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The Unrealizable Libertarian Dream • The Attention Economy • The Next Global Depression • More

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Mission Statement: In Berkeley Economic Review, we envision a platform for the recognition of quality undergraduate research and writing. Our organization exists to provide a forum for students to voice their views on current economic issues and ultimately to foster a community of aspiring economists.

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FROM THE EDITORS' DESK

Dear BER Reader:

The field of economics, in its goal to quantify and understand the mechanics which control our daily lives, too often dehumanizes the very subjects it strives to care for. Too often, the individuality of people is lost in the great generalization of economic theory. Berkeley Economic Review's *Equilibrium*, serving as the voice of young economists at UC Berkeley, strives to make economics accessible, relatable, and educational to all of our readers. It is our hope that by reading our publication, you understand that the field of economics can be more than just statistics and numbers; economics is just another way to visualize the story of us.

As such, our articles cover a wide range of topics, from health concerns, political tensions, and regulatory battles, to the ever-evolving world of technology. Every article presented conveys a unique and important issue of our time, and has been chosen to demonstrate the wide reach of the economic field. The articles were relatable and important to us, and we hope that you, as the reader, will agree.

As our nation and the world go through an unprecedented and difficult time together, it is our desire that this magazine can present you a moment of distraction from the chaos. The 68 staff members of Berkeley Economic Review's eight departments and executive team have worked hard to produce a diverse and interesting publication for your reading pleasure.

With gratitude and pride, we present to you the 4th issue of Berkeley Economic Review's magazine, *Equilibrium*.

Yechan Shin & Vinay Maruri
Editors-in-Chief
Berkeley Economic Review



THE UNREALIZABLE LIBERTARIAN DREAM

BY NICOLAS DUSSAUX

In 2019 Facebook announced the creation of a new cryptocurrency, called Libra. Even though Libra is usually referred to as "Facebook's money," the project is in fact carried by the Libra Association, a non-profit headquartered in Geneva and San Francisco. The goal of the Libra Association is simple: to create a currency with two billion users that would not have to deal with frontiers, regulations or speculations. Their aim is to foster financial inclusion by challenging the dominance of Wall Street brokers and central banks in the financial system. Nevertheless, Libra has been received with a lot of defiance from the public. This article will examine some of the reasons why the Libra project would not be able to meet its own expectations and why the goals of the Libra Association are problematic from a practical standpoint.

Like every other cryptocurrency, Libra uses blockchain technology. This technology consists of registering transactions on the network in blocks that are successively added to a chain, which accounts for all transactions on the network. Several transactions are stored in each block. This technology relies on a distributed ledger, which means that instead of being overseen by a central authority, transactions are validated by a network of computers, called nodes. These nodes verify that the information contained in the block—the container of the transaction—is true, then add the transaction to the database. Each block is assigned a single number, called a hash, which allows for inviolability. For instance, if a hacker wanted to hack the blockchain by modifying the information in a block, he could not do it without creating a new block, with a new hash, which would make the hack very visible and easy to stop. Due to this, the system is very transparent and almost inviolable. But how would the system react if a

node was deficient or was sending wrong information?

The Libra developers came up with a solution called the Libra Byzantine Fault Tolerant consensus (LibraBFT consensus). The Byzantine Fault Tolerant consensus is a common process in the blockchain that consists of defining a common behavior for all nodes in reaction to a deficiency or hostile manipulation. In the case of the LibraBFT consensus, the system would allow up to one third of deficient nodes to validate a transaction, which would make it both secured and efficient. However, only the Libra partners would be allowed to add blocks to the ledger, which would speed up the transactions and make it a more eco-friendly alternative to Bitcoin. The Libra Association plans to move to a decentralized system once the scalability problems are settled, but it does not seem attainable anytime soon.

The biggest difference between the cryptocurrencies that are currently being exchanged and the Libra project is volatility. Bitcoin, Ethereum and XRP are the most traded cryptocurrencies and their value regularly surges and slumps. Since the Libra Association wants Libra to be a stable currency that would not lose its function as a wealth reserve or means of exchange, currency stability is their number one goal. However, pegging Libra to the dollar, operating through a mechanism known as



currency board, would be very expensive and very difficult since a currency board consists of repurchasing the currency being pegged to the dollar with dollars in order to maintain its value. It has failed several times in the past when used in countries with limited resources, such as Argentina in the early 2000s. Therefore, instead of guaranteeing no fluctuations, the Libra Association created the Libra Reserve. The reserve will acquire as many stable assets as customers purchase Libra. Simply put, this means that purchasing one Libra with one dollar will allow the Libra Reserve to purchase one dollar worth of stable assets, such as government securities, mortgage backed securities, and other financial products with a competitive credit rating. For now, the Libra Association plans to use dollars, euros, Japanese yen, British pounds and Singapore dollars, which all are stable and reliable currencies.

Nevertheless, Libra has encountered a hostile reaction from lawmakers and the current actors of the economic system. The U.S. Congress audited several leaders of Facebook and Calibra – the Facebook subsidiary in charge of issuing the Libra – and some government officials openly showed their distrust of Facebook to administer the project in an efficient and lawful manner. The project takes place in a context of increased suspicion from the public towards Facebook after several scandals regarding data privacy that showed the unpreparedness of Facebook to counter the misuse of its network. There is indeed a huge difference between the goals of the Libra Association and the way they prepared lawmakers for the introduction of the currency. While the non-profit presents the project as a simple means of payment, David Marcus, the head of the Blockchain research at Facebook recently stated that “[Libra] could profoundly change the world” by fostering more financial inclusion. PayPal, eBay, MasterCard and Visa pulled out of the project in the end of 2019, saying they would not

do anything that would decrease their trustworthiness in the eyes of regulatory officials. These episodes were seen by the public as clear setbacks for Facebook and the Libra Association. Nevertheless, the Libra Association still has about thirty members. It must not be forgotten that the economic and technologic might of Facebook allows them to use their two billion users as leverage in a very efficient manner. Moreover, the partners of the association would allow for a very rapid scalability of the Libra by allowing the customers to pay in their applications directly in Libras. This would allow it to overcome the problem most cryptocurrencies face: they are not easily used and accepted.

