization is the capacity of subjects to determine their competence. That requires recognizing their legal existence before transferring such capacity. Doing so will also allow them to introduce proper legal actions and prevent illegal behaviors being turned against them.

2 THE FIRM IN ANTITRUST

Antitrust’s most common legal fiction is the firm. That legal fiction has developed little since the 1930s and Ronald Coase’s work. For that reason, one may wish to understand its premises to get a grasp of modem antitrust law.

2.1 The Theory of the Firm

The economic literature regarding the emergence of firms emphasizes the importance of transaction costs and the ability to reduce them thanks to top-down control. To this day, that theory has provided the bedrock for modem microeconomic analysis.

2.1.1 Highlights of Ronald Coase’s article

In 1937, when he was 21 years old, Ronald Coase published “The Nature of the Firm.”10 It contains no mathematics and is just 20 pages long, but it remains one of the most-cited publications in economic theory today." One can hardly overstate its impact.12

In it, Coase sought to answer the following question: if markets are efficient, why do firms emerge? Coase responded simply and elegantly, stressing that firms make it easier to organize certain exchanges. Coase introduced the concept of transaction costs without naming it - referring to all the expenses the parties must incur to complete a transaction - and explained that firms exist to minimize these costs.13 Indeed, a transaction involves different costs - the costs of finding economic agents on the market, negotiating, drafting a contract and so on. By internalizing these various externalities, firms reduce the cost of economic transactions. Firms were thus seen as an institutional device for the first time.14 Coase opened the firm “black box.”15

He then explained why firms reduce these costs. His explanations came down to the power of command and control.16 Firms are hierarchically organized: orders and directions are given from the top and trickle down the hierarchy. This reduces the scope for costly opportunistic behavior that might otherwise make transaction unprofitable. Put differently, the reduction of these costs is often achieved by collaboration between employees, while market participants outside the firm are compelled to compete.

In Coase’s words, “in place of the complicated market structure with exchange transactions is substituted the entrepreneur-coordinator, who directs production.”17 Reductions of costs follow, as “by forming an organisation and allowing some authority (an ‘entrepreneur’) to direct the resources, certain marketing costs are saved.”18 Coase thus defines the “firm” as “the system of relationships which comes into existence when the direction of resources is dependent on an entrepreneur.”19 On the contrary, this kind of efficiency is not found in the market, where free economic agents compete under emergent orders. One can thus define the boundary between the firm and the market: where control stops, the firm’s perimeter stops.

Coase particularly emphasized the firm’s ability to deal with contingencies during the performance of a contract. While firms manage long-term relationships, the market mainly permits short-term contracts based on the price mechanism.20 Thus, Coase argued, “it seems improbable that a firm would emerge without the existence of uncertainty”21 in the market. This assumption is based on the theory of incomplete contracts, according to which the contracting parties cannot anticipate all the situations that may arise during their contract’s performance.22 The firm helps in creating a way to settle disputes, which as a result reduces all the upfront costs related to the management of potential conflicts. Here again, Coase put the firm’s ability to exercise control at the center of his demonstration. He was awarded the 1991 Nobel Prize in Economics for “his discovery and clarification of the significance of trans- action costs and property rights for the economy’s institutional structure and functioning.”23

2.1.2 Coase’s impact

Coase’s article put transaction costs at the center of modem economics, making them “the ultimate unit of microeconomic analysis.”24 Although Coase complained in 1988 that the concept was “largely absent from current economic theory,”25 it has transformed the perception of the firm from a pro- duction function into a governance structure.26

This transformation of economic thinking heavily influenced Oliver Williamson, among many others.27 He researched the optimal design of firms28 and helped to open the firm “black box” even further, putting the firm’s “control instruments”29 and the “means by which to infuse order”30 at the center of his analysis. Williamson was awarded the Nobel Prize in Economics in 2009.

Alternative theories to those of Coase have also developed. For instance, incentive theory portrays the firm as an incentive system that uses various instruments combining authority, ownership and compensation to ensure that all employees contribute their best to the firm’s interests.31 The theory holds that firms must adopt institutional arrangements that ensure survival by aligning these incentives. They are thus a nexus of written and unwritten contracts between different economic actors in which each contractual relationship is an agency relationship, whose optimal configuration must be discovered. According to the proponents of this theory, there is no difference in nature between firms and the market. Both are said to depend on contractual relationships that do not imply any exercise of authority or control. As I will explain, none of these alternative theories is currently being used in antitrust and competition law.32

2.2 A Pillar of Modern Antitrust

Although Coase’s theory was developed in the 1930s, modem antitrust is still constructed on the basis of this theory and has not adapted to changes in the nature of firms. Why is that? One may find a satisfying explanation in the fact that the nature of economic hierarchies has changed little to this day. Even the apparition of online platforms and aggregators has not changed the structure consisting of minimizing transaction costs thanks to vertical power. In a nutshell, Coase’s theory is here to stay. As a matter of fact, and as we are about to see, all modem antitrust case laws and regulations are based on the above-mentioned article, whether in the United States or Europe. More specifically, Coase’s theory helps point out where control is being exercised and, therefore, where the firm’s boundaries are. Antitrust and competition law applies to all entities defined accordingly.

2.2.1 The firm’s boundaries in antitrust and competition law

The Sherman Act in the United States and the TFEU in Europe are both the subject of extensive case law. The vast majority of the jurisprudence is not concerned with the question of the firm - that is, the person that is the subject of antitrust and competition law. The firm’s structure has transformed very little since the introduction of these two texts; it has become more complex, but has not changed in nature.33 For that reason, litigation generally involves other issues subject to further disagreement. Nevertheless, blockchain’s emergence forces us to reassess the definition of a “firm,” to analyze whether decentralized groups can be captured by antitrust law as currently conceived or if blockchains should be captured through another theory. In the United States, antitrust provisions apply to all “persons”34 affecting trade and commerce by unlawful restraints and monopolies.35 According to Section 7 of the Sherman Act:

the word ‘person,’ or ‘persons,’ wherever used in sections 1 to 7 of this title shall be deemed to include corporations and associations existing under or authorized by the laws of either the United States, the laws of any of the Territories, the laws of any State, or the laws of any foreign country.36

The text does not further define the term “person”; it simply establishes exemption regimes for which antitrust is not applicable - mainly concerning federal government agencies and instrumentalities.37

The case law is more informative. In *Copperweld*,38 the Supreme Court stressed that although “[n]othing in the literal meaning of [the Sherman Act] excludes coordinated conduct among officers or employees of the same company,”39 there is “general agreement that § 1 is not violated by the internally coordinated conduct of a corporation and one of its unincorporated divisions.” On that basis, the Court held that “there can be little doubt that the operations of a corporate enterprise organized into divisions must be judged as the conduct of a single actor,” therefore exempting these operations from Section 1 of the Sherman Act.

The Supreme Court was dealing with possible intra-group collusion for the first time with this decision.40 One can only guess what would have been its reasoning before Coase’s article (1937). The fact remains that *Copperweld* follows a Coasian logic:41 the firm uses vertical control to save transaction costs; antitrust law must recognize the fact and exempt from Section 1 of the Sherman Act all agreements between two legal entities bound by such a control relationship42 In the words of the Supreme Court:

The intra-enterprise conspiracy doctrine looks to the form of an enterprise’s structure and ignores the reality. Antitrust liability should not depend on whether a corporate subunit is organized as an unincorporated division or a wholly-owned subsidiary. A corporation has complete power to maintain a wholly-owned subsidiary in either form. The economic, legal, or other considerations that lead corporate management to choose one structure over the other are not relevant to whether the enterprise’s conduct seriously threatens competition.

In the end, “courts must examine whether the conduct in question deprives the marketplace of the independent sources of economic control that competition assumes” “when making a single-entity determination.”43 Only when “general corporate actions are guided or determined” by “separate corporate consciousnesses” can two entities be seen as two separate firms in antitrust law.44 One must make no mistake about it: only control makes the firm and defines its scope.45

In Europe, the theory of the firm as defined by Coase is also the basis of modern competition law.46 Article 1 of Protocol 22 to the European Economic Area Agreement defines the “firm” as “any entity carrying out activities of a commercial or economic nature,” but the concept is not properly delimited in the black letter of EU law. However, the case law defines “undertakings” as “every entity engaged in an economic activity, regardless of the legal status of the entity and the way in which it is financed.”47 The legal form of the entity offering the economic activity does not matter.48 In fact, as the CJEU made clear in Shell, “undertakings” are economic units rather than legal units.49 Here again, the concept of undertaking takes Coase’s path-breaking article as a starting point.50

That definition of the “firm” is still incomplete, as it does not define its boundaries. For instance, in Imperial Chemical Industries, the CJEU ruled that the degree to which it carried out “the instructions given” by a company was essential in analyzing the independence of a subsidiary; and that “where a subsidiary does not enjoy real autonomy in determining its course of action in the market,” the prohibitions set out in Article 101 of the TFEU were inapplicable.51 The CJEU further held in Akzo Nobel that “the actual exercise of decisive influence”52 defines firm limits in competition law; and that “it is sufficient for the Commission to prove that the subsidiary is wholly owned by the parent company to presume that the parent exercises a decisive influence over the commercial policy of the subsidiary.”53 In the end, a firm encompasses all the elements over which control is exercised, as in the United States.54 For instance, in Hydrotherm, the CJEU found that a natural person, a limited partnership and another undertaking made up a single economic unit when they were all controlled by the same natural person.55 That logic derives from Coase’s “The Nature of the Firm.”56

2.2.2 The firm as a pillar of antitrust and competition law

The definition of the firm’s boundaries helps in three fundamental steps of antitrust and competition law: (1) determining whether the law should apply; (2) assessing practices; and (3) and assigning liability. First, establishing the firm’s boundaries helps determine the extent to which antitrust and competition law applies. U.S. antitrust law provides several exemptions to different types of entities, which require both the identification of the firm and an understanding of its activities. European competition law applies only to undertakings that carry out an economic activity. Once again, it is then necessary to identify the firm’s boundaries to determine the activities carried out.

Second, establishing the firm’s boundaries is essential when agencies assess the legality of business practices.57 In terms of collusion, U.S. and European courts have recognized that two legal entities that are part of the same eco- nomic unit - that is, the same firm - cannot be held guilty of collusion, as one cannot agree with oneself.58 Antitrust prohibits several forms of cooperation outside the firm, while it always permits cooperation within the firm. The logic is similar in terms of monopolization and abuse of a dominant position. As a company cannot abuse its market power against itself, abuses of power are illegal only when they affect other firms. Above all, defining the boundaries of firms is essential to analyze market power (and thus whether Section 2 of the Sherman Act or Article 102 of the TFEU is applicable to a given case) and the ability to engage in anticompetitive practices. Control indeed confers the firm with the power to implement practices - including the ability to raise prices, which is often central in antitrust cases.

Finally, identifying the boundaries of firms is essential to assign liability.59 Liability for anticompetitive practices rests with the parent company that ultimately controls other entities if such control has been exercised.60 This logic stems from the classic distinction between ownership and control.61

It is safe to assume that antitrust law will capture the activities of blockchain participants at their individual level.62 For example, one could imagine that a miner is considered a company on his own; after all, miners are operating an economic activity. Nevertheless, analyzing whether the entire blockchain layer 1 could be deemed a firm for the purpose of antitrust law is essential if agencies are to understand and apprehend anticompetitive practices that are carried out beyond the simple framework of the individual. For example, suppose a blockchain is implementing practices to exclude another blockchain from the market. In that case, one will want to punish these practices rather than each individual action leading to the entire scheme. I will return to these practices in the coming chapters.

In other words, defining the firm’s boundaries is a necessary step in understanding competitive dynamics, in analyzing practices and eventually, in assigning antitrust liability to the blockchain when, as an entity, it seeks to achieve survival through anticompetitive ways. It is thus essential to carefully consider the elements that are taken into account when defining “firms” under antitrust law. I showed that in the United States, as in Europe, only one element matters: control. This reasoning is problematic when it comes to blockchain.

# 2AC

## Blockchain ADV

### AT Dollar ---2AC

#### Global blockchain’s inevitable---failing to lead ensures hostile alternatives that are worse for the dollar

Tal Elyashiv 21, Founder and Managing Partner at SPiCE VC, Founder and Board Member at Securitize, MBA from the University of British Columbia, BS in Math and Political Science from Bar-Ilan University, “A New Global Arms Race In Digital Finance Is Heating Up”, CNBC, 1/21/2021, https://www.cnbc.com/2021/01/21/op-ed-a-new-global-arms-race-in-digital-finance-is-heating-up.html

Today, we’re on the precipice of what could be the largest transformational period in global history. With the first Industrial Revolution, new technologies like assembly lines, factories and transportation fundamentally changed society. This time, instead of cogwheels doing the work, blockchain-based digitalization will continue to drive transactions. Specifically, this latest phase of progress has its sights set on a massive industry ripe for disruption: finance.

Digital finance and the monetary system is leveraging decentralized blockchain technology to modernize financial markets. Dominant players in these systems include the world’s biggest financial institutions and global central banks.

The rise of digital currencies and CBDCs

As tokenization is an inevitable trend, central bank digital currencies (CBDC) are surging in adoption, since they are simply one kind of a more generalized digital asset, albeit one that is bound to risk-free central bank money. The global rivalry in digital currencies is heating up as central banks from an increasingly wider swath of countries, including China, Hong Kong, Thailand, the EU, U.K., U.S., and Australia, explore potential use cases for tokenized money.

CBDC is the first place where we see top-down adoption of distributed ledger technology (DLT) from central banks and governments. The adoption of CBDCs will drive significant DLT ecosystem innovation and development that will impact financial organizations. The widespread adoption of DLT will extend beyond finance to other industry verticals like security, supply chains, healthcare, retail and ecommerce.

How institutional investors are buying into crypto via Anchorage

CBDCs will certainly make payments, settlement of deals and trading simpler, especially when it comes to global trade. It will also potentially change the role current institutions are playing regarding money and payments. CBDC implementation will also possibly make cross border payments simpler and much cheaper. One result of that will be the enablement of micropayments, allowing small businesses to be more competitive and eliminate the need for aggregators in order to make them economically viable, resulting in a different distribution of value.

Winners and losers are made from historic periods of societal shifts and advancements. The U.S. was obviously a dominant force during the first revolution. As the world embarks on a new transformational journey, who is driving it? The answer to this question is very complex and currently unclear, but there is an intense financial technology “arms race” brewing between the world’s superpowers for dominance in digital finance infrastructure and technology, spurring short-term competitive innovation with critical long-term implications.

“I believe that if America does not lead innovation in the digital currency and payments area, others will,” David Marcus, head of Diem, the cryptocurrency project founded out of Facebook, said in a statement to the U.S. Senate Committee on Banking, Housing and Urban Affairs.

Huw van Steenis of UBS said there will be a “three-horse race” around the future of money with private tokens and CBDCs developing in parallel with efforts to improve the current system. The implications of winning or losing the digital finance “arms race” are massive and far-reaching.

During the U.S. and USSR space race, NASA harnessed tremendous intellectual and technical capital to enable the moon landing and further space exploration, leading to a variety of spinoff inventions, from global positioning systems (GPS) to advances in flight technology to Velcro and even freeze-dried food. In the same way, blockchain-based digital finance technology is a means to the end of greater technological sophistication.

The three leaders in the digital currency arms race

More than 80% of the world’s central banks are exploring their own versions of digital currencies, but it’s China, the U.S. and the EU that have the resources, technology and infrastructure to determine the future of the digital economy. 2020 started with a major event within the financial world: the World Economic Forum in Davos, where the WEF released a toolkit for policymakers regarding the creation of CBDCs.

China

China is currently testing its digital yuan with a feature allowing people to send money to each other by simply touching their smartphones together. This particular effort is just one of many digital currency trials China is conducting across the country. These coordinated activities, in combination with their leadership in the crypto ecosystem (accounting for nearly 90% of trading volumes and hosting two-thirds of bitcoin mining operations), is giving China somewhat of an advantage.

Leveraging that first-mover advantage, China has ambitious plans to leverage U.S. innovation and its own digital currency to someday dominate other world currencies. As a purely aspirational endeavor, the jury is still out on whether they can actually achieve this goal.

Regardless, China is creating a significant advantage in this global race on CBDCs by investing in the technology and experimenting at a very fast pace. Even in the most isolated and underdeveloped areas, most people already use electronic forms of payment, like WeChat Pay, almost exclusively. We will continue to see advancement from China with regards to the digital yuan, where it’s currently enjoying a first-mover advantage over other digital currencies.

China has made the digital yuan a public priority, and it has an ambitious goal of competing with the U.S. dollar by creating a digital Asian alternative. China will be able to track and control the movement of money in and out of the country, which is much easier to do with a digital yuan. Given its political structure, China is able to move faster than the U.S. or Europe in implementing such changes.