If the Libra Association is successful in creating Libra, it would create huge challenges for regulatory entities. The first partner of the Libra Association is Calibra, a Facebook subsidiary that would issue Libras. Facebook officials have indicated that if Libra was used extensively, Calibra would propose services such as loans and financial products. The implications are huge: Calibra’s products would lead to the creation of an entire shadow financial system. This would pave the way to the development of a parallel ecosystem around Libra, an ecosystem in which the regulatory entity would no longer be the Federal Reserve nor the government but the Libra Association. The lack of conceivable regulation of this new system could possibly increase money laundering and unlawful transactions in the short term. In this case, an efficient solution would be to reconcile the two systems by providing a new common regulatory framework. Not only would it be a huge project but it would also be antithetical to the goal of the Libra Association, which was to get rid of heavy regulations. Moreover, the Libra Association has disclosed very little information about its governance. As the public suspected Facebook to be hiding itself behind the Libra Association, Mark Zuckerberg tried giving some guarantees to the public. Facebook central governance

distanced itself from its subsidiary, Calibra, and wrote in the status of the company very clearly that it would be impossible for Facebook to use the financial information collected by Calibra on its customers in any manner. Nevertheless, we still know very little about who leads the Libra Association and as such it is currently impossible for the public to assess the Association’s trustworthiness. In addition, despite claiming it would not do it, the Libra Association is going to perform monetary policy, a very technical duty that even highly skilled government officials barely master. This would tie very closely the monetary policy of the Fed and the one performed by the Libra Association.

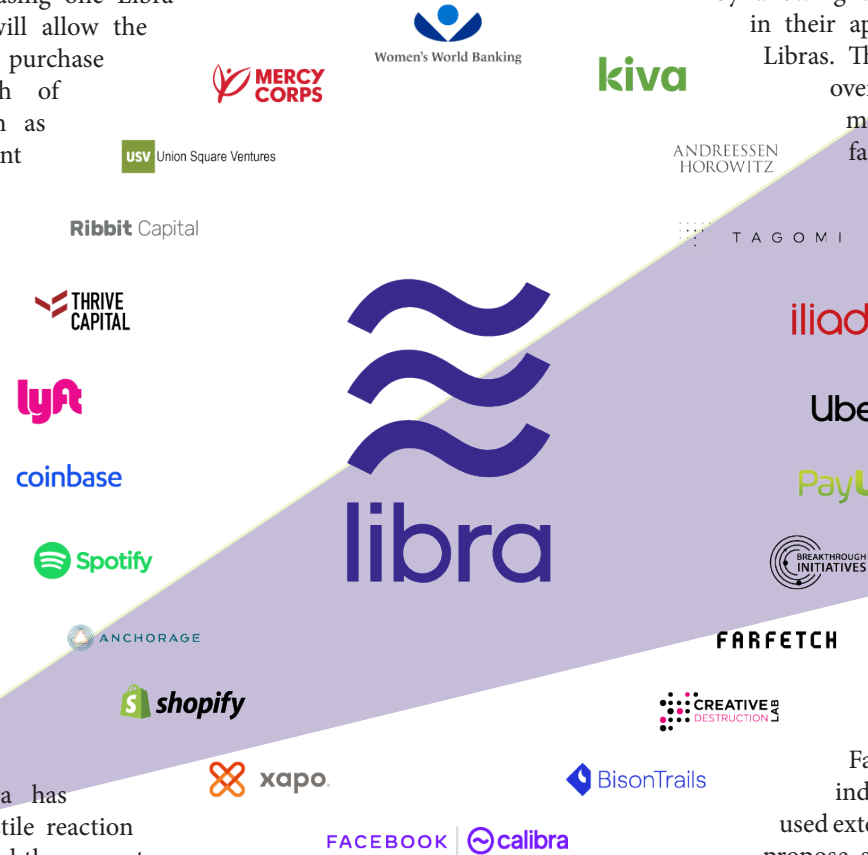
The biggest threat posed by Libra is to economic and monetary sovereignty. Although in the distant future competition between the euro or dollar and Libra could

accounts than in Venezuelan banks where the value of the deposit shrinks daily. Therefore, this is probably the most ambitious attempt in history by a private entity to compete with the state on one of its regalian duties.

It is widely believed that privately-issued money is a libertarian idea. Libertarians argue that the coercive power of the state must be used only if it is absolutely necessary. Therefore, it must reduce as much as possible its intervention in the economic system even by letting money be controlled by private agents. This idea stems from Friedrich Hayek’s book “Denationalization of Money,” written in 1976. Hayek suggests that confiding the creation and the regulation of money to private entities that would compete with each other would increase the efficiency of the system. However, the economist David Howard has pointed out that considering the dynamics in the market, a currency will inevitably end up dominating the market and instigate a monopoly, which then would harm the consumer either way. In our case, the Libra Association starts with a huge comparative advantage: the Facebook network has two billion users and its partners represent the bulk of the new economy (Lyft, Uber, Spotify, Shopify, Iliad, etc). Although at first the idea might seem like it could increase private initiative and reduce the influence of the state, it would ultimately reverse the hierarchy without making consumers any freer. Libra is about replacing the government entities by the partners of the Libra Association which does not settle in any way the trust problem, even if this centralization is temporary. The question then stands: are we willing to give up the command of the economic system to a private entity?

“THE BIGGEST THREAT POSED BY LIBRA IS TO ECONOMIC AND MONETARY SOVEREIGNTY”

exist, it is the countries of the global South that would pay the price of this innovation first. Facilitating the exchange and storage of a currency over borders would not only put platforms like Western Union out of business but would also cause a lot of problems to the central banks of developing countries. For instance, a currency like Libra would be too competitive compared to the Venezuelan bolivar and as such undermine the economic sovereignty of Venezuela. It is not difficult to imagine that if Libra becomes fully integrated into the international financial system that companies would choose to operate with Libra in unstable countries to secure their activities and reduce uncertainty. This would create a vicious spiral: paying wages directly in Libras would allow workers to store them more safely in their Libra



PAYING ATTENTION:

THE ATTENTION ECONOMY

BY ALLY MINTZER

Economics is the study of how scarce resources are allocated; whether that is housing, food, or money. However, in an era of endless amounts of information at the hands of our fingertips, what is the scarcity? Unlike the first three examples that can be empirically quantified and measured, our intangible yet extremely valuable attention is the limiting factor: we are in the age of the attention economy.