Europe

Europe is in a strong position to create a CBDC, but unlike attempts by smaller, individual countries like Sweden, the size and scale of an EU digital currency would be sustainable long-term and could compete at scale. The European Central Bank is discussing launching a consideration phase for a digital euro this year and launching a digital euro is at least a five-year plan.

United States

The U.S. continues to lead in the innovation, regulation and implementation of blockchain-based digital securities, banking, payments, insurance, etc., but may not be as far along as others when it comes to CBDCs. Over the last decade, American innovators have built compelling innovations in blockchain, digital currency and cryptocurrency aimed at revolutionizing finance and creating new US tech superstars. And, as these technologies advance, they’re innovating industries beyond just finance, including retail, cybersecurity, supply chain management and so many more.

Tech leaders in the space like Securitize are paving the way for widespread adoption and access to liquidity by building the mechanisms for the industry to take hold. The benefits of CBDCs will propel the U.S. implementation of a digital dollar. The release of CBDC is not just a technical change, but it’s also the revamp of a financial system that is centuries old. US policymakers should continue to foster US leadership in technological financial innovation and ensure that the American people enjoy its benefits first.

“The United States usually wins when we unleash the power of our innovative, dynamic private sector, with the government setting the rules rather than building the products,” said Brian Brooks, former acting comptroller of the currency of the U.S. Treasury Department’s Office of the Comptroller of the Currency. “But either way, given the intense focus of other countries in this area, let me say that because of the important role of the US dollar, we need the United States to step forward on this field.”

The future of finance

What happens with CBDCs will have far-reaching implications on the future of digital finance, including cryptocurrency and digital securities. Much like the space race didn’t just put a man on the moon, but also catapulted the invention of important ancillary technologies, CBDC and DLT adoption will influence the forward-moving progress of every industry. There will be an exponential amount of innovations resulting from this digital finance arms race that we don’t even know about yet. The possibilities are endless and we’re just at the starting line.

Whoever leads this race and determines the outcome of its infrastructure and operation will most certainly gain a significant advantage and may have the possibility to spearhead many of the other innovations that come from this technology. The conversation of this tech competition between countries was even brought to the US Senate. China is far ahead in implementing real digital finance and currency programs as we speak, giving them a first-mover advantage in something as simple as experience.

The US and its regulatory bodies are still the gold standard and will ultimately set the pace and the rules. US-based innovators continue to roll out viable solutions, but which powerhouse will roll out the standard solutions first to control the space and our digital economic destiny?

#### Dollar’s resilient, including to crypto AND there’s no impact

Dr. Stephen Kirchner 19, Director of the International Economy Program at the United States Studies Centre at the University of Sydney, Senior Fellow at the Fraser Institute, PhD in Economics from the University of New South Wales, “The ‘Reserve Currency’ Myth: The US Dollar’s Current and Future Role in the World Economy”, United States Studies Centre, 11/11/2019, https://www.ussc.edu.au/analysis/the-reserve-currency-myth-the-us-dollars-current-and-future-role-in-the-world-economy

The US dollar remains the dominant currency for international trade and investment, foreign exchange market turnover and settlements, debt issuance and official foreign exchange reserves. The dominant role of the US dollar in the world economy reflects the unrivalled depth and liquidity of US dollar capital markets, backed by America’s high quality political and economic institutions.

Contrary to popular myth, the US dollar’s role owes very little to its status as a so-called "reserve currency". The fact that the US dollar makes up most of the world’s official foreign currency assets is a symptom, not a cause, of the US dollar’s dominant role. If foreign central banks were to hold less US dollar assets, it would make almost no difference to the US dollar exchange rate or interest rates.

Nor does the role of the US dollar depend on a "strong dollar" policy. So long as the US enjoys a floating exchange rate and an independent Federal Reserve continues to target domestic inflation, the US does not have a meaningful or effective dollar policy. While President Trump has shifted US official rhetoric by signalling a preference for a weaker exchange rate to boost US export competitiveness, this preference means little without backing from Federal Reserve policy. The US Treasury, with or without the support of the US Federal Reserve, could intervene in foreign exchange markets with a view to influencing the value of the exchange rate. However, such intervention would have little to no sustained effect on the US dollar exchange rate and would do little to change US export competitiveness. Such intervention would only serve to increase foreign exchange market volatility. For all the talk of "currency wars", exchange rates are difficult to weaponise.

The role of the US dollar also does not depend on its relative strength against other currencies. The US dollar has seen significant cyclical swings in value against other currencies, consistent with the role of a floating exchange rate in intermediating foreign and domestic economic shocks. Perennial predictions of the US dollar’s demise as the dominant international currency have not been borne out because they misunderstand the sources of the US dollar’s role or because they wrongly assume that a decline in the US dollar exchange rate is inconsistent with its role as the world’s dominant currency.

In principle, the US dollar’s role could be supplanted by other currencies. But the US dollar’s nearest potential are beset with problems. The euro is part of a dysfunctional monetary union that has impoverished some member economies, while enriching others, given rise to political and diplomatic tensions that are tearing the European Union apart. China’s RMB is part of a managed exchange rate regime and a system of capital controls and financial repression that is inconsistent with the RMB achieving international status. RMB-denominated assets suffer from poor quality governance, insecure property rights and a non-existent rule of law. Cryptocurrencies may challenge the role of fiat currencies, but are more likely to displace less dominant currencies before displacing the US dollar. The US dollar is likely to remain the principal benchmark against which cryptocurrencies are priced.

The US dollar typically strengthens at times of international economic and political stress, highlighting the relative strength of US political and economic institutions. This remains the case, even as President Trump has unleashed a chaotic trade war against the rest of the world. While there is some evidence that domestic political partisanship undermines the safe-haven appeal of the US dollar,52 the US dollar’s international role is unlikely to be significantly diminished by the Trump administration and could be reinforced, even if for perverse reasons. The policy uncertainty associated with President Trump’s trade war has led to a 12 per cent appreciation in the US dollar in real terms, exacerbating trade tensions.

### Circumvention---2AC

#### Courts will enforce the plan faithfully

Charles S. Dameron 16, Yale Law School, J.D. 2015. "Present at Antitrust’s Creation: Consumer Welfare in the Sherman Act’s State Statutory Forerunners." https://www.yalelawjournal.org/note/present-at-antitrusts-creation-consumer-welfare-in-the-sherman-acts-state-statutory-forerunners

Notwithstanding occasional invocations of the judiciary’s “common law” authority over the Sherman Act, federal courts have, since the Act’s earliest days, expended great energy attempting to divine the legislative purpose behind it.5If the Sherman Act were truly a blanket grant of common law-making authority to federal courts, they would hardly need to undertake such searching inquiries. The Supreme Court’s and lower courts’ close attention to the Sherman Act’s language and legislative history indicates that they have sought to abide by their constitutional role as interpreters of federal statutes.6

It is therefore more precise to say that the judiciary enjoys an especially wide authority to fill statutory gaps when interpreting the Sherman Act due to the Act’s ambiguous language, its constancy over time, and the fact—peculiar in light of many modern regulatory regimes—that Congress did not assign rulemaking authority to an administrative agency. These traits do not imply that federal courts may pursue whatever antitrust policy they find most desirable or wise; courts are obliged to follow the statute’s contours to the extent that they can perceive those contours.7

## FTC ADV

### FTC Trade-Off --2AC

#### It makes all antitrust enforcement far more taxing AND forces an agency ramp up

Dr. Thibault Schrepel 21, PhD in Antitrust Law from Université Paris-Saclay, LLM in International Law and Legal Studies from the Brooklyn Law School, Associate Professor of Law at VU Amsterdam University, Faculty Affiliate and Creator and Director of the Computational Antitrust Project at the Stanford University CodeX Center, Blockchain + Antitrust: The Decentralization Formula, p. 179-180

The second element concerns the technical difficulties created by blockchain, as it will complexify the work of antitrust agencies. First, blockchain protects users’ identities. That is all the more so with public blockchains, where there is no need for the creator of a blockchain to approve users. Second, the transactions recorded on the blockchain are encoded and cannot be decrypted by anyone other than the parties to a transaction. This encryption also protects colluders by preventing agencies from tracing the history of their collusion. Third, even if users’ identity and purpose of their transactions were known, the deletion of the data contained therein by agencies would remain quite challenging (to say the least).73 In this respect, perhaps the exit of companies with the automatic destruction of information by smart contracts would be preferable to a leniency application with no subsequent possibility of eliminating the collusive agreement, or at least, the information illegally published.

The third element is linked to the fact that, besides its technical characteristics, blockchain enables colluders to manage the risk of detection. In turn, this should reduce the number of leniency applications. Most of these procedures are indeed started by colluders who fear being discovered. Technology helps in that regard. This is all the more true with private blockchains, as they can be set up so that only specific users can access the entire blockchain. This will limit their ability to hand over incriminating information to antitrust agencies. As a result, when choosing between leniency and an exit through smart con- tract,74 there is every reason to believe that blockchain would, at least partially, overshadow leniency applications.

How worrying is all this? At first sight, the expected decrease in the number of leniency applications may seem problematic, as antitrust agencies rely heavily on them to detect collusive agreements.75 According to the Organisation for Economic Co-operation and Development (OECD), the per- centage of cartel cases detected through leniency applications is reported in the survey to range between 45 and 55 percent for countries such as Canada, Chile, Germany, Korea and New Zealand, and over 85 percent for the European Union.76 In the United States, more than 90 percent of the penalties imposed by the DOJ in recent years are linked to investigations assisted by leniency applicants.77 This report shows a reactive policy by antitrust agencies. It also signals to companies that a well-designed collusive agreement that frames and rectifies disagreements has a good chance of (extended) survival.78 By undermining leniency programs’ effectiveness, blockchain will force competition agencies to become proactive again, failing which companies will have a growing sense of impunity from antitrust and competition law. Only a strengthening of proactive detection will increase the risk of punishment and force companies to seek leniency again.79

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#### That saves resources through deterrence

Rebecca Slaughter 20, JD from Yale Law School, BA in Anthropology from Yale University, “Antitrust at a Precipice,” GRC, 11/17/2020, https://tinyurl.com/yckdf62n

On top of that. I think the FTC’s win rate in court is a result of jurisprudence that is so permissive that it incentivizes companies to take a chance by proposing anticompetitive mergers or engaging in anticompetitive conduct. We are forced to file too many cases against mergers and conduct that should never have gotten out of the boardroom because firms are willing to take a chance at engaging in anticompetitive or monopolistic conduct or proposing mergers that are so clearly anticompetitive.

We spend far too many of our enforcement dollars on mergers that are clearly illegal. For example, this past summer, our staff litigated and won a merger challenge in a clear merger-to-monopoly of coal producers in the Southern Powder River Basin.15 Earlier this year, the FTC challenged the acquisition by Illumina. a monopolist, of PacBio. one of the only other firms capable of competing to make next-generation DNA sequencing systems.16 We also had to litigate all the way through trial and appeal a clear merger to monopoly of two healthcare providers in North Dakota.17 These mergers are only a few of the many data points that suggest a breakdown in the deterrent effect of antitrust enforcement.

Firms may also calculate that they have little to lose by engaging in anticompetitive conduct. These cases are critical, but they tend to be fewer and farther between, more time-consuming, and very fact-specific: sporadic enforcement may limit the deterrent effect. The one exception to this may be the Commission's decades of effort devoted to stopping anticompetitive pay-for-delay settlement agreements.18 But, even in that area, it took a very long time get from the early challenges to a resolution. Knowing that, some firms may still determine it is worth the risk.

Let me be clear: I am extraordinarily proud of the work the FTC has done to bring a record-breaking number of cases this past year. Our staff has been working non-stop, night and day, throughout the pandemic, conducting investigations and litigating both merger and conduct cases. I cannot give them enough credit for the way they have adapted to the circumstances and continued to focus on the work in front of them, even as many of them are juggling family and other challenges at the same time.

It is up the leadership of the agency to push forward and challenge underlying assumptions. I also think that where we are today, with this breakdown in deterrence, is the result of 40 years of courts' narrowing case law and periods of time where there the antitrust agencies intentionally took a hands-off approach to market concentration and market power.

#### Funding is normal means AND boosts are coming

Dylan Byers 21, Senior Media Reporter for NBC News; Internally Citing George Washington University Professor and Former FTC Chair William Kovacic; “Is Facebook Untouchable? It's Complicated,” NBC News, 7-1-2021, https://www.nbcnews.com/tech/tech-news/facebook-untouchable-complicated-rcna1323)

The House Judiciary Committee recently advanced six bills that would bolster the government's ability to regulate Big Tech. They range from simple budgeting measures — one would give more funding to the FTC and the Department of Justice for their antitrust enforcement efforts — to profound reforms — one that would stop platform companies from preferencing their products over those of their competitors and another that would make it illegal for companies to eliminate competitors through acquisitions.

This legislative package faces an arduous road ahead. House Majority Leader Steny Hoyer, who sets the House floor schedule, has said none of the six bills are ready for a vote, which suggests they don't have broad bipartisan support. If and when they do make it through the House, they face an even harder battle in the Senate.

"It's hard to imagine that the larger legislative package is accomplished this year," Kovacic said, though he predicted a few of the less-threatening bills — budgeting, for example — are likely to pass on their own.

"The funding for the FTC and DOJ antitrust divisions, it's nearly 100 percent likely that Congress will pass that law," he said. He said another bill, which would block the tech firms from moving court hearings to more favorable states, was also likely to pass.

### AT: Algorithmic Bias [Emory]---2AC

#### The squo solves bias AND backlash sparks correction.

Lee Rainie 17, Director of internet and technology research at Pew Research Center, quoting various leading AI experts, Janna Anderson, Theme 2: Good things lie ahead in Code-Dependent: Pros and Cons of the Algorithm Age, Pew Research Center, 2017, <https://www.pewresearch.org/internet/2017/02/08/theme-2-good-things-lie-ahead/>

Code processes will be refined and improved; ethical issues are being worked out

DAVID KARGER

David Karger, a professor of computer science at MIT, said, “Algorithms are just the latest tools to generate fear as we consider their potential misuse, like the power loom (put manual laborers out of jobs), the car (puts kids beyond the supervision of their parents), and the television (same fears as today’s internet). In all these cases there were downsides but the upsides were greater. The question of algorithmic fairness and discrimination is an important one but it is already being considered. If we want algorithms that don’t discriminate, we will be able to design algorithms that do not discriminate. Of course, there are ethical questions: If we have an algorithm that can very accurately predict whether someone will benefit from a certain expensive medical treatment, is it fair to withhold the treatment from people the algorithm thinks it won’t help? But the issue here is not with the algorithm but with our specification of our ethical principles.”

Respondents predict the development of “ethical machines” and “iteratively improved” code that will diminish the negatives.

Lee McKnight, an associate professor at Syracuse University’s School of Information Studies, wrote, “Algorithms coded in smart service systems will have many positive, life-saving and job-creating impacts in the next decade. Social machines will become much better at understanding your needs, and attempting to help you meet them. Ethical machines – such as drones – will know to sense and avoid collisions with other drones, planes, birds or people, recognize restricted air space, and respect privacy law. Algorithmically driven vehicles will similarly learn to better avoid each other. Health care smart-service systems will be driven by algorithms to recognize human and machine errors and omissions, improving care and lowering costs.”

Jon Lebkowsky, CEO of Polycot Associates, wrote, “I’m personally committed to agile process, through which code is iteratively improved based on practice and feedback. Algorithms can evolve through agile process. So while there may be negative effects from some of the high-impact algorithms we develop, my hope and expectation is that those algorithms will be refined to diminish the negative and enhance the positive impact.”

Edward Friedman, emeritus professor of technology management at the Stevens Institute of Technology, expects more algorithms will be established to evaluate algorithms, writing, “As more algorithms enter the interactive digital world, there will be an increase of Yelp-type evaluation sites that guide users in their most constructive use.”

Ed Dodds, a digital strategist, wrote, “Algorithms will force persons to be more reflective about their own personal ontologies, fixed taxonomies, etc., regarding how they organize their own digital assets or bookmark the assets of others. AI will extrapolate. Users will then be able to run thought experiments such as ‘OK, show the opposite of those assumptions’ and such in natural-language queries. A freemium model will allow whether or not inputting a user’s own preferred filters will be of enough value.”

An anonymous chief scientist observed, “Short-term, the negatives will outweigh the positives, but as we learn and go through various experiences, the balance will eventually go positive. We always need algorithms to be tweakable by humans according to context, creating an environment of IA (intelligent assistants) instead of AI (artificial intelligence).”

Another anonymous respondent agreed, writing, “Algorithms will be improved as a reactive response. So negative results of using them will be complained about loudly at first, word-workers will work on them and identify the language that is at issue, and fine-tune them. At some point it will be 50-50. New ones will always have to be fine-tuned, and it will be the complaining that helps us fine-tune them.”