The American Psychological Association defines attention as “a state in which cognitive resources are focused on certain aspects of the environment rather than on others.” Attention comes in many forms: love, recognition, obedience, and help. Although theoretically unquantifiable, many derive attention’s value from how much time we focus on a particular thing. We face attention’s scarcity every day; while “paying attention” to one thing we ignore others. Similar to money, we exchange attention; you are reading this article right now and probably ignoring the other work you have to do (sorry for bringing that up).

The term “attention economy” was coined by psychologist, economist, and Nobel Laureate Herbert A. Simon, who posited that attention was the “bottleneck of human thought” that limits both what we can perceive in stimulating environments and what we can do. He also noted that “a wealth of information creates a poverty of attention,” suggesting that multitasking is a myth. Later, in 1997, theoretical physicist Micheal Goldhaber warned that the international economy is shifting from a material-based economy to an attention-based economy, pointing to the many services online offered for free. As fewer people are involved with manufacturing and we move away from an industrial economy, emerging careers work with information. Although the “information economy” is a common name for this new state, Goldhaber rejects this; information is not scarce, attention is.

Like money, we all crave and need attention to a certain degree. Money is needed for food, water, and shelter. Similarly, attention can be translated to such tangibles necessary for survival. As babies, we cry, laugh, make noises, and want the attention on us—otherwise we are not fed, clothed, or do not survive. However, money and attention are distinct; money

follows attention, whereas the reverse is not necessarily true. As our economy becomes more dependent on attention, the medium of exchange flows from the holders of the old to the holders of the new.

Our attention has always been limited, valuable, and scarce. But what distinguishes the present day is that technological advances have made an overwhelming amount of information available, strategically aimed at capturing our attention. As for the general public, it has never been easier to garner such personal levels of attention though means like social media.

When we go on the internet, we typically have a goal in mind, like finding an answer to a question or conducting research. Once we obtain what we want, we leave the site. However, social media keeps us on the platform longer and wanting more. Once we see a platform or user we like, we “subscribe” to them on YouTube, “become friends” with them on Facebook, or “follow” them on Instagram or Twitter. Thereafter, anything they post will appear on our feeds. Anyone can set up an account and have the opportunity for their presence to be seen by millions, but this also increases the pressure to capture more of the increasingly scarce resources of attention. As our online social media presence is defined by numbers—number of “friends,”

“followers” vs. “following,” “likes,” and “subscribers”—comparison is easy. Furthermore, social media sites’ “explore pages” throw endless information at us, hoping that one picture, hashtag or video will interest us. We can scroll endlessly on social media, and upon finishing a video we will always have a new one to auto-play. However, when we focus our attention glued to our phones, we forgo other opportunities.

It is difficult to determine the impact attention-grabbing sites can have on the economy and society as a whole. As UC Berkeley economist Stefano DellaVigna and Bocconi University economist Eliana La Ferrara note, it is necessary to not only consider the direct effects of exposure to social media, but the crowding out of other activities, known as the substitution effect. Since

technology rapidly advanced in the past decade, much of the observed effects are unknown. The two economists do report, however, is that in the United States in 2013, the average amount of television an American watched per day is 2.7 hours, approximately half of leisure time (perhaps now, more of this statistic is attributed to social media). Furthermore, once interrupted, it is incredibly difficult to return to one’s original task; UC Irvine Informatics professor Gloria Mark reports that it takes an average of 23 minutes and 15 seconds to get

back on track.

Just as our nation faces extreme levels of wealth inequality, we also see attention inequality. Stars have amassed massive followings; the most followed Instagram user, soccer player Cristiano Ronaldo, has over 205 million followers (which is more than the population of all but four of the ten most populous countries). The personal lives of celebrities are showcased throughout the media for the world to see, and such stardom makes them appear less and less human.

Many firms understand the scarcity of our attention, and are adapting their business models to capitalize on it. For instance, music streaming services like Spotify have two revenue streams; you can either monetarily pay for ads to disappear, or pay with your attention and listen to ads. In the book *Hooked: How to Build Habit-Forming Products*, Nir Eyal attests that technology companies use Harvard psychologist B.F. Skinner’s well-known study that rewards, especially at variable intervals, increase one’s anticipation. As anticipation increases, such reward-seeking actions that technology companies have capitalized on to capture attention turn to instinct. Eyal argues “When you’re feeling uncertain, before you ask why you’re uncertain, you Google. When you’re lonely, before you’re even conscious of feeling it, you go to Facebook. Before you know you’re bored, you’re on YouTube. Nothing tells you to do these things. The users trigger themselves.”

Many of us members of “Generation Z” reached our teenage years just as social media was emerging. The insecurities we had, the personas we wanted to portray, and the desire to feel like we belong that comes with being a teenager merged seamlessly with social media’s design of “bridging us together” and garnering more and more attention. When looking at social media’s societal impact, Tristan Harris, founder of the Center for Humane Technology and former Google design ethicist and product philosopher, suggests that it is monumental. Harris asserts “Behaviour design can seem lightweight, because it’s mostly just clicking on screens. But what happens when you magnify that into an entire global economy? Then it becomes about power.” As we continue to drown in a surplus of stimuli trying to capture our attention, perhaps we must focus on paying attention to what we pay attention to.



AN ILL ECONOMY:

THE ECONOMIC TOLL OF CORONAVIRUS

BY KONNOR VON EMSTER

While crises like natural disasters and financial cyber attacks can significantly damage an economy, very few events can completely halt the global economy. A natural disaster often only disrupts the local area it damages, while life continues on normally in other parts of the world, such as what happened with Hurricane Katrina in 2005. Cyber attacks, while potentially global in scope, would likely not cause an economy to grind to a halt, as many functions can be taken offline in an emergency and person to person transactions can still occur. Pandemics, on the other hand, are one of the few events with the potential for complete global disruption.

Pandemics occur when highly contagious diseases spread to humans and then spread around the world. In the case of the current Coronavirus outbreak, many cities, most notably Wuhan, China, have entered lockdown in an effort to prevent its spread. While public health organizations as well as the Chinese government are attempting to stop the virus in China, the virus is spreading rapidly, with hundreds of cases documented each day.

In this situation, the major economic impact of factories halting production and people being quarantined in their homes is evident but the extent of such impacts has not fully been analysed until now. Does this pandemic have the power to completely disrupt the global economy or will the consequences only be local in scope?

WHAT IS THE CORONAVIRUS?

The Coronavirus that is sweeping China is an individual strain of disease in the Coronavirus classification of viruses including the common cold, bronchitis, and pneumonia. Little is known about its lethality, although it appears to be much less deadly than Severe Acute Respiratory Syndrome (SARS) or Middle East Respiratory Syndrome (MERS), which had lethality rates at 10% and 34% respectively.

However, there are now about 45,000 confirmed cases and nearly 1000 confirmed deaths, far surpassing the death toll of the SARS outbreak of 2003. While a quarantine has been implemented to prevent the spread of the disease, the disease has spread to Europe and America, including 12 confirmed cases in the US, with no deaths. The disease's rapid surge has coincided with China's largest holiday, Chinese New Year, where people from around the country travel and visit family. As a result, China placed a travel ban in an attempt to prevent the spread of the disease. This also includes banning Chinese New Year festivities in Wuhan and Beijing in an effort to prevent public gatherings that could spread the disease.

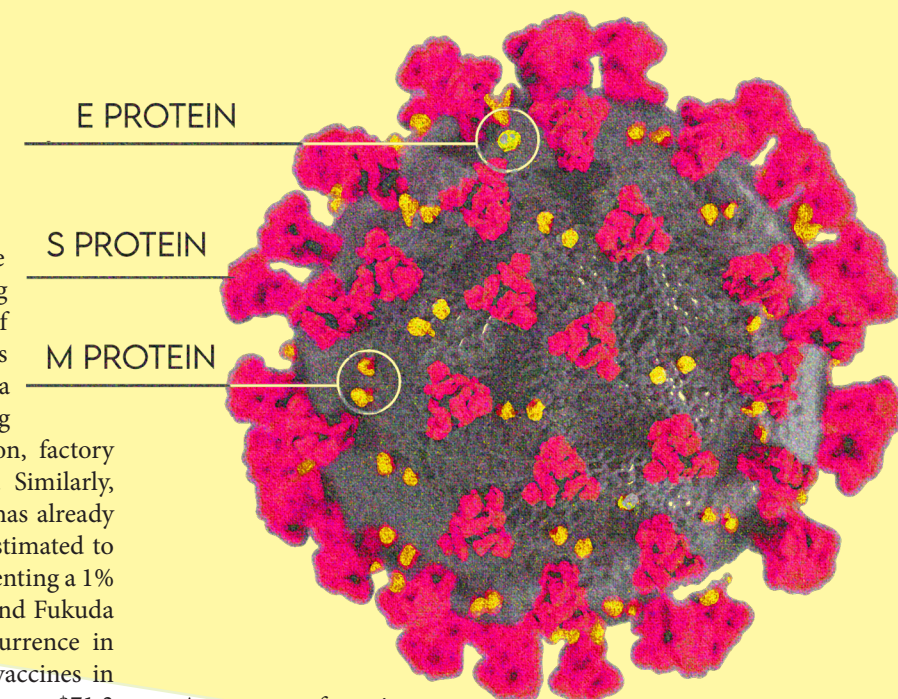
Included in these travel and event restrictions, Wuhan itself has been placed on lockdown. All transit (flights, trains, buses, and highways) has been suspended as of January 23 2020. On January 26th, one resident reported text messages from the government allowing only certain people to leave their residences and pick up supplies. The economic impact of such a lockdown is great, particularly in light of the fact that Wuhan itself is a large city known for its commercial and manufacturing interests, located in the province of Hubei. The city has over 11 Million residents and is one of China's technology and automotive manufacturing hubs.

A BRIEF HISTORY OF PANDEMICS

Past pandemics, while extraordinarily infrequent, have resulted in substantial decline in economic growth during the periods in which they were active. The Spanish Flu of 1918, one of the most severe in history, saw large swaths of markets shut down throughout the globe due to a large number of workers being infected, thereby causing basic services such as mail delivery, telephone operation, factory production, and garbage disposal to become hindered. Similarly, SARS's economic effect, the likes of which Coronavirus has already surpassed, led to an economic loss in mainland China estimated to be between \$12.3 and \$28.4 billion USD, ultimately representing a 1% decline in Chinese GDP. An article from Meltzer, Cox, and Fukuda analysed the economic impact of a pandemic-like occurrence in 1999. Their results confirmed the cost-effectiveness of vaccines in lessening the economic impact which was estimated at between \$71.3 and \$166.5 Billion. Such studies exemplify the extreme impact that this would have on output, not to mention the effects the study was not able to account for such as social and commercial ramifications.


CURRENT ECONOMIC EFFECTS

Needless to say, pandemics are very bad for an industrial economy, as people are immediately and uncontrollably removed from the workforce for either a temporary or permanent amount of time. Wuhan, as a city built for commerce and trade, will be hit hard by this epidemic. The only questions left are what areas of the economy will be disrupted and how far the virus and its effects will spread.



Auto manufacturing is chief among the disrupted industries as entire production lines for Honda, Nissan-Renault, and GM have come to a halt. This lost production may lead to increased prices for consumers and lost wages for factory workers. China's state-owned auto manufacturer, Dongfeng Motor Corp, faces the most extreme difficulty as their entire headquarters is stationed in Wuhan, as is much of their manufacturing. Tesla's recently built Shanghai factory reported a necessary slow down in production and delivery of vehicles due to Coronavirus. Due to all these factors, Gasgoo Auto Research Institute reported a projected 3% to 6% drop in auto sales during 2020.

China's "Made in China 2025" high tech initiative will also be disrupted, as the movement has largely centralized



itself in Hubei through strategic centralization of semiconductor, smartphone companies, and industrial components.

Manufacturing will suffer due to a twofold decrease in labor supply. Not only are there sick workers who cannot show up to work, there many still who cannot return from their Spring Festival Travel due to the travel ban, as reported on by a semiconductor industry insider. This has caused many companies to make the painful decision to partially or fully shut down manufacturing operations.

This instigates another point, which is that much of the business is derived from foreign corporations or foreign agreements. With the travel ban and airline service suspended, business transactions cannot be had in person, leaving significantly less effective phone calls and emails the only option. This situation tests the trust companies must have in their subsidiaries and third party manufacturers, when dealing with quality control and actuarial management.