‘Algorithms don’t have to be perfect; they just have to be better than people’

Some respondents who predicted a mostly positive future said algorithms are unfairly criticized, noting they outperform human capabilities, accomplish great feats and can always be improved.

## OFF

### T---Scope---2AC

#### ‘Core’ antitrust are the big 3

Michael A. Rataj 21, PC, Law Degree from the Detroit College of Law, “Consequences for Breaking Antitrust Laws”, 5/12/2021, https://www.michaelrataj.com/blog/2021/05/consequences-for-breaking-antitrust-laws/

The core antitrust laws are…

The three core antitrust laws are the Sherman Act, the Federal Trade Commission Act and the Clayton Act. The Sherman Act primarily prohibits unreasonable restraint of trade and monopolization. Those who are in violation of the Sherman Act may face hefty fines, up to $100 million, and up to 10 years behind bars.

The FTC Act prohibits unfair practices or acts and unfair approaches to harming competition. Only the FTC can file cases under this act. The Clayton Act is a catch-all that covers every practice not covered by the Sherman and FTC Acts. Then consequences for violations of both of these acts are usually civil in nature.

#### They’ve read Arthur backwards---new rationale is NOT core.

Thomas C. Arthur 9, L.Q.C. Lamar Professor, Emory University School of Law, “The Core of Antitrust and the Slow Death of Dr. Miles,” 2009, 62 SMU L. Rev. 437, <https://scholar.smu.edu/cgi/viewcontent.cgi?article=1359&context=smulr>

Alternatively, the Court could discover a new rationale for prohibiting simple RPM, which might impel it to clear up the confusion by closing the Colgate loophole. As described below,212 the Justice Department and Warren Court came up with two in the 1960s, dealer autonomy and "spurious product differentiation," and the Colgate and consignment loopholes were closed. But as we shall see, neither rationale was part of the core of antitrust and their pursuit imposed substantial costs to productive efficiency, which later Courts and enforcers have proved unwilling to pay.

#### ‘Scope’ is authority

William R. Johnson 89, Judge on the New Hampshire Supreme Court, Appeal of Rehabilitation Assocs., 131 N.H. 560, 565-566, 556 A.2d 1183, 1187, 1989 N.H. LEXIS 22, \*11-13 (N.H. April 7, 1989), 4/7/1989, Lexis

The board, however, refused to approve the change in site from Allenstown to Concord without first having an opportunity to review the final plan, because of its belief that such a change could constitute a change in scope. The board was particularly concerned that the change in site might affect various financial variables. Although the administrative interpretation of a statute is entitled to deference, it is not ordinarily controlling. N.H. Dept. of Rev. Administration v. Public Emp. Lab. Rel. Bd., 117 N.H. 976, 977, 380 A.2d 1085, 1086 (1977). With regard to CONS, the board was given the authority by statute to determine what information must be included in an initial application; the statute, however, expressly [\*\*\*12] designated when an applicant who has submitted a completed application or a holder of a CON had to go back to the board for approval. The interpretation of the word "scope" to some extent defines the board's authority. The board's interpretation of the "scope" of the project to include a change in the site without a [\*566] change in the service area, or a change in a financial variable without a substantial change in the total expected capital expenditure, does not comport with the ordinary meaning of that term, and serves to expand the board's authority beyond its statutory limits. See Social Security Board v. Nierotko, 327 U.S. 358, 369 (1946); see also Hamby v. Adams, 117 N.H. 606, 609, 376 A.2d 519, 521 (1977) (even longstanding administrative interpretation of statute not controlling if contrary to express statutory language). We hold that a change in the site of a facility without a change in a factor affecting the "scope" of the project, as defined here, does not require prior board approval. Our decision is not intended to prevent the board from requiring the filing of a "change of scope" in accordance with RSA 151-C:12, [\*\*\*13] IV-a (Supp. 1988), effective June 1988, if any documents or materials submitted to it indicate that the change in site has changed the "location", "nature" or "scope" of the project as those terms must be understood.

#### ‘Expanding’ increases the area covered

Cesar A. Noble 17, Judge on the Connecticut Superior Court, Hartford Judicial District, 777 Residential, LLC v. Metro. Dist. Comm'n, 2017 Conn. Super. LEXIS 4178, \*4-5 (Conn. Super. Ct. August 1, 2017), 8/1/2017, Lexis

The defendant relies upon §7-249 as authority for the supplemental assessment. The statute provides that "[b]enefits to buildings or structures constructed or expanded after the initial assessment may be assessed as if the new or expanded buildings or structures had existed at the time of the initial assessment." The parties dispute whether the conversion of the property constitutes a construction or expansion of buildings or structures granting authority to the defendant to levy a supplemental assessment. The plaintiff argues that because the conversion did not constitute an expansion, that is, an increase in the volume or physical area of a building the defendant had no authority under §7-249 for the supplemental assessment. 5 In the view of the plaintiff it is significant that the conversion did not increase the physical footprint or interior square footage of the property in any way including by a vertical [\*5] enlargement. Absent such an increase, asserts the plaintiff, there can be no construction or expansion of any building or structure. The defendant assert that the construction of the 285 new residential units constitute new structures within the plain meaning of §7-249. The court agrees with the defendant.

[FOOTNOTE]

5 The plaintiff relies upon the definition of the word "expand" found in Merriam-Webster's Collegiate Dictionary (10th ed. 2002) of "to open up; to increase the extent, number, volume, or scope of."

### T---Prohibit---2AC

#### ‘Prohibition’ is injunction. That can happen after review.

Sarah E. Light 19, Assistant Professor of Legal Studies and Business Ethics at the The Wharton School at the University of Pennsylvania, “The Law of the Corporation as Environmental Law”, Stanford Law Review, 71 Stan. L. Rev. 137, Lexis

Section 1 of the Sherman Act prohibits "every contract, combination in the form of trust or otherwise, or conspiracy, in restraint of trade or commerce." 159 There are certain kinds of actions that are per se illegal under the antitrust laws, rendering antitrust law an absolute bar. 160 Such actions include price fixing, horizontal boycotts, and output limitations. 161 Courts apply the per se rule when firms aim to "disadvantage competitors by "either directly denying or persuading or coercing suppliers or customers to deny relationships the competitors need in the competitive struggle.'" 162 In the per se unreasonableness context, the plaintiff need not show anticompetitive effect, as harm to competition is presumed. 163

Before the enactment of the Clean Air Act, the federal government invoked antitrust law to end a collusive agreement among major automakers and their industry association to keep pollution control technology from reaching the California market. By 1952, authorities addressing air pollution in Los Angeles County had accepted scientific findings that motor vehicle emissions were the major source of the smog that blanketed the Los Angeles basin. 164 Local officials began to reach out to the major automobile [\*173] manufacturers about research on emissions-control technology. 165 In 1953, the Automobile Manufacturers' Association (AMA), an industry trade group, began a campaign to study the issue and committed to funding research. 166 In 1955, several automobile manufacturers, including the four major manufacturers - General Motors, Ford, Chrysler, and American Motors - entered into a formal cross-licensing agreement to share technological information and data on the development of emission-control technology, 167 an action that later became the subject of antitrust litigation. 168 They announced their decision publicly, garnering some praise for addressing the smog problem. 169

In 1960, California passed the California Motor Vehicle Pollution Control Act. 170 The Act mandated that manufacturers of new cars install emissions-control devices; however, the mandate was only triggered once such devices had been certified by the newly created Motor Vehicle Pollution Control Board. 171 By 1964, the Board had certified four emissions-control devices as meeting the state's standards, triggering the mandate under the Act. 172 Independent firms, rather than the major automakers, had developed these devices. 173 Shortly after the state certified these devices, the major automakers announced that they, too, had developed their own emissions-control technology, 174 arguably so that they would not be required to license technology from other firms. This sequence of events led some officials in California to conclude that the major automakers had conspired to delay making their own technologies publicly available. 175 After Los Angeles County officials asked the U.S. Attorney General to investigate possible collusion, a grand jury was convened. 176

Although the Department of Justice did not file criminal charges, in January 1969 it filed a civil antitrust suit against the AMA and the four major [\*174] automakers, alleging that the defendants had conspired among themselves and with smaller motor vehicle manufacturers "to eliminate competition in the research, development, manufacture and installation of motor vehicle air pollution control equipment, and in the purchase from others of patents and patent rights, covering such equipment," in violation of section 1 of the Sherman Act. 177 In response to the complaint, the defendants argued that their cooperation had actually accelerated the development of emissions-control devices and noted that collaboration was required to ensure that all manufacturers would be able to comply with the increasingly stringent standards. 178 After the lawsuit was filed, a partner in the law firm representing the AMA penned an article 179 explaining that individual consumers had been "unwilling to spend the additional small amount" necessary to purchase vehicles equipped with emissions-reducing devices. 180 Thus:

So far as the installation of devices was concerned, therefore, the manufacturers had a substantial and legitimate interest in cooperating. No company wanted to incur a cost disadvantage, either in terms of an increase in sales price or an adverse effect on vehicle driveability, without some assurance that all manufacturers were incurring similar disadvantages in the marketplace. 181

Arguably, this was as much a problem of the interaction between corporate law and antitrust law in competitive markets as it was one of antitrust law alone. If firms had a broader mandate beyond profit maximization, including to contribute to the public interest, perhaps they would have been more willing to incur a short-term cost disadvantage, even in a competitive market, rather than enter into an agreement to limit competition.

The parties resolved the suit by entering into a consent decree, which required the defendants not to conspire to delay the development of emissions-control devices and to make available without royalties both patent licenses and data on the emissions-control devices they had developed. 182 However, the decree did not require the defendants to admit liability or pay monetary penalties or damages for environmental harm; nor did it require the [\*175] retrofitting of vehicles. 183 Despite the lack of damages or penalties, in this case antitrust law served as a mandate to promote environmental goals, preventing collusion in the market when firms feared that developing an environmental product would put them at a competitive disadvantage.

A second, more recent example of antitrust law serving as an environmental mandate comes from the European Union, not the United States, but the example offers a similar lesson about the potential confluence, rather than conflict, between antitrust principles and environmental goals. In 2011, the European Commission fined two consumer products firms, Unilever and Procter & Gamble, more than 300 million euros combined for entering into an agreement to maintain prices for laundry detergent while the firms switched to selling a more concentrated, environmentally preferable formulation. 184 The firms switched to the more environmentally friendly formulation as a result of their participation in a voluntary industry initiative called the "Code of Good Environmental Practice for Household Laundry Detergents," 185 a classic example of private environmental governance. The voluntary initiative included reducing the amount of detergent needed for each load of laundry, as well as overall product weight and packaging. 186 The industry initiative appropriately did not include any commitments regarding price fixing. 187

However, the firms privately "agreed to keep the price unchanged" when the "products were "compacted'" in a way that might appear to a consumer that he would be able to wash fewer loads of laundry than the compacted product was capable of cleaning. 188 In addition, they engaged in other forms of price collusion, including "restricting their promotional activity" and "deciding not to pass the benefit of cost savings (reduced raw materials, packaging and transport costs) on to consumers." 189 The firms further agreed on direct price [\*176] increases and "exchanged sensitive information on prices and trading conditions, thereby facilitating the various forms of price collusion." 190

In this case, just as in the case of the automakers, antitrust law enforcement served as an environmentally positive mandate. Relying on antitrust law, the European Commission fined these firms for seeking to avoid passing cost savings from an environmentally beneficial product onto consumers. The motivations of the consumer products firms mirrored those of the automakers: In both cases, the firms feared that being the first to market an environmentally preferable product would reduce profits or create a competitive disadvantage vis-a-vis other firms in the marketplace. This example likewise suggests the importance of viewing antitrust law in connection with other fields, such as corporate law. Firms driven by a profit motive experience that motive in the context of a competitive environment. 191

B. Prohibitions and Disincentives: The Antitrust Per Se Rule and the Rule of Reason

While antitrust law can serve as an environmental mandate by prohibiting collusive behavior that keeps environmentally preferable goods from the market, there is also conflict between antitrust law's goals of promoting competition and environmental law's goals of promoting [\*177] conservation. 192 Because antitrust law's per se rule and rule of reason operate on a somewhat fluid continuum, 193 this Subpart discusses the two doctrines together. The per se rule operates as a prohibition, whereas the rule of reason operates as both a prohibition and a disincentive.

As noted above, antitrust law generally prohibits certain types of market activity - price fixing, horizontal boycotts, and output limitations - as illegal per se, and harm to competition is presumed. 194 For example, if an industry association declines to award a seal of approval necessary for a product's sale without any good faith attempt to test the product's performance, but rather simply because that product is manufactured by a competitor, such an action would be illegal per se. 195 Under this Article's framework, a per se violation is thus a prohibition.

The more fact-intensive inquiry under the rule of reason tests "whether the restraint imposed is such as merely regulates and perhaps thereby promotes competition or whether it is such as may suppress or even destroy competition." 196 While this extremely broad statement might suggest that any fact is relevant to the inquiry, the salient facts under the rule of reason are "those that tend to establish whether a restraint increases or decreases output, or decreases or increases prices." 197 If an anticompetitive effect is found, then the action is illegal and the rule of reason operates, like the per se rule, as a prohibition. 198 The rule of reason can also operate as a disincentive, even if no [\*178] court finds an anticompetitive effect, as uncertainty and litigation risk may discourage firms from undertaking legally permissible, environmentally positive industry collaborations. 199

#### ‘Practices’ can be singular

Justice Clinton 82, Supreme Court of Nebraska, Justice. Opinion in MID-SOUTH, ETC. v. Platte Valley Livestock, 315 NW 2d 229 - Neb: Supreme Court 1982

Most words, including the word "practice," encompass more than one meaning, and the particular meaning intended must be determined from the context in which it is employed. Only two of the multiple meanings of the word practice, as found in the dictionary, can possibly apply in the context of the statute. In Webster's Third New International Dictionary, Unabridged (1968), one meaning is "to make use of: use, employ." Another meaning is "to do something habitually," or "repeated or customary action." 233\*233 The words of the statute, "and every unjust, unreasonable, or discriminatory regulation or practice is prohibited and declared to be unlawful," § 208(a), do not suggest that the word practice includes only that which is done habitually or repetitively by the particular stockyard or marketing agency. (Emphasis supplied.) Rather, as we will later attempt to demonstrate from an analysis of the cases upon which the parties rely, repetition may be important only in determining whether a particular act is an unjust or unreasonable practice included within the evils which the act was intended to cure.

#### Coherence---it’s impossible to apply to ‘anticompetitive’ conduct

Donald L. Beschle 87, Associate Professor of Law at The John Marshall School of Law, B.A. from Fordham University, J.D. from the New York University School of Law, LL.M. from Temple University School of Law, “"What, Never? Well, Hardly Ever": Strict Antitrust Scrutiny as an Alternative to Per Se Antitrust Illegality”, Hastings Law Journal, March 1987, 38 Hastings L.J. 471, Lexis

This Article argues that the defenders of per se analysis have assigned themselves an impossible task. Arguing that types of activity can [\*476] be identified as invariably anticompetitive is futile; counterexamples can almost always be put forward. Consequently, defenders of per se categorization are reduced to one of two unattractive alternatives. First, they can concede that per se categories may in some instances prohibit procompetitive activity, but argue that the overall benefits of per se categorization justify the result. Such an argument is unsatisfying because it explicitly sacrifices particular blameless defendants in order to search for an increase in general welfare. Second, per se defenders can narrow their categories to eliminate procompetitive counterexamples. This strategy, however, threatens to destroy those categories entirely. And if most of the once-condemned activity is returned to the realm of the rule of reason, the insight that certain types of behavior are particularly dangerous is lost.

### Regulation CP---2AC

#### Ex ante regulations are too rigid and confrontational---antitrust is the sweet spot

Dr. Thibault Schrepel 21, PhD in Antitrust Law from Université Paris-Saclay, LLM in International Law and Legal Studies from the Brooklyn Law School, Associate Professor of Law at VU Amsterdam University, Faculty Affiliate and Creator and Director of the Computational Antitrust Project at the Stanford University CodeX Center, Blockchain + Antitrust: The Decentralization Formula, p. 240-241

3.2 Law + Code

3.2.1 Why together?

We are facing a conundrum. On the one hand, blockchain architecture requires us to find ways to prohibit illegal behaviors (and only those). On the other hand, confrontational law may hamper the technology and therefore reduce the common good or stay ineffective. It is crucial that we find a way around this conundrum. Blockchain code reveals, probably more than ever, the need for collaboration between law and technology: between policymakers, regulators and blockchain communities. This may spark a pivotal moment in legal history, forcing the creation of a new paradigm that leads to the emergence of hitherto unexplored synergies.29

If they work together, these two communities can put in place mechanisms to stop and punish anticompetitive practices once committed by creating a way for legal enforcement instead of trying to prevent all illegal practices from happening in the first place.30 That requires us to find a way for blockchain communities, alongside the regulator, to take practical actions when necessary and give them incentives to do so.

The code that underlies blockchain ecosystems is an ideal candidate to achieve this aim. Code is the language of technology and the principal determinant of behavior within a digital ecosystem. The maxim “code is law” describes that reality.31 As I have explained, blockchain’s architecture creates trust between participants. It is the same architecture that can build “too much trust,” leading to illegal practices because it creates (a sentiment of) impunity from the law. The occurrence of these practices therefore implies that one must adapt the architecture. If policymakers and regulators want the help of blockchain communities, they must translate the law into code so they can implement it and monitor its application.

This is the “law is code” ex-post approach I am arguing for,32 which I distinguish from other “law is code” ex-ante solutions that lead to the prohibition of practices before they even occur or automatic enforcement by code.33 In practice, ex-ante solutions suffer from the rigidity of code language and, above all, from our cognitive and imaginative limits.34 [FOOTNOTE] 34 If only because unexpected elements cannot be computed in advance, see Nassim Nicholas Taleb, The Black Swan: The Impact of the Highly Improbable (Penguin Books, 2010): 1-10 (explaining that inductive reasoning does not allow us to tackle never-before-seen events - the “Black Swans”). [END FOOTNOTE] Instead, the “law is code” ex-post approach I am offering relies on, and allows, other constraints (law, market, norms) to play a part in deterring most illegal practices; and, when implemented, creates a gateway for legal enforcement.

#### Perm---do the CP. It’s an example of the plan

Christopher L Sagers 15, James A. Thomas Distinguished Professor of Law and Faculty Director of the Cleveland-Marshall Solo Practice Incubator, Handbook on the Scope of Antitrust, “Introduction”, Chapter 1, p. 9

B. Sources of the Scope of Antitrust Law

The scope of federal antitrust law is governed by three separate authorities: (1) the U.S. Constitution, (2) the language of the antitrust statutes themselves, and (3) the language of other federal statutes and regulations.

#### Regs destroys clarity and gets circumvented

Steven Semeraro 2, Associate Dean & Associate Professor of Law at the Thomas Jefferson School of Law, “Regulating Information Platforms: The Convergence to Antitrust”, Telecommunications & High Technology Law, Volume 1, p. 178-180

IV. INDUSTRY-SPECIFIC REGULATION

Industry-specific regulation is believed to be needed where cooperation among competitors is necessary in order to maximize consumer welfare and where the public interest demands consideration of goals other than short-run consumer welfare. Antitrust is generally thought to be incapable of achieving these results because it rarely imposes duties to cooperate.121 As explained in Section I, however, antitrust has proven quite adept at requiring cooperation when it is really essential.122 And Sections II and III explained how antitrust may incorporate long-run consumer welfare and free speech values. There is thus no inherent need for specifically tailored legislative pronouncements when the general body of antitrust law is seen as flexible enough to reach all threats to consumer welfare.

Nevertheless, industry-specific consumer-welfare regulation arguably could provide substantial benefits by clearly identifying ex ante the rights and obligations of the competitors in a way that the general antitrust laws cannot. But that theoretical benefit is unlikely to be realized. Congress has demonstrated a singular inability, or at least an unwillingness, to draft regulatory legislation that is clear enough to obtain this benefit. As Justice Scalia wrote in his opinion for the Court in Iowa Utilities:

It would be a gross understatement to say that the 1996 [Telecommunications] Act is not a model of clarity. It is in many important respects a model of ambiguity or indeed even self contradiction. That is most unfortunate for a piece of legislation that profoundly affects a crucial segment of the economy worth tens of billions of dollars.123

In the absence of industry-specific regulation, litigation would often be necessary to resolve particular disputes. Given the inherent uncertainties in the antitrust laws, the notion that private parties could often settle differences in the shadow of those laws is unlikely.124 But industry specific regulation may be no better. The 1996 Telecommunications Act produced an explosion of litigation that remains unresolved five years later.125

Even when industry-specific regulation is interpreted in a way that provides clear rules to govern competitive behavior in information platform markets, the antitrust laws may remain a substantively better regulatory device. By their nature, industry- specific rules intended to enhance consumer welfare would necessarily require both (a) costly conduct to conform to the rules that in some situations would have no measurable consumer welfare benefit, and (b) permit some conduct that reduced consumer welfare but did not violate an ex ante rule.126 The problem would likely worsen over time as firms learned to walk the line along the rule, figuring out ways to comply with the letter of the law without providing the intended consumer welfare benefits. 127 For example, firms may learn the maximum permissible delays in the implementation of a rule-required behavior. All this is not to say that clear rules are never useful. But the resistance to using clear rules in antitrust doctrine generally should lead us to think twice before assuming that industry-specific legislation is a superior alternative to antitrust as a regulator of competition among information platforms.

#### It’ll get misapplied or watered down

Stacey L. Dogan 9, Professor of Law at the Northeastern University School of Law, and Mark A. Lemley, William H. Neukom Professor at Stanford Law School and Partner at Durie Tangri Lemley Roberts & Kent LLP, “Antitrust Law and Regulatory Gaming”, Texas Law Review, 87 Tex. L. Rev. 685, March 2009, Lexis

A. Relative Expertise

It is true, as the Court emphasized in Trinko and Credit Suisse, that antitrust courts are generalist courts, while regulatory agencies tend to specialize in a particular industry and its problems. That specialization should, all other things being equal, mean that expert regulators will do a better job than judges or juries of reaching the right result. But all other things are far from being equal. Antitrust courts have two significant advantages over regulatory agencies when it comes to promoting competition.

First, antitrust courts try to promote economic efficiency, while regulators often don't. For decades, efficiency has served as the sole criterion on which to judge antitrust rules. And courts have had more than a century to hone those rules to achieve that end. Without question, courts have made mistakes in the past. But there is a strong consensus among antitrust scholars that the wave of cases in the last thirty years has largely moved antitrust in the right direction, eliminating any significant risk that antitrust enforcement will do more harm than good. 53 Scholars may fight over whether a Chicago School or a post-Chicago School approach will achieve the right result in specific cases, 54 but for the most part they are tinkering at [\*697] the margins: the law and the scholarship have converged with respect to both the proper goals of antitrust and the general rules that will achieve those goals.

Regulation, by contrast, is frequently not even intended to achieve economic efficiency through competition. Occasionally that is due to a legislative judgment that competition is impossible, though the number of industries thought to be natural monopolies for which markets won't work has shrunk dramatically in the past four decades. 55 Industry regulation that excludes entry in order to promote a natural monopoly, as telephone regulation did before 1984, is not likely to achieve a competitive outcome.

More often, the goals of the legislators who establish regulatory agencies, or the goals of the regulators who run those agencies, are to achieve something other than competition. Indeed, many regulations are aimed precisely at eliminating competition, like the government-sponsored raisin cartel in Parker v. Brown or any of its modern descendants, the crop-support programs administered by the Department of Agriculture. It should be obvious that regulations intended to reduce competition will not promote it. But even if the regulation is not directly inimical to competition, competition is frequently irrelevant to, or at best a minor consideration in, a regulator's agenda. Regulators may care about the safety and efficacy of a drug, for example, and may only incidentally worry about whether there is competition in the sale of that drug. They may seek to reduce traffic deaths or air pollution by mandating the use of technology, regardless of the effect that mandate has on the price manufacturers can charge or the number of products manufacturers sell. These are laudable goals, to be sure, but they are not competition-related goals. An agency tasked with achieving these goals is likely to ignore threats to competition from the industry it regulates so long as those threats do not compromise its core mission. Thus, in Allied Tube & Conduit Corp. v. Indian Head, Inc., 56 the state and local governments that enacted into law the privately drafted code of the National Fire Protection Association were interested in stopping fires; doubtless they thought little if at all about the competitive effects of the code, even though it turned out that the code was drafted by interested private parties with the purpose of impeding competition rather than promoting fire safety. 57

Even those agencies whose mission expressly involves the consideration of competition issues will not necessarily make it their first among potentially [\*698] conflicting priorities. The SEC, for example, which as Justice Breyer pointed out is dedicated to improving market information and expressly considers competition among other issues in setting regulation, 58 is first and foremost an investor-protection and information-disclosure agency, not an agency that investigates and weeds out cartels or other anticompetitive practices. It is unlikely to devote much in the way of time or resources to such issues, because even if it is tasked to consider such issues, they do not reflect the agency's primary purpose. Similarly, even an agency like the Federal Communications Commission (FCC), which is directly focused on competitive conditions in a particular market, may naturally pay attention primarily to that market and give less if any attention to the effect its rules might have on competition in adjacent markets or on competition from unanticipated new businesses. This arguably explains the FCC's willingness to largely ignore the effects its decisions have on Internet communications; it is telecommunications, not the Internet, that the FCC is tasked to regulate. 59

Agencies that view competition as secondary - or view it through the lens of a particular industry's characteristics and interests - are less likely to create and enforce rules that optimally encourage competition. 60 At a bare minimum, therefore, the industry-specific expertise of an agency must be balanced against the competition-specific expertise of the specialist antitrust agencies: the Federal Trade Commission (FTC) and the Department of Justice's Antitrust Division.

#### Regulators are captured

Stacey L. Dogan 9, Professor of Law at the Northeastern University School of Law, and Mark A. Lemley, William H. Neukom Professor at Stanford Law School and Partner at Durie Tangri Lemley Roberts & Kent LLP, “Antitrust Law and Regulatory Gaming”, Texas Law Review, 87 Tex. L. Rev. 685, March 2009, Lexis

The problem with agencies is much greater than just their questionable mandates to promote competition, however. Agencies are famously subject to "capture" by the industries they are supposed to regulate. 61 That capture can take many different forms. Sometimes regulators or legislators are captured in the most venal sense - they are bribed or otherwise given personal benefits in exchange for voting a particular way. This seems to have been the case in Omni Outdoor Advertising, for example. Regulators who accept bribes (or politicians who accept campaign contributions in exchange for a particular vote) are not acting in the public interest but in their private interest - a private interest that necessarily aligns with the industry [\*699] participant doing the bribing. Even regulators who would never accept bribes may still seek to maximize not the public interest but their own power or the power of their agencies - a fact that industry can often use to its advantage.

Capture need not be so brazen, however. Even honest regulators and legislators can be captured through the mechanism of public choice theory. 62 Legislators who try to maximize their constituents' expressed preferences may still end up supporting legislation that benefits private firms at the expense of the public interest, because the private firms will frequently have a concentrated interest - and therefore show up to lobby on a particular issue - while the public is hard to organize, even around issues that may affect a great many people diffusely. Regulators are subject to the same effect. A notice-and-comment rulemaking is likely to produce more comments from people with a concentrated interest in the outcome and fewer comments from those with a more diffuse interest. Thus, regulators who try in good faith to determine what the public thinks of a particular regulation may still end up with a skewed view of the pros and cons. This may be particularly likely with competition issues. While the public as a whole has a strong interest in unfettered competition, any individual member of the public is unlikely to be affected much by a particular regulatory decision. And particularly where the industry as a whole colludes to seek regulatory intervention that benefits them, as in Ticor Title, there are unlikely to be competitors who can stand as proxy for the interests of the public.

### ADV CP ---2AC

#### Perm do both

#### ‘Government-run’ blockchain is impossible. There’s no uptake. The entire draw is operating without government permission.

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Not surprisingly, Brand is regularly on the side of blockchain communities or quoted by them. In November 2018, he took part in a conference organized in Prague by the Ethereum Foundation.20 The DIY culture he has helped to flourish is that of the blockchain communities which are developing infrastructures outside of government circuits. Brand wants every individual to access emancipating tools. Blockchain communities want to emancipate themselves from current transactional methods; this explains why they draw inspiration from Brand. In that sense, his influence is very much visible, even if it is only indirect (i.e., does not directly concern blockchain architectural choices). He contributed to the decentralized philosophy of Web 2.0; while blockchain communities want to implement this into Web 3.0.

1.2 The Cypherpunks are Not Coming to Get You

Satoshi Nakamoto first introduced blockchain in his article “Bitcoin: A Peer-to-Peer Electronic Cash System” published on October 31, 2008.21 It resulted from decades of research22 strongly dominated by a cyber-libertarian ideology, finding its roots in the Whole Earth Catalog.23 More specifically, blockchain can be traced back to the work of the cypherpunks: cyber-libertari- ans writing code.24

In the 1970s, for the first time, cryptographic methods became accessible to civilians.25 For example, Rivest, Shamir and Adleman showed how two persons could use public-private key encryption and digital signatures to ensure communication integrity.26 In 1982, David Chaum, an American com-puter scientist, published his thesis which he had written at the University of Berkeley. Entitled “Computer Systems Established, Maintained, and Trusted by Mutually Suspicious Groups,”27 it introduced a new protocol that harnessed cryptographic tools to protect private information.28

A year after, in 1983, Ithiel de Sola Pool - then a professor at Massachusetts Institute of Technology (MIT) - published a book entitled Technologies of Freedom,29 in which he analyzed the impact of several technologies on free speech and freedom of the press. The objective was clearly stated: technol- ogy and freedom go hand in hand. Two years later, David Chaum published “Security without Identification: Transaction Systems to Make Big Brother Obsolete,” an article in which he introduced anonymous digital cash.30 Here again, freedom was mainly intended as freedom from the government. In the same vein, the GNU Manifesto was introduced the same year, starting the Free Software Movement. It argued that: “[TJhere is no intrinsic right to intellectual property. The kinds of supposed intellectual property rights that the government recognizes were created by specific acts of legislation for specific purposes.”31 It was deeply libertarian.

A few years later, in 1988, Timothy May published “The Crypto Anarchist Manifesto” in which he called for further action.32 It read:

Computer technology is on the verge of providing the ability for individuals and groups to communicate and interact with each other in a totally anonymous manner. ... The methods are based upon public-key encryption, zero-knowledge interactive proof systems, and various software protocols for interaction, authentication, and verification. ... But only recently have computer networks and personal computers attained sufficient speed to make the ideas practically realizable.

... The State will of course try to slow or halt the spread of this technology, citing national security concerns, use of the technology by drug dealers and tax evaders, and fears of societal disintegration. Many of these concerns will be valid; crypto anarchy will allow national secrets to be trade freely and will allow illicit and stolen materials to be traded. An anonymous computerized market will even make possible abhorrent markets for assassinations and extortion. Various criminal and foreign elements will be active users of CryptoNet. But this will not halt the spread of crypto anarchy. ... Arise, you have nothing to lose but your barbed wire fences!

In his signature, Timothy May linked “Crypto Anarchy” to the “collapse of governments.” His manifesto would be quoted several thousand times. Two years later, in April 1990, the Federal Bureau of Investigation questioned John Perry Barlow (lyricist of the Grateful Dead) about stealing and distributing the code of Macintosh ROMs. He recounted his experience on The WELL (the newsletter created by Brand) and obtained financial support from John Gilmore and Steve Wozniak (Apple’s co-creator). The idea of the Electronic Frontier Foundation was born. And in July of the same year, Gilmore, Barlow and Mitch Kapor created the Electronic Frontier Foundation. They aimed to provide legal and financial support to people that were subjected to unfounded legal threats regarding internet civil liberties.

Then came Linux in 1991 as one of the first major concrete outputs accessible to the public. Linus Torvalds released the operating system’s kernel under a GNU General Public License. Linux was perfectly in line with the 1985 GNU Manifesto. And Phil Zimmerman’s encryption program, Pretty Good Privacy, was also made freely available in 1991. Things started to become more concrete. The following year, Eric Hughes, May and Gilmore formed a group and agreed to meet every month at Gilmore’s company premises in the San Francisco Bay Area. Jude Milhon, an American hacker also known as St. Jude, attended one of the first meetings.33 She described the group as being “cypherpunks,” derived from “cipher” and “cyberpunk.” Hughes reused the term in 1993 in his “Cypherpunk’s Manifesto.”34 It read:

Privacy is necessary for an open society in the electronic age. Privacy is not secrecy. A private matter is something one doesn’t want the whole world to know, but a secret matter is something one doesn’t want anybody to know. Privacy is the power to selectively reveal oneself to the world. ...

We cannot expect governments, corporations, or other large, faceless organizations to grant us privacy out of their beneficence. It is to their advantage to speak of us, and we should expect that they will speak. To try to prevent their speech is to fight against the realities of information. Information does not just want to be free, it longs to be free. Information expands to fill the available storage space. ...

We the Cypherpunks are dedicated to building anonymous systems. We are defending our privacy with cryptography, with anonymous mail forwarding systems, with digital signatures, and with electronic money. Cypherpunks write code. We know that someone has to write software to defend privacy, and since we can’t get privacy unless we all do, we’re going to write it. We publish our code so that our fellow Cypherpunks may practice and play with it. Our code is free for all to use, worldwide. We don’t much care if you don’t approve of the software we write. We know that software can’t be destroyed and that a widely dispersed system can’t be shut down.