A more direct economic effect will be airline companies losing business over decreased travel to China. The CDC advised travelers to avoid all non-essential trips to China. Several airlines including United, Air Canada, British Airways, and Air India have begun canceling flights to adjust for the decreased demand. This has been exacerbated by the US's ban on travelers with recent travel to China, essentially cutting a large tourist segment from the US. These route cancellations represent small (2-8%) but real cuts to US airline revenues.

Ripple effects around the world on supply chains may become evident in the coming months. With shortages in production certain intermediate goods made in Wuhan such as their acclaimed semi-conductors will be scarce, leading to product specific inflation. A severe pandemic could lead to worsening transport problems with sickly transit workers but this does not seem to be the case as the epidemic is mostly centered in China.

An often unmeasurable effect pandemics have to the global economy is that of investor confidence. Investor confidence is a hard trait to measure as millions of investors around the world partake in individual financial transactions that ultimately conglomerate in market prices and the health of the global economy. Therefore a relatively unimportant or small impact that spooks many investors could cause a momentary downturn in the market. Such fears may be sound in the technology and auto companies directly involved in the crisis, but a global downturn may result from lost investor confidence over fear of the virus's spread. It is a known fact that many people disproportionately exaggerate unlikely risks from common ones, such as the classic shark attack verses traffic incident fallacy. Therefore a relatively controlled virus like Coronavirus that has killed just over 1,000 people is greatly exaggerated from the common flu which has killed 10,000 people in the 2019-2020 season alone.

This ridiculousness is not isolated to theory either. Hot Pot restaurant shares took a tumble in response to a reported story that 9 people were infected in Hong Kong after sharing a hot pot.



Many Asian indexes have fallen in the wake of Coronavirus, even in countries marginally affected by it. This could be for several different reasons, including fear that the virus could spread to other economies, China's temporary downturn may spillover, and manufacturing supply chains will be disrupted, decreasing production. Because it is difficult to estimate how far the epidemic will spread, determining whether markets are priced in or not cannot be accurately estimated.

HEALTH CARE SYSTEM UNDER STRAIN

While most of the time disease is a morbidly good business for hospitals, it seems this is not the case in Wuhan as of yet. While it is not entirely clear the full extent of the situation, there are stories of overcrowded hospitals where only the sickliest of patients are admitted. The pace of new cases is outstripping the capacity of all of the hospitals, which China has responded by outright building more hospitals, having completed two in just over a week. Even then patients are being turned away as there are simply not enough beds,

with reports of people being treated from the disease outside and in their cars. It is evident the Chinese healthcare system did not have the capacity for such a virus. China's healthcare is nationalized and thus the government controls supply to fit demand. There is thus no profiteering to be made from this virus as there may be in other healthcare systems. Either way, the totalitarian control and legitimacy of China's state government is under question by this gap in services, with many complaining about the poor quality of care their relatives are receiving.

One industry that is benefitting heavily from the Coronavirus are antiviral pharmaceutical manufacturers. As the virus currently does not have a standard treatment, healthcare professionals have been required to improvise, leading them to try antivirals typically reserved for HIV patients. When a Washington man became ill with Coronavirus, doctors turned to the experimental Remdesivir, produced by Gilead Sciences. Remdesivir was originally produced to combat Ebola, but has shown to be effective as an antiviral treatment. Gilead Sciences insists it is only for experimental use and "has not been demonstrated to be safe or effective for any use" in a statement released on January 31st. While Gilead is not expected to profit much off of Coronavirus, its stock still realized a 4% gain after their press release on Coronavirus.

CONCLUSIONS

The impact of Coronavirus is far from well-defined. Current analyst predictions place the effects on the order of a 0.5-1% reduction in GDP, although this is dependent on the severity and longevity of the virus. Further devaluations may be necessary depending on the longevity and spread of the epidemic. The longevity aspect is what will start to hurt business inventory and supply, thus causing a contraction in production and in the local economy of places affected by the epidemic. The epidemic in its most extreme form is only centralized to Wuhan's state of Hubei, although further expansion would affect other economies. Luckily this has not been the case as it has not reached a pandemic status, and does not appear to be spreading globally.

There is yet another silver lining to the Coronavirus crisis. The pandemic has caused companies to rethink their supply chain management and decentralization of parts procurement, such as that of many automakers and tech companies, notably Honda in this article, choosing to shift production to other foreign plants. It may also push companies to plan more succinct and complete business continuity plans, protecting consumer goods against future crises. While this may not be as important for auto manufacturers or technological products, business continuity plans are crucial for industries such as agriculture, utilities, and pharmaceuticals, all services many people would not be able to live without for an extended period of time.

Part of China's strife also exemplifies the need for developing healthcare systems to be prepared for local epidemics at any point in time. One could also argue it is up to the global public health system to support healthcare systems that are not able to fend for themselves. In China's case there were not enough gowns, googles, or masks to protect all the available healthcare workers, nor beds to keep up with the incredible spread of the disease.

Another consideration for businesses is how to decentralize and move online when a whole city is quarantined. While this is obviously not the solution all businesses can rely upon, especially when it comes to manufacturing jobs, service and managerial jobs can often be completed over alternate means of communication. While difficult, performing vital tasks over email, phone, and video calling may be preferable to completely shutting down a business to ride out the epidemic.

While it is uncertain how far the Coronavirus will spread, it is evident that it will affect the Chinese economy the most, followed by some rippling effects for the world economy.



A NEW BREATH FOR U.S. ANTITRUST REGULATIONS

BY NICOLAS DUSSAUX

Why do Americans increasingly despise big tech companies? Just recently, a poll found that “seven out of ten Americans are pretty on board with breaking up big tech...” In fact, the might of giants like Facebook, Google and Amazon is a growing concern reinforced by the high confidentiality of their operations and research. The fact these giants collaborate with the military in the case of Google, the ICE in the case of companies like Palantir or with lobbyists as with Cambridge Analytica for Facebook does not relieve the public. They are more and more referred to as monopolies, which begs questions. Such companies have made irrelevant the current framework in which we analyze anticompetitive practices and call for a redefining of the assessment standards. In this respect, the consensus inherited from the Chicago School of Economics which put too much emphasis on price theory not only failed to ensure low prices for consumers but also undermined economic structures of markets.