Cypherpunks deplore regulations on cryptography, for encryption is fundamentally a private act. The act of encryption, in fact, removes information from the public realm. Even laws against cryptography reach only so far as a nation’s border and the arm of its violence. Cryptography will ineluctably spread over the whole globe, and with it the anonymous transactions systems that it makes possible.

Importantly, and perhaps more aggressively, Esther Dyson, George Gilder, George Key worth and Alvin Toffler published “A Magna Carta for the Knowledge Age” in 1994.35 The authors quoted the “libertarian icon” Ayn Rand 36 and pointed out that cyberspace:

spells the death of the central institutional paradigm of modern life, the bureaucratic organization. (Governments, including the American government, are the last great redoubt of bureaucratic power on the face of the planet, and for them the coming change will be profound and probably traumatic.)

#### ‘Government-run’ blockchain is mutable, so it’s fundamentally untrustworthy

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1.2 Immutability: It’s the Code, Again

1.2.1 Explanations

Blockchain is immutable because it is both decentralized and distributed. The decentralization of blockchain determines who controls it, while its distribution designates the location. The graph in Figure 2.1 is commonly used to represent these two concepts.

Shape, polygon

Description automatically generated

Blockchain is decentralized since no single user controls the information or data on the blockchain.31 The power to alter the blockchain is equally shared among all of its users; this is why it has no choke points. As a result, changing one copy of the ledger has no impact on the rest of the blockchain. Put simply, no single user retains the power to alter the information contained in other users’ copies. This inalterability applies to blockchain developers, courts and other forms of public intervention.32 It also means that the negative effects of one person’s reckless behavior are limited because only that person’s copy of the blockchain will be affected and thus invalidated.33

Blockchain is also distributed because its functioning mechanisms and data are located across many computers through the network. Contrary to centralized systems, where core developers maintain control over these elements, they are equally distributed between all the nodes in the network in the blockchain space. Blockchain thus creates trust by granting equal access to the full ledger.

The distribution of power is cemented by a set of procedures, called the protocol.34 Once the protocol is established, it is not possible to deviate from it unless decided by most users, who can then create a copy of the blockchain functioning with new rules. This is referred to as a “fork.” From the outset, it is important to note that forking does impair the immutability principle.35 The original (pre-forked) copy of a forked blockchain remains intact. For now, let me simply stress that blockchain reliance on a protocol is said to solve the “Byzantine Generals Problem,”36 according to which computer systems cannot reach consensus without relying on a central authority.37 In short, blockchain distribution eliminates the need to trust a single entity.

#### No blockchain agreement

Ethan Chen 21, J.D. from The University of Iowa College of Law, “Cryptocurrency as the Modern-Day Bretton Woods: A Comparative Analysis of Legal Approaches to Blockchain Technology”, Transnational Law and Contemporary Problems, 30 Transnat'l L. & Contemp. Probs. 289, Summer 2021, Lexis

Second, there exists a wide-ranging international response towards security concerns and trade barriers. Issues of interest include "trade barriers for cross-border data flows, international standards, privacy and security concerns, and regulatory implications." 48 There is a high level of disharmony among independent nations regarding the regulation and standards of blockchain technology and cryptocurrency law. 49 As such, cryptocurrencies must traverse an inconsistent global regulatory environment. 50 The regulatory disharmony between governments would pose difficulty in the creation of an international regulatory body. Most notably, differences in the regulatory frameworks of the United States and China pose significant hurdles for international harmonization. 51

Third, major regulatory concerns question whether cryptocurrencies are here to stay or whether they are a speculative bubble. Take, as a classic example, the tulip bulbs in 17th century Holland; they became extraordinarily valuable and then dramatically collapsed. 52Since then, there have been many more speculative bubbles such as the dot-com bubble near the end of the 20th century. 53 The fear that cryptocurrency may be another socio-economic phenomenon has led to stark differences in cryptocurrency regulation among international governments. 54 There is very little regulatory harmonization among countries and a quickly emerging patchwork of complex regulation. 55

#### The CP creates industry doubt and equivocation---that nukes development

Kimberley Rust 19, JD Candidate at the University of Sheffield Law School, “Block-chain Reaction: Why Development of Blockchain is at the Heart of the Legal Technology of Tomorrow”, Legal Information Management, 19 (2019), 3/1/2019, Lexis

The future of blockchain

In spite of the above, which suggests that blockchain does have a great capacity to change and advance legal technology, current developments have not been subject to a DLT-revolution. Why is this?

It would be foolish to claim there are no barriers to blockchain′s development, or that the technology is perfect. Logistically, energy consumption and a lack of technical knowledge impedes the evolution of DLT. Energy requirements have reached astonishing levels, with one academic suggesting that that bitcoin mining necessitates a comparable amount of energy to the whole of Ireland′s electricity consumption. 13 Not only does this affect the cost of blockchain-supported technology, but makes this technology fragile to fluctuations in energy prices, with nodes likely to be located in jurisdictions with favourable energy prices, eroding the concept of decentralisation. 14 The relative novelty of blockchain has also meant a general lack of expertise to develop technology specifically for the legal industry.

A lack of regulatory clarity is possibly the greatest barrier to blockchain′s development. 15 Conflicts between blockchain and privacy law, fears over cybersecurity and ambiguity of liability remain huge obstacles which fuel industry doubt and equivocality, prompting firms, legislators and developers to err on the side of caution and avoid investing in blockchain development.

#### The CP’s slow

Gerald Steinberg 1, Center for Strategic Studies, Jerusalem Post, 9/21/2001, Lexis

Instead of time-consuming negotiations and diplomatic coalition building, President Bush, as the leader of the world's only superpower needs to demonstrate his determination and power through clear action. This does not mean that long-standing allies such as NATO (including Turkey) and partners such as Israel, Japan, South Korea, Taiwan, India and even Russia and China should be ignored. Consultation and cooperation are important, but the US must also provide an unambiguous lead. Those states that are serious about anti-terrorist policies will follow, including Egypt, Saudi Arabia, Jordan, Kuwait and many other Arab and Islamic countries which are themselves threatened by fundamentalist Islamic terror.

### Forecasting CP---2AC

#### Perm---do the CP. ‘Prohibit’ can be a regulation.

John G. Koeltl 07, United States District Judge, “United States Baseball v. City of New York”, United States District Court for the Southern District of New York, 509 F. Supp. 2d 285, 297, 2007 U.S. Dist. LEXIS 63234, 8/27/2007, Lexis

The City responds that its home rule and police powers are broader pursuant to Article IX, Section 2(c) of the New York State Constitution, New York Home Rule Law § 10(1)(a)(12), and New York General City Law § 20(13) than the plaintiffs suggest. These provisions give the City the power to enact laws for the "safety, health, well-being, and welfare" of its residents. The City asserts [\*\*29] that the Bat Ordinance does not constitute a "prohibition" because it does not condemn all use of non-wood bats. It bars their use in competitive high school baseball games, but not for example in high school practices, junior high school games, "pick up" games, or youth league games that are not school-sponsored. Moreover, the City persuasively argues that the suggested distinction between "prohibitions" and other "regulations" is artificial and untenable, because all regulations prohibit some conduct that is incompatible with the regulatory standards and all "prohibitions" leave some conduct untouched. For example, a New York court upheld as a valid exercise of the police power a New York City law banning the possession in a public place of a knife with a blade of at least four inches in length in People v. Ortiz, 125 Misc. 2d 318, 479 N.Y.S.2d 613, 620 (Crim. Ct. 1984). The plaintiffs suggest the law at issue in Ortiz was a not a "prohibition," but it appears to be at least as complete a prohibition as the Bat Ordinance, which prohibits only certain uses of bats with certain defined characteristics.

#### ‘Superforecasters’ (especially from the Good Judgment Project) are terrible at predictions.

Nuño Sempere & Alex Lawsen 21, Researcher, Quantified Uncertainty Research Institute; Advisor, 80,000 Hours. MA, Physics, University of Oxford, "Alignment Problems with Current Forecasting Platforms," arXiv, arXiv:2106.11248, 06/28/2021, pg. 2-28.

However, these forecasting competitions sometimes inadvertently provide forecasters with incentives not to reveal their best forecasts. As as a highlight of the paper, in §3.2, we prove that the scoring rule used in Good Judgement Open, CSET-foretell, and other Cultivate Labs platforms is not proper. That is, in some scenarios, a forecaster with correct probabilistic beliefs can input a much higher probability than would reflect their true beliefs into the platform, and still obtain a better score in expectation, and this effect is quantitatively large.

Notably, Good Judgement draws from the top 2% of forecasters from Good Judgement Open, who are then dubbed Superforecasters™, which introduces further incentive distortions.

The incentive problems we identify are not only problematic because score-focused forecasters might exploit them, but also because platform users might interpret imperfect reward schemes as feedback, and because the flawed incentive schemes will fail to incentivize, identify and reward the best forecasters.

For an overview of the broader literature around incentives for forecasters, see the recent literature review in (Witkowski et al. (2021)).

1.2. Overview of the paper

Section §1.1 provides the motivation for this paper, and section §1.3 introduces the alignment terminology we use as an organizing principle for the rest of the paper. Sections §2 and §3 outline the alignment problems which we identify, and Appendix §A provides some numerical simulations to support our points. In section §4 we propose possible solutions. Section §5 concludes, and draws parallels to the broader artificial intelligence alignment problem.

1.3. Alignment terminology

The process of creating a forecasting system comprises several distinct steps:

1. Broader society, with its own goals, spawns a forecasting system, whose goals are to obtain accurate probabilities.

2. The forecasting system chooses a formal objective function which operationalizes “obtain accurate probabilities”.

3. Forecasters then maximize their actual reward, which might depend on their own preferences and inclinations.

An alignment failure is possible at each of those steps. For instance, a failure in the first step, where broader society’s goals are not aligned with a forecasting system’s goals, might correspond to obtaining forecasts about Ebola without being cognizant that different forecasts may provoke different responses, and hence lead to a different number of deaths, and that the prediction which minimizes deaths might not be the one which is most accurate. A failure in the second step, where the goals of the forecasting system are not aligned with its scoring rule, might correspond to choosing a reward function which, when maximized, doesn’t result in optimal forecasts, for example, a function which rewards successfully convincing other forecasters of false information: this maximizes the liar’s comparative accuracy, but might decrease the accuracy of the broader scoring system. A failure in the third step, where the goals of the forecasters are not aligned with the goals of the formal scoring rule might correspond to a bug in the implementation of the scoring rule, so that forecasters optimize their score of the unaligned buggy implementation.

Hubinger et al. (2019) distinguish between inner and outer alignment. Outer alignment refers to choosing an objective function which to optimize, and making sure that the gap between this objective function and one’s own true goals is as small as possible. This has some similarities to our first two steps above: making sure that we want to optimize for obtaining accurate probabilities, and making sure that our scoring rule leads to accurate probabilities. For instance, if we care about saving lives, we would have to check that having better forecasts leads to more lives saved, and that the scoring rule, if optimized, leads to more accurate forecasts.

Inner alignment then refers to making sure that an optimizer is trying to optimize a previously chosen base objective function, when this optimizer is also being optimized for. Normally this refers to making sure that the reward function learnt by a reinforcement learner during training closely approximates a base objective function, even in a different environment outside of training. In the case of a forecasting system, this bears some resemblance to making sure that forecasters maximize their score according to a previously chosen scoring rule, for instance by paying forecasters more money the lower their Brier score is.

Nonetheless, human forecasters have some differences with reinforcement learning systems, in that they are not quite trained by forecasting systems from scratch, but merely repurposed or incentivized. For this reason, it is perhaps more accurate to say that the first two steps are a akin to a reward specification problem, and the last step is akin to a principal-agent problem.

The focus of this paper is on failures for forecasting platforms related to steps 2 and 3 , respectively covered in sections §2 and §3.

2. Reward specification problems ≈ Outer alignment problems

This question discusses cases where, as individual forecasters maximize their comparative accuracy score1 , or some other score determined by a forecasting platform, problems arise where this does not maximize the accuracy of the whole forecasting system. That is, the forecasting platform chose some reward function, forecasters are optimizing that reward function, but it turns out that the reward function fails to capture some aspect which the creators or clients of the forecasting platform also care about.

An classical example of this would be a Sybil attack: if a forecaster created many puppet accounts on Good Judgment Open, CSET or Metaculus, and used them to make many bad forecasts on the questions she had made predictions on, her comparative accuracy score (and the comparative accuracy score of those who predicted the same questions as her) would increase.

As long as set of questions she choose to forecast on were relatively unique, she would benefit. She would still be maximizing her comparative accuracy score, but that score would have ceased to be related to the broader objectives of the forecasting system.

2.1. The scoring rule incentivizes forecasters to selectively pick questions

Forecasters seeking to obtain a good score are incentivized to selectively pick questions, and in some cases, are better off not making predictions even if they know the true probability exactly. Tetlock mentions a related point in one of his “Commandments for superforecasters” (Tetlock et al. (2015), pp. 277-278): “Focus on questions where your hard work is likely to pay off”. Yet if we care about making better predictions of things we need to know the answer to, the skill of “trying to answer easier questions so one scores better” is not a skill we should reward, let alone encourage the development of.

For the case where the forecasting system rewards the Brier score2 , if a forecaster has a brier score p·(1−p), then they should not make a prediction on any question where the probability is between p and (1 − p), even if they know the true probability exactly.

Theorem 1. A forecaster wishing to obtain a low average Brier score, and who has3 a Brier score of p·(1−p) (with p ≤ (1−p) without loss of generality) should only make predictions in questions where the probability is lower than p or higher than (1 − p).

Proof. Suppose that the forecaster makes a prediction on a binary question which has a probability q ≤ 0.5 of resolving positively, with p < q < (1 − p). Then the expected Brier score is:

E[Score] = q ·(1−q) 2+(1−q)·(0−q) 2 = q ·(1−q)·(1−q+q) = q ·(1−q) (1)

As f(x) = x · (1 − x) is strictly increasing from 0 to 0.5, if p < q, then p ·(1 −p) < q ·(1 −q). Hence, their expected score on the question is greater than their current score, and they should not predict. For the case where q > 0.5, consider that the question has a probability q 0 of resolving negatively and swap p and (1 − p).

In fact, if a forecaster has so far performed better than random guessing, there exists a range of probabilities which, if used, are guaranteed to hurt their score not only in expectation, but regardless of the outcome of the event. This is stated formally as follows.

Theorem 2. A forecaster with brier score b 2 who forecasts that an event has probability p is guaranteed to end up with a worse brier score, regardless of the outcome of the event, if b < p < (1 − b).

Proof. If p < 0.5, the best score the player can achieve is p 2 , when the event does not occur. But p 2 > b2 as p > b, so the player’s score will be worse.

If p > 0.5, the best score the player can achieve is (1 − p) 2 , when the event occurs.

[Equation omitted]

Hence, in this case the player’s score will also be worse.

Some competitions don’t reward the Brier score, but the relative Brier score (or some combination of both). The relative Brier score is defined as the difference between the forecaster’s Brier scores, and the aggregate’s Brier scores. As before, a lower score is better.

As in the previous case, forecasters should sometimes not predict on some questions, even if they know the probability exactly. This is not necessarily a problem, as it might lead to better allocation of the forecaster’s attention, but can be.

Theorem 3. A forecaster seeking to obtain a low average relative Brier score score, and who has4 a relative Brier score of r, should only make predictions in questions where:

E[the forecaster’s Brier score] − E[Brier score of the aggregate] < r (3)

Proof.

E[the forecaster’s Brier score] − E[Brier score of the aggregate] = E[the forecaster’s Brier score − Brier score of the aggregate] = E[relative Brier score]

and the forecaster should only predict if E[relative Brier score] < r. Otherwise, predicting degrades their relative Brier score, in expectation.

This can be particularly problematic for questions where the community is confident, e.g., a question for which the aggregate forecast is 5%. Suppose that a forecaster knew with certainty that the event would not happen, and forecasted 0%. Then the resulting relative Brier Score would be 0 − 0.052/2 = −0.00125, which by inspection is poor; the authors observe that good forecasters tend to have relative Brier scores downwards of −0.05.

Note that this is only a problem if one is trying to maximize the mean relative Brier, that is, the average difference between her forecasts and the aggregate’s. The problem disappears if one is trying to maximise the sum of relative Brier scores (as in the case of CSET-foretell), although the discussion below should be noted.

2.2. The scoring rule incentivizes forecasters to just copy the community on every question.

In scoring systems which more directly reward making many predictions, such as the Metaculus scoring system where in general one has to be both wrong and confident to lose points, predictors are heavily incentivised to make predictions on as many questions as possible in order to move up the leaderboard. In particular, a strategy of “predict the community median with no thought” could—in the expert opinion of one of the authors, a top 50 Metaculus forecaster himself—see someone rise to the top 100 within a few months of signing up. Metaculus allows advanced users to see other forecaster’s track records by spending “tachyons”, from which the authors found that at least one of the top 10 predictors on the leaderboard has performed worse than the community prediction5 on a per-question basis for both discrete and continuous questions.

However, if the main value of winning “Metaculus points” is personal satisfaction, then predicting exactly the community median is unlikely to keep participants entertained for long. New users predicting something fairly close to the community median on lots of questions, but updating a little bit based on their own thinking, is arguably not a problem at all, as the small adjustments may be enough to improve the crowd forecast, and the high volume of practice that users with this strategy experience might lead to rapid improvement.

This incentive to predict on all questions can also arise when scoring is based on the total (cumulative) relative Brier score.

Theorem 4. A forecaster seeking to optimize her relative Brier score should predict the average community forecast instead of not predicting on a question, even if she doesn’t know anything about the question.

Proof. The relative Brier score is calculated as an average relative score over all other predictors, i.e.

[Equation omitted]

The community prediction is given by 1 n Xn i=1 pi , so the forecaster’s Brier score if she predicts the community prediction is

[Equation omitted]

However, the Brier score is strictly increasing and convex, so

[Equation omitted]

Thus the forecaster’s relative Brier score will always be negative6 (or zero if all predictions are the same.) And thus predicting the community average is more advantageous than leaving the question blank.

In practice, this makes community predictions more “sticky”,

that is, slower to adapt to new information. This is because new forecasts with new information are averaged with the old forecasts, of which there is an incentive to be many. This would not be a problem if forecasters updated often, but in practice forecasters who are lazy enough to forecast the community average on many questions in order to gain some marginal relative Brier or Metaculus points also don’t update their forecasts that often.

2.3. The scoring rule incentivizes forecasters not to share information and to produce corrupt information

In a forecasting tournament which rewards comparative accuracy, there is a disincentive to sharing information, because other forecasters can use it to improve relative standing. This disincentive includes both not sharing information and providing misleading information. Perhaps for this reason, most forecasts on Good Judgement Open are accompanied by blank comments.

As a counterpoint, other forecasters can and will often point out flaws in one’s reasoning if one gives an unconvincing rationale. Further, regardless of the rationale one writes, in Good Judgment Open and CSET, other forecasters can see one’s probabilities. Thus, seeing a blank forecast rationale accompanied by a forecast of 100% by a forecaster with a good track record can be enough to infer that this forecaster has private information.

Publishing misleading information does not seem to be an urgent problem today. However, this might only be the case because forecasting competitions are currently relatively niche and small. If they grew further, they might encounter similar problems to PredictIt, where market participants have on occasion created fake polls which confused election bettors.

Two notable cases from the PredictIt community are the cases of Delphi Analytica, and CSP polling. With regards to Delphi Analytica, Enten (2017) explains in a FiveThirtyEight article:

“Delphi Analytica released a poll fielded from July 14 to July 18. Republican Kid Rock earned 30 percent to Sen. Debbie Stabenow’s 26 percent. A sitting U.S. senator was losing to a man who sang the lyric, “If I was president of the good ol’ USA, you know I’d turn our churches into strip clubs and watch the whole world pray.”

McDonald believes that ‘Jones’ and whoever may have helped him or her did so for two reasons. The first: to gain notoriety and troll the press and political observers. (The message above seems to support that theory.) The second: to move the betting markets. That is, a person can put out a poll and get people to place bets in response to it — in this case, some people may have bet on a Kid Rock win — and the poll’s creators can short that position (bet that the value of the position will go down). In a statement, Lee said Delphi Analytica was not created to move the markets. Still, shares of the stock for Michigan’s 2018 Senate race saw their biggest action of the year by far the day after Delphi Analytica published its survey.

The price for one share — which is equivalent to a bet that Stabenow will be re-elected — fell from 78 cents to as low as 63 cents before finishing the day at 70 cents. (The value of a share on PredictIt is capped at $1.) McDonald argued that the market motivations were likely secondary to the trolling factor, but the mere fact that the markets can be so easily manipulated is worrisome.”

With regards to CSP polling, Yeargain (2017) explains in the Michigan Law Review:

“a PredictIt user seeking to purchase a futures contract on the outcome of the Republican primary in Alabama’s 2017 special U.S. Senate election who comes across a poll predicting a result of that exact election, allegedly conducted by CSP Polling, might reasonably consider that poll in their purchasing decision – even if they do not know that CSP lacks a track record or any indicia of reliability. And given the speed with which PredictIt users buy and sell contracts, a user seeing this information might reasonably conclude that if she is to use this information to her benefit, she needs to act quickly.

CSP Polling – which, according to University of Florida political science professor Michael McDonald and Jeff Blehar of the National Review, stands for ‘Cuck Shed Polling’ – alleged that it conducted polls in the 2017 special congressional election in Montana, the special congressional election in Georgia, and the Virginia Democratic primary for Governor. Even after being identified in FiveThirtyEight as a fake pollster, CSP Polling continued to release polls, though the seriousness of the poll “releases” noticeably deteriorated in the year that followed.”

For an example within the forecasting space, the Forecasting AI Progress Tournament (Metaculus (2020)) saw very few forecasts in its first round, so organizers decided to require the publication of at least three comments per participant in subsequent rounds. However, participants are still cognizant that sharing their insights reduces the advantage they have over competitors, and thus their expected share of the $50,000 prize. A top 10 forecaster shares “I personally have made less comments on Metaculus over time (especially on tournaments with monetary rewards) due to realizing that it’s better for me not to share.”

A different way to look at the perverse incentives of non-cooperative scoring rules is to imagine a population which is differential altruistic, as is the case in Metaculus or in CSET-Foretell. More altruistic participants who share information benefit the less altruistic participants who do not. With the passage of time, altruistic forecasters would be systematically disadvantaged, and less altruistic forecasters would rise to the top. Of course, altruistic forecasters are not necessarily na¨ıve, and foreseeing this dynamic, may choose to not share information either, or to only share information among themselves.

If we look at Metaculus’ leaderboard, top 10 forecasters leave comments in respectively 5.5%, 16%, 21%, 6%, 12%, 60%7 , 1.5%, 0.7% 6% and 15% of the questions they forecast on. This percentage seems low, and it seems natural to hypothesize that it would be higher if forecasters were not incentivized to make it lower.

If forecasting competitions were to be expanded to take a broader role in society, if monetary prizes were to significantly increase, or if the forecasting community were to grow in size and become less tightly knit, the above problems might be exacerbated.1

3. Principal-agent problems ≈ Inner alignment incentive problems

Forecasters sometimes deeply care about their score on forecasting platforms, spending long and mostly unpaid hours forecasting on them. Sometimes, they care about reward maximization explicitly; for example, forecaster @yagudin8 (who is in the top 1% of CSET-foretell forecasters) writes “If this question resolves positively I will get a lot of points. This question could only resolve negatively in 5 years, likely, I wouldn’t care about my Foretell predictions then” as a comment under “Will the U.S. government file an antitrust lawsuit against Apple, Amazon, or Facebook between January 20, 2021 and January 19, 2025?”. In this case, the forecaster has ceased to maximize expected comparative predictive accuracy and ceased to report his true probabilities, and has started maximizing a different reward.

In the previous section, we considered forecasters who were dutifully optimizing their expected accuracy (e.g., their Brier score, or the difference between their Brier score and that of their competitors). In particular, forecasters were still reporting their true probabilities throughout. This still led to problems because there is some difference between “maximize your comparative accuracy” and “produce useful information”. In this section, we consider problems where forecasters cease to report their true probabilities, even when forecasting competitions organizers wish they hadn’t, or think they haven’t.

3.1. If scoring is translated to discrete prizes, this creates an incentive to distort forecasts

If a forecasting tournament offers a prize to the top X forecasters, the objective “be in the top X forecasters” differs from “maximize predictive accuracy”. The effects of this are greater the smaller the number of questions.

For example if only the top forecaster wins a prize, forecasters might want to predict a surprising scenario, because if it happens they will reap the reward, whereas if the most likely scenario happens, everyone else will have predicted it too.

This effect is also present if one considers acquiring the title of ”Superforecaster” as a reward or as an objective in itself. One might consider it so because it comes with a degree of prestige and career capital. This objective can be achieved by reaching the top 2% of forecasters and having over 100 predictions in Good Judgement Open. But note that the objective of “place in the top 2%” is different from “be as accurate as possible.”

3.1.1. Optimal distortion in a tournament with continuous questions

To attempt to quantify these effects, we ran some numerical simulations for continuous questions. In this section, we consider a perfect predictor in a tournament with a varied pool of 30 players. This perfect predictor can either predict the true continuous distribution from which the question resolution will be drawn, or manipulate its mean and standard deviation.

More detailed specification details, as well as more complex simulations and simulations for binary rather than continuous questions can be found in Appendix §A.

In Figures 1 and 2, we find that, given Metaculus’s scoring rule, after roughly 10 questions, the incentive to distort either the mean or the standard deviation for one question is much reduced. In Figure 3 we then consider a small tournament of 5 questions, and observe that the optimal distortion is attained when distorting the mean by 50 units and the standard deviation by 12 units. This results in a probability of placing in the top 3 of 16.2%, as opposed to 13.46% in the case where there is no distortion.

[Figure omitted]

Note that there are decreasing marginal returns to distorting any one question, so in practice, better results might be achieved by distorting more than one question by different amounts. Thus, the above can be thought of as a lower bound for the amount of distortion, not an upper bound.

For a result closer to an upper bound, we run the same simulations as above, but we also allow for variation in the number of questions the predictor is allowed to distort beyond just one. We find that that the maximum is attained when two questions are distorted, with a distortion of the mean of 0 units and a distortion of the standard deviation of 10 units. In that case, the predictor places in the top 3 17.3% of the time, in contrast with the previous 13.46% in the case where there is no distortion and 16.2% when only distorting one question.

[Figure omitted]

The point that forecasters seeking to place at the top of a leaderboard will have different incentives to purely maximising their score is known among forecasting researchers and practitioners; see e.g., (Lichtendahl et al. (2007)) for a proof in the two forecaster case. However, we are not aware of previous literature which considers numeric simulations of continuous questions to quantify the incentive to distort one’s own forecasts.

3.2. The participation-rate weighted Brier score is not a proper scoring rule

We define “participation-rate weighted Brier score” as follows: the Brier score integrated in time multiplied by the participation rate. The participation rate is the percentage of time that the forecaster had an active prediction, from the beginning of the question until question resolution.

More formally, if a question opens at time t0, a forecaster starts forecasting at time t1, the question closes9 at time t2, and the forecaster’s prediction at time t is P(t), then “participation-rate weighted Brier score” is:

[Equation omitted]

In this section, we prove that the “participation-rate weighted Brier score” is not a proper scoring rule.

The participation-rate weighted Brier score or variants thereof is used throughout various Cultivate Labs platforms, such as Good Judgment Open, CSET-foretell, or Covid Impacts. For more information, see Good Judgment Scoring Rule (2019). Note that Good Judgment may reward the relative “participation-rate weighted Brier score”, namely:

[Equation omitted]

However, whether the “participation-rate weighted Brier score” is relative or not doesn’t make a difference to this section and its proof, so we will ignore it10. Additionally, the Cultivate Labs platform, on which Good Judgment Open and other tournaments run, only permits one prediction per day, so the integral would instead be a summation (P). Again, this doesn’t change the conclusion.

We will provide an overview of our argument, and then a formal proof. As for the overview, the “participation-rate weighted Brier score” ceases to be proper when it gets multiplied by the participation rate. The crux of the issue is that if a question set to resolve in 100 days instead resolves earlier, say, after the first 10 days, those who have forecasted during the first 10 days are counted as having 100% participation, instead of 10% participation. This then incentivizes higher probabilities at the beginning for questions which are unlikely to be resolved soon, but such that if they resolved soon, it is knowable how they resolve. Many questions have this property, such as whether a prominent figure will leave office, whether a deal or announcement will be made, or whether an event will in general happen.

Theorem 5. The “participation-rate weighted Brier score” is not proper. Further, the misincentive to report a dishonest probability is practically unbounded.

Proof. Let “PW BS” stand for “participation-rate weighted Brier score” Suppose a question has a 10% chance of resolving positively in two weeks (Scenario 1), and otherwise a 90% probability of resolving negatively in one year (Scenario 2). Suppose that a forecaster predicts p1 during the first week, and p2 = 0 afterwards. Then the expected value of the score is:

[Equation omitted]

Now the minimum is reached when f 0 (p1) = 0, and hence when:

[Equation omitted]

which is a significant misincentive (i.e., declaring a 74% when one really believes 10%).

In general, per reasoning analogous to the above, if the true probability is t and the first interval (e.g. 0.034614 for 2 out of 52 weeks in a year) is i, then the optimal probability to declare is t t+i , making the error unbounded, that is, if i is small enough, then one might be incentivized to input 100% when one’s true probability is 1%.

In practice, Good Judgement Open and other Cultivate Labs platforms rarely have questions longer than two years, and only the last update for each forecaster is counted for each day. So if t = 1%, and i = one day in two years, then one would be incentivized to input:

[Equation omitted]

Note that, because Cultivate Labs platforms only accept integers as probabilities, the above might be rounded up to 100% by forecasters. This means that in the case above, forecasters are incentivized to enter a probability of 100% even when they believe the true probability to be 1%

One might object that this type of misincentive does not occur in most questions, and that we are merely counting beans. However, if at the beginning of the Cuban missile crisis Good Judgment had asked about the probability of a nuclear exchange in the next two years, this category of error might have applied in full force, yet it might have been all the more valuable to have access to highly calibrated probabilities.

Empirically, questions such as Will Prayut Chan-o-cha cease to be the prime minister of Thailand before 23 April 2021?, display behavior broadly consistent with what optimal (dishonest) behavior would recommend. That is, the probabilities for the question are excessively high at the beginning.

[Equation omitted]

In contrast, updating either according to Laplace’s rule, or just naively updating on the passage of time11 produces very different update shapes, per Figures 6 and 7.

We do not believe that this is a result of conscious decisions on the part of forecasters. However, positing such conscious decisions isn’t necessary; see Lagerros (2019) for an accessible discussion about “Unconscious Economics”, as well as Friedman (1990) and Friedman (2001) for a more in-depth treatment.

A picture containing graphical user interface

Description automatically generated

3.2.1. Implications for ”extremization”

“Extremization” refers to taking aggregate probabilities and moving them towards 0% or 100%. Quoting Tetlock et al. (2015), pp.90-91:

Then you give the forecast a final tweak: You “extremize” it, meaning you push it closer to 100% or to zero. If the forecast is 70%, you might bump it up to, say, 85%. If it’s 30%, you might reduce it to 15%.

Now imagine that the forecasts you produce this way beat those of every other group and method available, often by large margins. Your forecasts even beat those of professional intelligence analysts inside the government who have access to classified information– by margins that remain classified. [...] It actually happened. What I’ve described is the method we used to win IARPA’s tournament. [Emphasis mine]

In this section, we prove that there are cases where extremization of otherwise accurate probabilities is incentivized by the “participation-rate weighted Brier score”, which is improper, and wouldn’t be incentivized by a proper scoring rule. We will do this by constructing two scenario in which this is the case. In the first scenario, the effect to distort probabilities is small. In the second scenario, the effect is larger.

Theorem 6. The “participation-rate weighted Brier score” rewards dishonest extremization.

[Figure omitted]

Proof. Consider an event which for the next 5 days, has a 25% probability of happening at noon each day, provided it hasn’t happened before. Then the probability of it happening at least once, given that it hasn’t happened before, is:

Text, table

Description automatically generated

Let’s “extremize” these probabilities

Text, table

Description automatically generated

Per calculations in appendix §B, the expected “participation-rate weighted Brier score”, E[PWBS] is, respectively:

[Equation omitted]

Conversely, the order is reversed if we use a proper version of the PWBS, which we define in §4.7

[Equation omitted]

We note, that the effect in the example is small, on the order of less than 10% of the score12. And this seems to be the case for questions in which the forecast decreases continuously with time.

Consider a second scenario, in which the probability of an event is 60% during the first half of a question, and 0% afterwards. Then the expected participation-weighted Brier score for predicting a probability of x during the first half and 0 during the second half is given by

[Equation omitted]

The minimum is given when x = 0.75 = 75%, where the PWBS is 0.15, in contrast with an expected PWBS of 0.168 when revealing the true probability of 60%. If the scoring rule had been proper, as in, a 75% probability would get a score of 0.2625, whereas a 60% probability would have gotten a brier score of 0.24. This is a slightly larger effect, on the order of 20% of the score13.