THE RISE OF THE CONSUMER WELFARE STANDARD

It is broadly acknowledged in economic theory that a monopoly is bad for an economy and the word has very negative connotations in public debate. After the twenties, it disappeared as a prominent topic for political campaigns but has regained exposure lately, to the point that it is a major topic in the current presidential election in the United States. Elizabeth Warren is a fervent advocate of breaking up the “giants of technology”. Why? According to Warren and some observers, these companies act in deeply anti-competitive ways.

Let us break up the meaning of this affirmation and see why it is problematic. The most basic economics classes teach their students that lack of competition is a bad thing because it creates market power, and consequently the possibility for a company to charge their consumers the price they want without having to fear being put out of

business by another company that would charge for a lower cost.



Expanding this analysis to imperfect markets but still a little bit competitive, we expose ourselves to higher prices due to collusion or to simultaneous rise in prices that would benefit the few companies in power. In order to avoid these negative outcomes, the government created courts and agencies in charge of operating in markets to enforce competitiveness. In the United States, the Federal Trade Commission and the Department of Justice enforce a handful of texts written to enforce competition among which the famous Sherman and Clayton Acts.

This framework of analysis for the competition is named the Consumer Welfare Standard. It argues that the role of the antitrust authorities is to ensure low prices for consumers. However, this analysis was not always the dominant one and is today ill-suited to understand the problems created by big technology companies. We inherited this theoretical framework from the Chicago School of Economics, famous for the central importance of neoclassical price theory in its thought. More in favor of free markets, the Chicago School was convinced that prices were a reflection of the value rational agents placed on goods and services. The growing influence of the School of Chicago in the seventies led to the creation of governmental guidelines regarding antitrust regulations that ultimately led to the Consumer Welfare Standard while disregarding some other features of competitive markets such as economic structure.

The Chicago School, based on the assumption of rationality, dismissed essential anticompetitive practices based on their alleged unlikelihood. For instance, predatory pricing consists in pricing aggressively below the market price—and below production cost—in order to capture a majority of the market and drive out competitors. It is commonly believed that this is followed by a rise in the monopolist's price but it is not always the case and can significantly harm the competition on a market even though prices remain low. In *The Antitrust Paradox*, the seminal book that outlined the shift in modern competition law, Robert Bork made the case that such practices were violating the assumption of rationality because companies would generally prioritize profits over growth. Bork, a judge that got his JD from University of Chicago, had a significant influence on the Reagan administration and almost became a Supreme Court Justice. He also made the case that corporate mergers generally benefit the consumers that can profit from efficiencies generated by such economic concentration, thus lower prices.

THE FLAWS OF THE CONSUMER WELFARE STANDARD

But antitrust laws were not only written to protect the consumers from high prices. The Senator John Sherman, at the origin of the Sherman Act, argued in front of the Senate:

“If we will not endure a king as a political power, we should not endure a king over the production, transportation, and sale of any of the necessities of life. If we would not submit to an emperor, we should not submit to an autocrat of trade, with power to prevent competition and to fix the price of any commodity.”

If we are trying to reconstitute the legislative history of antitrust laws, we realize that they were not only meant to protect consumers of unreasonable toll: they were a guarantee of freedom for everyone: consumers, buyers and sellers. In a time where capitalism is under the fire of critics for the inequalities he creates, it is time to ask another question: what if the fault is on the government that fails

to implement efficient competition policies? If the Consumer Welfare Standard fails in its goal which is keeping prices low for consumers, it is probably the time to rethink our antitrust policies, not only to enhance innovation in the long run, but also social equity in the short run.

HOW TO MEASURE THE HARM

Besides the Consumer Welfare Standard's lack of efficacy, it is very difficult to carry out an appropriate econometric analysis of the way a company prices its goods and services. This kind of analysis is highly relevant in case of class action suits filed by consumers, buyers or sellers. Prior to certifying a class action, a judge must assess the possibility of carrying out an economic analysis of the market. To determine if a business is actually engaging in price discrimination, the two most common methods are the regression and the correlation matrix. These two processes are used to determine if there exists a “price structure” that would harm the consumer.

However, even if the conclusions seem easy to draw, these numbers are rarely eloquent. Besides the extreme complexity of aggregating thousands of correlations in order to prove the existence of the price structures, each of the correlations must be analyzed in order to provide the judge—or the jury if the analysis is carried later during the trial—with a plausible explanation for the common price variation that would demonstrate a “price structure.” This assessment is left to the judge's discretion, which

does not really help the implementation of a common judgment framework. This is one of the major explanations of the relative disorder we note when trying to examine closer the trend in the last antitrust litigations.

THE KILL ZONE

Lina Khan, a student of the Yale Law School that later became an advisor at the Federal Trade

Commission, explained in a note in the *Yale Law Journal* how Amazon embodies the flaws of the current competition analysis framework.

“It is as if Bezos charted the company's growth by first drawing a map of antitrust laws, and then devising routes to smoothly bypass them. With its missionary zeal for consumers, Amazon has marched toward monopoly by singing the tune of contemporary antitrust.”

Amazon is the perfect example of the kind of structural dominance on a market that cannot be captured by the Consumer Welfare Standard. Some figures are more eloquent than words: Amazon registered an operating loss on half of its reports since its creation in 1995. In fact, the company always prioritized its expansion and invests aggressively in every line of its business, subsidizing its losses to gain market shares. And it is efficient: Amazon controlled in 2017 46% of the U.S. e-commerce and continued to expand since then. However, over a six year period, while their operating revenue multiplied by 5, they are still enjoying meager profits when not incurring a slight loss. The constant losses of Amazon were always compensated by generous investments of shareholders and since their beginning, they reversed the logic of the Chicago's School, which allowed them to conquer the online shopping business. Starting at a yearly price of \$79, Amazon Prime, their delivery service, lost \$1.5 billion dollar a year since its creation. However, the loyal basis of clients it created allowed the company to raise the toll to \$99 then \$119 without losing a significant volume of clients. Even though Amazon Prime is hardly profitable for the company, it allowed it to build a loyal client base which gives them a decisive advantage in their other businesses. It makes the case for a company that disobeys the rules: by prioritizing growth over profits, Amazon occupies now a structurally dominant place in the market by practicing predatory pricing, in contradiction with Bork's predictions.