At this point, we have two competing considerations. On the one hand, per Good Judgement (2020c), the median of Good Judgment Project superforecasters’ forecasts in the original IARPA ACE competiton “was 35% to 72% more accurate than any other research team in the competition”. This suggests that, even if the original Good Judgment Project gained an illegitimate advantage of 10% to 20% over competitors by identifying and exploiting an improper scoring rule, it would still have won otherwise.

Further, per Good Judgement (2018), the Good Judgment Project’s advantage is due to multiple factors: Selection of forecasters with suitable mental traits, de-biasing training, teaming, and aggregation algorithms.

This also suggests that, in the aggregate, the techniques and skills identified by the Good Judgment Project and their superforecasters would still be valuable even if they are 10% or 20% worse than previously considered.

On the other hand, given strong optimization pressure, and in particular data analysis to find optimal aggregation algorithms to optimize an improper scoring rule, we would expect many patterns to be found and exploited. And this would include patterns that take advantage of the difference between the proper and improper scoring rules. Or, in other words, patterns which improve the score under the improper scoring rule no matter at what expense to true accuracy. For instance, in our last example scenario, we found that manipulating the probability from 60% to 75% would improve the PWBS score by 12%. This is a small improvement in the score which comes at the expense of a relatively large manipulation in base percentage points.

We contacted Good Judgment Inc, and they revealed that, per a previously unpublished paper, (Karvetski et al. (s.a)), they were already aware of the incentive problems with participation weighted Brier scores. They pointed this out to IARPA during the Aggregative Contingent Estimation (ACE) Program, but other participants voted not to correct the flaw. Further, the in-house forecasting platform which Superforecasters use does have a proper scoring rule.

3.3. Reputational rewards may outweigh internal platform rewards

If the signalling value a predictor obtains from a high rank outweighs the difference in expected monetary reward between strategies, then probabilistic rewards will not prevent the incentive to extremize in order to be ranked as the ”best predictor” in a competition. As many competitions run on many platforms, the risk of performing badly in a competition is unlikely to solve this problem alone, as predictors can select which results they publicise.

4. Solutions

4.1. Use probabilistic rewards

In tournaments with a fairly small numbers of questions, where paying only the top few places would incentivize forecasters to make overconfident predictions to maximize their chance of first-place finishes as discussed above, probabilistic rewards may be used to mitigate this effect.

In this case, rather than e.g. having prizes for the top three scorers, prizes would be distributed according to a lottery, where the number of tickets each player received was some function of their score, thereby incentivizing players to maximize their expected score, rather than their chance of scoring highest.

Which precise function should be used is a non-trivial question: If the payout structure is too “flat” i.e. making a much better prediction than average does not get you many more tickets, then there is not sufficient incentive for people to work hard on their forecasts compared to just entering with the community median or some reasonable prior. If on the other hand the payout structure too heavily rewards beating the crowd forecast, then the original problem returns.

4.2. Give rewards to the best forecasters among many questions.

If one gives rewards to the top three forecasters for 10 questions in a contest in which there are 200 forecasters, the top three forecasters might be as much a function of luck as of skill, which might be perceived as unfair. In fact, as demonstrated above, there are situations where more skill (in the sense of being closer to the ”true” probability) is associated with a lower chance of success (being in the top few.) As we discussed in previous sections, giving prizes for much larger pools of questions makes this effect smaller, allowing for skill to dominate luck of the draw effects.

4.3. Force forecasters to forecast on all questions

This fixes the incentive to pick easier questions to forecast on. A similar idea would be to assume that forecasters have predicted the community median on any question that they haven’t forecast on, until they make their own prediction, and then reporting the average brier score over all questions. This has the disadvantage of not rewarding “first movers/market makers”, however it has the advantage of “punishing” people for not correcting a bad community median in a way that the relative Brier score doesn’t. It also removes the incentive to manually forecast on all questions.

4.4. Score groups

If one selects a group of forecasters and offers to reward them in proportion to the Brier score of the group’s predictions for a fixed set of questions, then the forecasters now have the incentive to share information with the group. This group of forecasters could be pre-selected for having made good predictions in the past.

4.5. Anonymize winners

If reputational rewards from placing in the top few outweigh monetary rewards, and forecasters are able to publicize parts of their track record, the incentive to distort forecasts in order to be in the top few returns. This is not a problem if winners are not known. On the other hand, monetary rewards might have to be increased in the absence of repoutational rewards.

4.6. Divide information gatherers and prediction producers

If this is done, information gatherers might then be upvoted by prediction producers, who would have less of a disincentive not to do so, though hiding good comments from other forecasters would still incentivised. Alternatively, some prediction producers might be shown information from different information gatherers, or select which information was responsible for a particular change in their forecast. A scheme in which the two tasks are separated might also lead to efficiency gains.

4.7. Do not truncate the participation rate

If one does not truncate the participation rate, Good Judgement Open’s score becomes proper. That is, if a question resolves when it is n% towards completion, the forecasters’ Brier score should be multiplied by n%, not by 100%. Formally, if a question would otherwise have been left open until t3, the weighting should be as

[Equation omitted]

Proof sketch. The integral is the limit of having a question for each period of time h, each of which is weighted by h t3−t0 , and scoring each separately. That is, the integral is similar to having a question for each day and that question being scored with a proper Brier score, a setup which would be proper.

But because g(t) = Brier(P(t)) is Riemann integrable, the limit of the sums is as we expect:

[Equation omitted]

Thus, if a series of P(t) minimize the discrete case, they also minimize the continuous case. Because the minimum of the discrete case is achieved when the forecasters honestly reports their probabilities, that will be the minimum for the continuous case as well. The scoring rule in (21) is thus proper.

One consequence of not truncating the participation rate is that questions which resolve early end up being worth less to the user. This can cause confusion, especially with additive scoring rules such as those used on the Metaculus platform, which correctly does not truncate their scores. New users express surprise frequently enough at participation rate truncation that an FAQ entry on this exact topic was recently added on the Metaculus (2021) platform.

4.8. Design collaborative scoring rules

Tournament organizers could seek to use collaborative scoring rules, where forecasters are incentivized to share information with each other. We define a proper collaborative scoring rule as one where the highest expected reward is obtained if a user maximises both their own score and the aggregate score. If forecasting tournament organizers are able to produce a prior, and Brier denotes the Brier score, the following is a proper collaborative scoring rule:

[Equation omitted]

The proof is left to the reader. One might also seek to design other collaborative scoring rules which attempt to approximate the Shapley value of each forecaster. Note that for this scoring rule to be proper, S must directly be the reward the forecaster obtains. If S is used as a score, with that score determining how some finite prize is shared, the incentive to collaborate disappears. Unfortunately, making S directly be the reward means that the size of the prizepool for a tournament cannot be decided in advance, which makes this system somewhat unattractive for funders.

Currently, some platforms make it possible to give upvotes to the most insightful forecasters, but if upvotes were monetarily rewarded, one might not have the incentive to upvote other participants’ contributions as opposed to waiting for one’s contributions to be upvoted. Insightful comments can also be externally judged and incentivised. A reward system the authors intend to field test in the near future involves comments that are judged to be useful being rewarded with a multiplier on question scores, therefore ensuring that helpful sounding comments are not rewarded if accompanied by poor forecasts.

In practice, Metaculus and Good Judgment Open do have healthy communities which collaborate, where trying to maximize accuracy at the expense of other forecasters is frowned upon, but this might change with time, and it might not always be replicable. In the specific case of Metaculus, monetary prizes are relatively new, but becoming more frequent. It remains to be seen whether this will change the community dynamic.

5. Conclusions

We presented some incentive problems which currently befall various forecasting platforms and contests. These incentive problems are worrying because the probabilities which these platforms and contests produced generally aim to be action-guiding, but forecasters have an incentive to input distorted probabilities. Following Lagerros (2019), these incentives can either manifest themselves because forecasters consciously choose to maximize them, because the forecasters who happen to follow them rise to the top, or because forecasters internalize them in their learning processes when interpreting flawed scoring mechanisms as feedback.

Further, improper scoring rules are then used to grade and reward forecasters. In the case of Good Judgment Open, superforecasters are selected amongst the best performers, but this is done according to a distorted, improper scoring rule. We also find that “extremizing”—pulling aggregate probabilities towards the nearest of 0% and 100%—is in some cases incentivized by Good Judgment Open’s improper scoring rule, and thus some of Tetlock et al.’s results about extremization might not hold if they were discovered while using a proper forecasting rule. However, we are unsure about the size of this effect, and subjectively estimate it to be small.

We also pointed out that common scoring rules incentivize forecasters not to share information, and that that tournaments with discrete prizes generate an incentive to distort forecasts to maximize the chances of winning, rather than to maximize expected loss.

For the case of aligning human forecasters, solving the alignment problem would have required using a truly proper scoring rule, making it incentivize cooperation, etc. But the most prominent forecasting platforms and competitions have, to a certain extent, failed to do so. We can relate this problems with the broader alignment problem present in machine learning systems. In particular, we notice that the incentive problems in our forecasting systems resemble machine learning specification gaming examples, such as those outlined in Krakovna et al. (2020), whereas others are more like principal-agent problems, which bear some resemblance to the inner alignment problems in Hubinger et al. (2019).

#### No spillover---its inhibited by the very definition of ‘superforecasters.’

Dr. Ilias Katsagounos et al. 21, Head of Research Activities, PM2 Alliance; Dimitrios D. Thomakos, Professor, Applied Econometrics, National and Kapodistrian University of Athens; Konstantia Litsiou, Senior Lecturer, Forecasting, Manchester Metropolitan University; Konstantinos Nikolopoulos, Professor, Business Information Systems & Analytics, Durham University Business School, "Superforecasting Reality Check: Evidence From A Small Pool Of Experts and Expedited Identification," European Journal of Operational Research, Vol. 289, Issue 1, 02/16/2021, ScienceDirect.

The one main finding from Tetlock and Mellers’ research project is that although superforecasters do exist, they are a rarity. It takes a lot of time and a very big initial pool of experts in order to identify them - all and all a few hundred across the globe. That end result, however, jeopardizes the applicability of the proposition, as exciting as it may be for the academic word. If each and every company in this world needs to rely on the aforementioned superforecasters, then this will end up being a very expensive and constrained endeavor for most interested parties.

### Biz Con DA---2AC

#### No spillover---blockchain is siloed from other areas

Jiang Jiaying 20, LLB, LLM, SJD, incoming Hauser Global Fellow at NYU School of Law and Co-Leader of the Central Bank Digital Currency Project with the Paul Tsai China Center at Yale Law School, “Regulating Blockchain? A Retrospective Assessment of China's Blockchain Policies and Regulations”, Tsinghua China Law Review, 12 Tsinghua China L. Rev. 313, Lexis

Under the direction of the national policy objective on technology, blockchain-related policies and regulations pursue the same path of innovation. Technology innovation in the blockchain field possesses distinctive implications owing to the novelty of blockchain and its implementations. Thus, three secondary policy objectives unique to blockchain characteristics are: (1) [\*345] building a blockchain ecosystem connecting everything in cyberspace; (2) standardizing the blockchain industry; and (3) acquiring leading innovation capacities for blockchain.

#### There’s a blockchain crackdown now that’s shredding confidence

Kellie Mejdrich 21, Senior Reporter at Law360, Financial Services Reporter at Politico, BA in Journalism from the University of Arizona, “‘Massive Wake-Up Call’: Crypto Faces Growing Legal Crackdown”, Politico, 8/17/2021, https://www.politico.com/news/2021/08/17/cryptocurrency-legal-crackdown-505595

Federal regulators are pursuing cryptocurrency startups in court and striking a growing number of legal settlements for rule violations, triggering complaints from the industry and sympathetic lawmakers who say it threatens a growing sector of the economy.

Over the past month alone, the Securities and Exchange Commission, the Commodity Futures Trading Commission and the Treasury Department announced more than $120 million in penalties aimed at digital currency exchanges and other service providers that officials said weren't complying with federal markets regulations and anti-money-laundering requirements. Several states also escalated their own crypto enforcement crackdowns this summer.

CFTC Commissioner Dan Berkovitz said in an interview that some cryptocurrency companies believe "the rules don't apply to them." He said regulators are now vigorously pursuing legal action to protect customers, ensure market integrity and prevent systemic risk. SEC Chair Gary Gensler also warned this month that crypto was rife with "fraud, scams and abuse" and that his agency was prepared to use its authorities "as far as they go" to police the market.

"This should serve as a massive wake-up call to the crypto industry," said Charley Cooper, a former CFTC chief operating officer now with software and blockchain technology firm R3. "A policy or a posture of ignoring Washington or showing disdain for Washington ... will ultimately be a failed strategy."

The enforcement actions are fueling debate about how cryptocurrency players fit into financial regulations. Federal regulators say the new digital currency platforms must adhere to existing rules, but industry players counter that it's not that simple and that it's time for Congress to pass new laws that are more tailored to crypto.

"This regulation by enforcement that we're seeing is not the way to go because it doesn't create good policy," said Kristin Smith, who advocates for the cryptocurrency industry as executive director of the Blockchain Association. "Regulators — in particular the SEC — think that the laws and regulations are crystal clear and that they're very easy to interpret. But for those of us on the other side of the table that are working in the industry and its ecosystem, the laws aren't clear, and it's very difficult to figure out how to apply them."

The market value of Bitcoin and other digital currencies hit $2 trillion again this week, meaning the stakes have never been higher for companies looking to enter the space. The movement has also spawned a whole sector of decentralized finance applications — so-called DeFi apps — that offer automated, autonomous trading and lending services with minimal human interaction. One such DeFi service, Poly Network, disclosed losing $600 million in a breach earlier this month.

Regulators in recent weeks have made clear they’re zeroing in on crypto exchanges and DeFi platforms.

Two high profile cases in August — a $100 million CFTC and Treasury settlement with crypto derivatives service BitMEX and a $10 million SEC settlement with digital asset exchange Poloniex — revolved around charges that the companies were operating unlicensed trading platforms. Another SEC settlement this month with decentralized lender DeFi Money Market accused its backers of selling more than $30 million in unregistered securities using so-called smart contracts and DeFi technology.

Some of the targeted crypto companies are trying to signal that they now take the rules more seriously. BitMEX CEO Alexander Höptner said in a blog post after his exchange's settlement that "crypto is becoming more responsible."

"We are committed to becoming a regulated exchange and are looking to set the benchmarks in this new era for crypto," said George Godsal, spokesperson for BitMEX operator 100x.

The federal cases came as five states including New Jersey, Texas and Kentucky took action against the startup BlockFi for offering interest-earning accounts that regulators say could be unregistered securities products.

BlockFi spokesperson Madelyn McHugh said the company believes its products and services are lawful and appropriate for crypto market participants, and that "we remain steadfast in our commitment to protect consumers’ rights to earn interest on their crypto assets."

"We’re hopeful that BlockFi will lead the charge in collaborating with regulators to define a regulatory path for our ecosystem going forward," McHugh said.

Lawyers tracking the cases said they showed that, even though some digital assets businesses assert certain laws don't apply to them, that doesn't stop the government from taking action.

"We've all been telling our clients and we've been telling people publicly for years that just because you come up with some name for something doesn't mean that the laws don't apply," said Stephen Palley, partner at the law firm Anderson Kill.

Vincent McGonagle, the CFTC's acting enforcement director, said in a statement that "there is a strong need for regulatory compliance in the digital asset market space and for bad actors to be identified and held accountable."

"The CFTC will continue to use the tools available to us to the fullest extent possible to closely monitor these evolving markets," McGonagle said. "The recent resolution with BitMEX and other enforcement actions by the commission, including those in the spot markets for digital assets, reflect our strong commitment to aggressively pursue actionable conduct within our jurisdiction."

Davis Polk partner Robert Cohen, former chief of the SEC's cyber unit, said that agency has taken an active approach to crypto enforcement since 2017, and it's no surprise it's continued under the Biden administration.

One of Trump-era SEC Chair Jay Clayton's final actions at the helm of the agency last December was to sue financial technology startup Ripple for allegedly selling unregistered securities in the form of the XRP cryptocurrency. The move triggered litigation between the SEC and Ripple that continues to this day over the extent to which digital currency should be regulated as an investment product.

"A question going forward is whether there will be progress on rulemaking and guidance for the community that provides the clarity and certainty needed to operate within the SEC’s regulatory system," Cohen said.

Some lawmakers are beginning to push back on the enforcement crackdown and warn there is an urgent need for Congress to draft new rules for the industry's business model.

Rep. Patrick McHenry of North Carolina, the top Republican on the House Financial Services Committee, said "regulation through enforcement hinders innovation."

"It's creating uncertainty in a really important and growing industry in the United States and globally,” McHenry said in an interview. “If we don't bring regulatory clarity here in this space, it's going to go to other regimes around the world that are more conducive for its development."

Rep. Don Beyer (D-Va.) has introduced legislation that would require the CFTC and SEC to issue new cryptocurrency rules. His bill would give the CFTC — which today regulates derivatives linked to things like oil and also fiat currencies — authority over digital assets. It would give the SEC — the U.S. stock market regulator — authority over digital asset securities.

McHenry has also proposed a bill that would convene a working group between the SEC, CFTC and industry to report on cryptocurrency regulation.

"The lack of legal clarity has hindered investment and innovation, and Congress should provide clear rules of the road for this growing market," Beyer said in a statement.

#### It’s a surgical approach that leaves most conduct to self-regulation---that reverses the perception of overreach

Dr. Thibault Schrepel 21, PhD in Antitrust Law from Université Paris-Saclay, LLM in International Law and Legal Studies from the Brooklyn Law School, Associate Professor of Law at VU Amsterdam University, Faculty Affiliate and Creator and Director of the Computational Antitrust Project at the Stanford University CodeX Center, Blockchain + Antitrust: The Decentralization Formula, p. 240-244

3.2 Law + Code

3.2.1 Why together?

We are facing a conundrum. On the one hand, blockchain architecture requires us to find ways to prohibit illegal behaviors (and only those). On the other hand, confrontational law may hamper the technology and therefore reduce the common good or stay ineffective. It is crucial that we find a way around this conundrum. Blockchain code reveals, probably more than ever, the need for collaboration between law and technology: between policymakers, regulators and blockchain communities. This may spark a pivotal moment in legal history, forcing the creation of a new paradigm that leads to the emergence of hitherto unexplored synergies.29

If they work together, these two communities can put in place mechanisms to stop and punish anticompetitive practices once committed by creating a way for legal enforcement instead of trying to prevent all illegal practices from happening in the first place.30 That requires us to find a way for blockchain communities, alongside the regulator, to take practical actions when necessary and give them incentives to do so.

The code that underlies blockchain ecosystems is an ideal candidate to achieve this aim. Code is the language of technology and the principal determinant of behavior within a digital ecosystem. The maxim “code is law” describes that reality.31 As I have explained, blockchain’s architecture creates trust between participants. It is the same architecture that can build “too much trust,” leading to illegal practices because it creates (a sentiment of) impunity from the law. The occurrence of these practices therefore implies that one must adapt the architecture. If policymakers and regulators want the help of blockchain communities, they must translate the law into code so they can implement it and monitor its application.

This is the “law is code” ex-post approach I am arguing for,32 which I distinguish from other “law is code” ex-ante solutions that lead to the prohibition of practices before they even occur

or automatic enforcement by code.33 In practice, ex-ante solutions suffer from the rigidity of code language and, above all, from our cognitive and imaginative limits.34 Instead, the “law is code” ex-post approach I am offering relies on, and allows, other constraints (law, market, norms) to play a part in deterring most illegal practices; and, when implemented, creates a gateway for legal enforcement.

3.2.2 Blockchain code

The “law is code” approach I suggest strikes what I find to be a satisfying MOAF balance. In terms of accuracy, modifying code to allow other constraints creates few false negatives and even fewer false positives. There is no need for overreaching regulations or to break the blockchain door altogether. This “law is code” approach is more surgical. In terms of manageability, it gives power to blockchain communities which are the first to implement and enforce blockchain code. Policymakers and regulators will trust new blockchain architectures; only the costs of verification will remain.

In terms of objectivity for private actors, one can trust that blockchain communities will know the rules they enforce. The extent to which these communities should enforce the rules on their own, or with the supervision of regulators, is debatable (see below). In terms of flexibility, that “law is code” approach is non-coercive, as it is agreed upon, implemented and enforced by blockchain communities. The more significant the role of the community agreeing to enforce these rules, the less top-down and coercive they will become. In the end, there is every reason to believe that such as “law is code” ex-post approach will achieve proper deterrence. If mechanisms are in place to deter and punish illegal practices, and if blockchain participants are made aware of these mechanisms, then the number of such practices will be significantly reduced. Again, as Beccaria said:

one of the greatest checks on crime is not the cruelty of punishments, but their inevitability ... the certainty of a chastisement, even if it be moderate, will always make a greater impression than the fear of a more terrible punishment that is united with the hope of impunity.35

Two mechanisms can be used in that regard: a first that allows communities to discourage and sanction anticompetitive practices, and a second that enables courts and regulators to “enter” blockchains. Both come with specific challenges. The first will partially recentralize blockchain, but it proves to be best for “targeting.” The second requires participants to trust the rule of law on top of the rule of code, but maximizes “objectivity,” since the regulator has no financial interest in the blockchain, unlike the other participants.

4 CHAPTER SUMMARY AND BEYOND

In this chapter, I started by analyzing the new challenges that blockchain creates for policymakers and regulators. I showed that blockchain has singular characteristics that require specific regulations in response. In the absence of such regulations, blockchain creates a nearly impenetrable fortress. One must then find a solution to make the law applicable. With that in mind, I introduced four principles against which to assess potential regulation: (1) accuracy, (2) manageability, (3) objectivity and (4) flexibility. I explained that one cannot maximize them all at once, as significant tradeoffs are involved.

Against this analytical framework, I have assessed distinct types of regulatory approaches. I concluded that a classic confrontational approach would not lead to good results. I explained this confrontational approach would either threaten the survival of blockchain technology or simply prove to be ineffective. Conversely, when law and code are combined, the results are more satisfactory. This collaboration implies that blockchain communities and regulators must find common ground to introduce mechanisms that sanction illegal practices when they are committed and, even before that, prevent them from taking place by relying on other constraints. In the next chapter, I detail the terms of this arrangement and explore how blockchain communities would ultimately agree to take part in the “law is code” approach that I have advocated for.

1 A POSITIVE AGENDA

In this section, I introduce a positive agenda that would lead agencies to create comfort zones and to direct legal enforcements toward certain specific practices. The objective is to create the right incentives for blockchain communities to implement the “law is code” approach described in Chapter 13 - that is, translating the law into code in a way that opens up ex post enforcement. This approach would lead to a cooperative relationship between law and technology. The result would be better legal protection for blockchain communities (which would suffer from fewer anticompetitive practices) while ensuring blockchain creates a positive impact outside the ecosystem.1 But getting there will require mutual concessions.

#### The signal of a antitrust crackdown has already been clearly sent

Lina Saigol 1-19, Head of Corporate News, EMEA, Dow Jones Media Group, BA from McGill University, “Mergers Are Booming. U.S. Regulators Are Gearing Up to Crack Down on Them.”, Barron’s, 1/19/2022, https://www.barrons.com/articles/mergers-booming-us-regulators-crackdown-51642534456?tesla=y

Aggressive antitrust enforcement is back.

That is the stark message that President Joe Biden has sent the business community, and regulators have already kicked into action, threatening to rein in a record-setting merger boom.

Those charged with delivering Biden’s message are two Big Tech critics: Lina Khan, chair of the Federal Trade Commission, and Jonathan Kanter, head of the Justice Department’s antitrust division. On Tuesday, they outlined a plan to revise how the agencies will review mergers. They want public comment on how to update federal guidelines “to better detect and prevent illegal, anticompetitive deals,” they said in a statement.

“Our country depends on competition to drive progress, innovation, and prosperity,” Kanter said. “We need to understand why so many industries have too few competitors, and to think carefully about how to ensure our merger enforcement tools are fit for purpose in the modern economy.”

That is due in part because the FTC is constrained by limited manpower and budget. Also, regulators don’t have authority on their own to block a merger—federal judges can issue orders blocking it.

“Of course there has been an increased level of scrutiny and managements and boards have raised the bar on what they will consider, but we will continue to see large deals with compelling strategic imperative,” Bruce Evans, global co-head of M&A at Deutsche Bank , told Barron’s.

In December, the FTC sued to block computer-chip powerhouse Nvidia (ticker: NVDA) from spending $40 billion for British technology provider Arm, saying the blockbuster deal would unfairly stifle competition.

Just weeks earlier, the Justice Department sued to halt a proposed $2.2 billion tie-up between publishers Penguin Random House and Simon & Schuster, which would create a mega-publisher in the books market. The agency argues that consolidation would hurt authors and readers.

The lawsuits come after Biden signed a sweeping executive order in July aimed at curbing the power of big business by cracking down on anticompetitive practices in sectors ranging from agriculture to pharmaceuticals to labor.

#### Expanding blockchain massively boosts the economy

Kieran Brown 19, Senior Managing Consultant in London with the Berkeley Research Group, Michael Jelen, Director in the Global Applied Technology Practice at the Berkeley Research Group, and Nabil Manzoor, Director of Health Technology at PwC, “Blockchain Could Unleash Economic Growth—But Only if Governments Step Up with Clear Policy and Leadership”, ThinkSet Magazine, 6/27/2021, https://thinksetmag.com/insights/blockchain-econ-growth

Blockchain Could Unleash Economic Growth—But Only if Governments Step Up with Clear Policy and Leadership

The technology could revolutionize security and transparency, but only if we trust it. That’s where the government comes in.

Blockchain has a trust problem. Or, at least, a *perceived* trust problem.

A decade after the ascents of Bitcoin and later Ethereum, the technology behind those cryptocurrencies—blockchain, a distributed electronic database that records and automates transactions—is still widely misunderstood among the public and even within boardrooms. It’s too often conflated with the unruly markets of cryptocurrencies, enveloping blockchain in a cloud of mistrust and confusion.

The perception that blockchain can’t be trusted is both unfortunate and inaccurate. It’s also preventing blockchain from achieving its potential as a technology that could radically improve transparency and security across a broad range of industries in the public and private sectors.

Getting past blockchain’s trust problem is the key to unlocking the technology’s enormous potential. And the best, fastest way to do that is through regulation and smart policymaking. That might sound like anathema to free-market hawks and cyberlibertarians, but proactive government involvement doesn’t have to be the government-dominated, centrally controlled nightmare they fear. Rather, it is the crucial ingredient needed to unlock this emerging technology’s potential, allowing innovation and business to flourish.

Blockchain beyond crypto

It’s ironic that blockchain, a technology designed to promote trust in transactions, still faces questions about trust. But it’s becoming increasingly clear that many trust issues facing blockchain stem from a lack of understanding.

What’s crucial for business leaders and the general public to understand is that blockchain technology completely transforms the concept of trust (for the better). Trust, of course, is an essential part of how economies and markets operate. It enables and facilitates transactions that create value. Therefore, through the lens of economic theory, blockchain represents a new way of answering an age-old question: How can we create enough trust to peacefully, efficiently enable parties to exchange something of value?

Blockchain is really just a distributed electronic database of transactions, individually secured with a mathematical signature (block) and then linked together (chain). As the MIT Technology Review editors put it, “blockchains distributed across thousands of computers can mechanize trust, opening the door to new ways of organizing ‘decentralized’ enterprises and institutions.” The potential to increase and mechanize the number and efficacy of trusted transactions is enormous. And the more transactions that can be verified (deemed trustworthy) and automated, the more economic opportunities will emerge.

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Blockchain’s ability to enable the frictionless transfer of assets is revealing itself rapidly in fascinating functions in the private and public sectors. Blockchain applications are involved with managing complex shipping and logistical issues at international ports (Maqta Gateway in Abu Dhabi and the Port of Antwerp in the Netherlands), providing a transparent record of trading activity on the Australian stock market and securing end-to-end transactions as part of a pilot program by the UK Land Registry.

Those functions should be viewed as at least as indicative of blockchain’s potential as Bitcoin. But instead, the technology’s conflation with cryptocurrency has created an association with volatile markets, spectacular risk and unsavory dark-web actors—and not the mathematical structure that relies on decentralized nodes for recording and storing data to allow for greater transparency, auditability and security.

Governments, policymakers and regulators are positioned to confer trust and legitimacy on blockchain—and to unlock its transformative economic potential—by promoting its adoption and developing best-use cases. To do this effectively, they need to invest in human capital, subject-matter expertise, a clear permission policy framework and governance. They must educate not only themselves on the applications of blockchain technology, but also their citizens.

How governments can lead expanding blockchain application

The internet’s utility and value aren’t limited to any single industry—it’s a general-purpose technology that has supported an explosion of economic activity and opportunity across every industry around the world. Likewise, we’re starting to see blockchain’s myriad applications beyond the financial sector.

Blockchain has the potential to radically upend traditional business models in a number of different areas: supply chain logistics, fair trade practices, property transactions, personal identity management and government, to name a few. Supply chain matters, where blockchain has made its first inroads outside of the financial sector, involve a complex series of transactions that move through multiple parties and transactions, each with its own contract and fulfillment terms. Blockchain enables the parties to automate and verify fulfilment of the terms at every step along the way, and to send and record payments instantly.

#### Biz con’s sinking due to inflation, labor shortages, and COVID

Matt Egan 2-10, Reporter at CNN Business, Former Senior Reporter at Fox Business, “Most CEOs Say Rate Hikes Won't Quickly Solve Inflation Crisis”, CNN Business, 2/10/2021, https://www.cnn.com/2022/02/10/economy/inflation-ceo-confidence-economy/index.html

CEO confidence is down for the third quarter in a row, according to the Conference Board survey, which was fielded January 17 through January 31. The measure of confidence now stands at 57, down from 65 at the end of last year. While that is still in positive territory, it is well below the record high of 82 set in mid-2021.

"CEO confidence fell further to start 2022 as business leaders struggle to contend with inflation, labor shortages, and yet another viral surge," Dana Peterson, the Conference Board's chief economist, said in a statement.

About 40% of the CEOs surveyed said inflation is unlikely to cool off as fast as the Fed wants because supply constraints are the primary source of inflation. And 34% expect wages will still increase due to the tight labor market, and those costs will need to get passed along.

#### But, it’s completely resilient

Clint Rainey 1-19, MA in Journalism from Columbia University, BA in Journalism from the University of Texas, Investigative Journalist and Freelance Writer for NYMag, Fast Company, Businessweek, MIT Technology Review, “For Some Reason, CEOs Are More Optimistic Than Ever About The Economy”, Fast Company, 1/19/2021, https://www.fastcompany.com/90713799/for-some-reason-ceos-are-more-optimistic-than-ever-about-the-economy

Business leaders’ optimism about the short-term economy is at its highest point in a decade despite, well, crises seemingly in every direction you look. (A short list includes a two-year-long global pandemic, record inflation, supply shortages, the Great Resignation, and the past seven years being Earth’s seven hottest on record.)

That’s according to accounting giant PwC’s latest Global CEO Survey, released yesterday.

The annual survey, now in its 25th year, polled 4,446 CEOs worldwide back in late fall of 2021, which, it’s worth noting, was also before the omicron wave broke. Still, just 15% of them said they believe economic conditions can’t get any worse in 2022—a relatable position, perhaps—but the vast majority, 77%, go even further, predicting “a stronger global economy in the coming year.” PwC says this is the “most confident” that global CEOs responding to its survey have been since 2012, when recovery from the Great Recession was in full swing.

It’s fair to say respondents worldwide are optimistic, but breaking their answers down country by country muddies the waters a bit. Optimism was highest in India, where 94% of CEOs anticipate global growth in the coming year, 6 points higher than last year. It climbed among CEOs in Japan as well (up 16 points to 83%), and in the UK (up 5 points to 82%), then leapt a ton in Italy (up 18 points to 89%) and France, which recorded the biggest increase (up 25 points to 85%).

Meanwhile, optimism took a hard tumble in four very big, key countries: the U.S. (down 18 points to 70%), China (down 9 points to 62%), Brazil (down 8 points to 77%), and Germany (down 4 points to 76%). Tellingly, however, American CEOs told PwC they’re just as confident as CEOs in India about their own company’s 2022 growth prospects—in both countries, about 40% are “extremely confident” that they’ll achieve revenue growth this year.

In his statement, PwC’s global chairman, Bob Moritz, writes that this level of optimism “speaks to the strength and resilience of the global economy and the ability of CEOs to manage through uncertainty.” He sums it up like this: “There is nothing ‘normal’ about the world we are working in, but we are getting used to it.”

By teaching their workforce technical, human, and learning skills, organizations will be better prepared for the challenges of tomorrow

The looming question—Why?—is not one PwC answers. Other first-of-the-year reports in recent days paint bleaker pictures for 2022. Last week, the World Bank released one warning that the world’s poorest countries face $35 billion in debt repayments this year, enough to potentially push some to the brink of default. In the run-up to Davos, the World Economic Forum just released its annual global risks report. Answers to a question asking 1,000 global leaders to identify the planet’s most imminent risks read like themes from a Cormac McCarthy novel: “extreme weather,” “livelihood crises,” “infectious diseases,” “debt crises,” and “social cohesion erosion.” Even in PwC’s own survey, CEOs still said despite their optimism that they worry in the coming year about cyber threats, health crises, climate change, geopolitical conflict, social inequality, and “macroeconomic volatility.”