For companies like Amazon, Google and Facebook that are today in a dominant place in their own market, suffocating smaller competitors is easy. By buying smaller companies, copying their innovations or taking advantage of their dominant position in a closely related line of the business the GAFA (the group formed by Google, Facebook, Amazon and Apple, to which we sometimes add Microsoft) ensure they remain dominant on their own markets. This phenomenon is called the “Kill Zone” and its existence is highly debated in business and within the authorities. As outlined during a meeting in February between the Department of Justice and some VC partners, there is a double phenomenon: shy investors tend to not back startups who venture against established companies, and these companies tend to squelch those new initiatives: “Arnold [a Venture Capital partner] pointed to LinkedIn as the perfect example. He said he's seen a litany of startups that want to take on LinkedIn and build a new professional

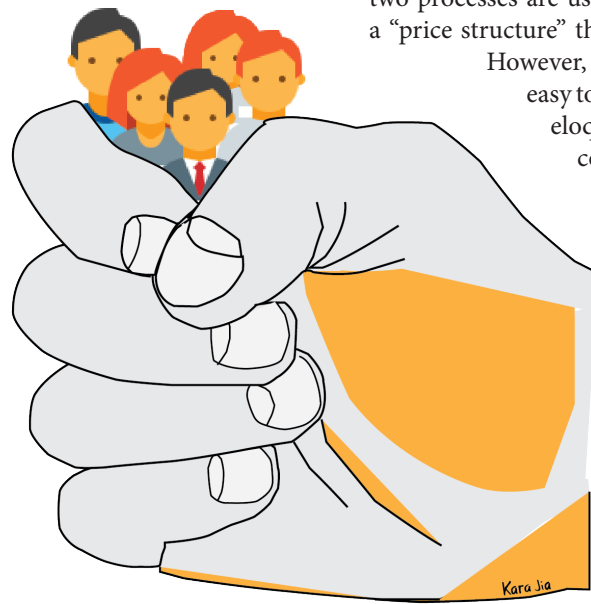
network, but none has been able to get a foothold.”

Nevertheless, regulatory authorities seem to be moving towards this renewed understanding of the antitrust policies. In early February, the FTC announced their intention to study extensively the last decade of acquisitions realized by the company to better understand how those could have affected the structure of the markets within which they operate.

CREATING THE EFFECTIVE COMPETITION STANDARD

In an article published in March 2020 in the *Chicago Law School Review*, Marshall Steinbaum and Maurice Stucke make the case that under these principles, it is possible to establish a new standard to restore competition, that they call the Effective Competition Standard. Through amendments to the Sherman and Clayton Acts, the authors propose to base the common framework for antitrust litigation on an economic structure-based assessment of the market. Instead of looking merely to reductions in output and increase in prices, the authors advocate for controlling competition through a wide range of criterias. Among those criteria, paying more attention to vertical mergers could allow the regulator to look upstream and guarantee fair pricing and open market not only when it comes to selling to customers, but also all along the supply chain. The authors propose to amend the Sherman and Clayton Acts to reflect the view of those principles and make a national guideline this new framework, acknowledging that various economic and non-economic factors come into play when assessing if a company operates unlawfully. This renewed framework would allow for structural remedies to lack of competitiveness, rather than circumstantial measures such as enjoining mergers or fining companies for anti competitive practices.

Changing the consensus is a long and difficult process, and it will probably take more than a legal fight in Congress to amend those acts in the way that would guarantee the best conditions to develop healthy markets. But antitrust trials work, and our past experiences prove it: the long fight between the government and Microsoft in their litigation against the network Netscape in 1998 deeply changed the practices of Bill Gates' company, and will maybe go down in history as the first of a long serie of trials to restore true competition in the United States. And maybe give a second youth to the American Dream?



POLITICAL POLLING

BY ANI BANERJEE

Political polling for preferred candidates often seems to be a fool's errand, even in the least controversial election years. Perhaps it is hindsight bias, but there are a myriad of polling issues lurking behind vague, generalized headlines like "Bernie Sanders Polling Well in Iowa." Data journalism and various polls have become a fixture in election coverage in the US, but as the US becomes more diverse and more polarized, biases in sampling have led a majority of American to distrust election polls.

One of the primary flaws in current, large-scale election polling is overextension. Polling across too many states can lead to inaccuracies, so focusing on six to eight states often provides better results. Focused polls have the advantage of providing demographic weighting - taking into account what demographics are most likely to pick up a phone or fill out a survey and how those demographics might vote depending on the state. Furthermore, without knowing the specifics of a state, it is difficult to account for those who merely have phone numbers or IP addresses in the state (or county for caucuses), but are not registered to vote in that state. Attention to detail is therefore key in election surveying, but attention in general is a finite resource, which is why most representative election surveys only focus on several specific states. However, the natural response upon hearing that information is to select go to survey swing states as survey candidates. After all, if you only get up to eight states with accuracy, you might as well pick the states known for their unpredictability.

The ever elusive and sought after swing voter, despite only making up 7% of all votes cast, tends to have a

"SWING STATES ARE IMPORTANT PRECISELY BECAUSE THEY'RE UNPREDICTABLE"

disproportionate say in the outcome of any given election, particularly in swing states. These states, which include Pennsylvania and Wisconsin, could go either way in major elections, making them some of the most important states to poll. Swing states are important precisely because they're unpredictable, and they're unpredictable because voters there often do not decide their candidate preference until the last minute. However, this indecisiveness makes the task of surveying swing states that much harder, especially in the final two weeks of an election cycle, when as many as one in seven voters may remain undecided over who to vote for.

Some polls try to circumvent this dilemma by attempting to forecast based on likeability. Stanford professor Morris Fiorina argues, however, that since 1952, "likeability" has had very little to do with candidate success rates. His definition of likeability was operationalized into a specific set of judgments including intelligence/stupidity, arrogance/humility, sincerity/insincerity, and honesty/dishonesty. However, there is no mention in Fiorina's paper of how these values are weighted, or even how they had been derived respective of the values of the American public.

While he polled the American public on what they liked and disliked in a political figure, Fiorina neglected to analyze his own poll, meaning survey sample bias could proliferate.

Furthermore, in theory, the values desired in a president, like strength and assertiveness, are the values least desired in women. The "dis-likability" of the increasing amount of female candidates may be what's tipping the scales—especially when likability is conflated with values like humility. While 94% of the country says that they'd vote for a woman in a presidential election, that theory may not hold up when a female candidate becomes a real option. Women elected to office in the US are still often much more qualified than the men that they run against. There is no way to tell what groups polled are most subject to this line of thinking, however, and which simply do not like a candidate based on their policies. The presence of sampling

bias means that one cannot draw a conclusion about the American public's opinions on issues based on their opinion of a candidate—especially when social movements like feminism have become so intrinsically tied to the Democratic party, rather than the Republican.

Therefore, to determine what issues are most important, a well-designed poll remains a necessity. Especially when it comes to issues like immigration, the problem is that the design of the poll matters quite a lot. If there is no Spanish—or Tagalog, Punjabi, or Cantonese—translation of a poll, how good of a representative sample will you create? If you only have online polls, can you accurately assess the urban-rural divide on issues?

The gold standard for polling used to be telephone-based surveys, although even phone errors were still fraught with large error bounds. The 1936 Literary Digest poll remains one memorable touchstone of a modern polling fiasco. It boasted a sampling error of 19% and predicted the presidential election in favor of Alfred Landon (R) over Franklin D. Roosevelt (D) despite having surveyed 10 million US voters. Nearly all of that sampling error in that case was the result of sample bias. Since the magazine had mailed their mock ballots to anyone on a telephone directory or club memberships, guaranteeing a bias towards the upper-middle class in an election that took place in the middle of the Great Depression. With telephone surveys, and surveys in general, a large sample size does not necessarily save one from a bad sampling method. Furthermore, as Democrats and Republicans are increasingly geographically isolated from each other, these issues in methods of aggregating addresses can come back to haunt pollsters.

But let's be honest: when was the last time you answered a call from an unknown number? Response rates for phone polls have dropped from 36% in 1997 to 6% in 2019, as robocalls and filtering technology has proliferated. This means that most pollsters have had to turn to the internet, which has its own built in sample biases, namely that 10% of Americans don't even use the internet, and there are clear demographic



ANALYSIS OF TAIWANESE ECONOMIC HISTORY AND POLICIES

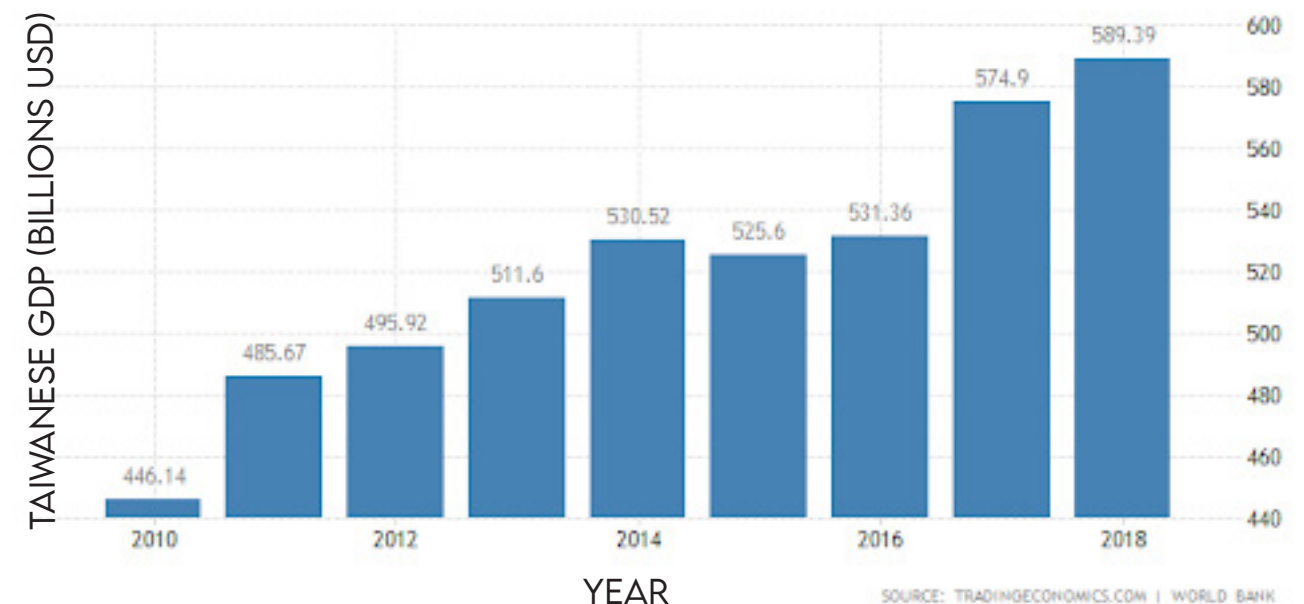
BY HOWARD YAN

EARLY MIGRATION AND COLONIAL PERIOD

Situated to the east of mainland China, Taiwan occupies a strategic position among global supply chains. Appropriately dubbed an Asian Tiger, the island's modern infrastructure, extensive foreign reserves, and \$590 billion GDP have placed it in the top 25 of 185 economies globally. Backed by one of the world's most advanced microchip sectors, it is recognized as a developed, high-income economy, a first for the Chinese-speaking world. Initially settled by Han immigrants during the Ming Dynasty, and subsequently conquered by the Qing, Taiwan has historically benefited from the flight of wealthy, educated

“APPROPRIATELY DUBBED AN ASIAN TIGER, THE ISLAND’S MODERN INFRASTRUCTURE, EXTENSIVE FOREIGN RESERVES, AND \$590 BILLION GDP HAVE PLACED IT IN THE TOP 25 OF 185 ECONOMIES GLOBALLY.”

Chinese seeking independence from the government in Beijing. Taiwan remained under Chinese rule until the Sino-Japanese War, when it was seceded to Japan under the Treaty of Shimonoseki. The Japanese administration effectively improved the island's educational, health, and transportation infrastructure; however, most benefits were intended for Japanese immigrants, as evidenced by



compensates for sampling biases as those biases become more understood and accounted for. However, while the numbers are getting more and more accurate, the headlines are not.

The simplest reason for why polling is so inaccurate at predicting results has almost nothing to do with the polls themselves. Rather, pollsters are locked in an arms race with political polarization. The error must get smaller and smaller to keep up with the razor thin margins that candidates win by, which means that, in many cases, even the average error of 2 percentage points won't be small enough. Elections are decided by narrower and narrower voting margins, which means that catching and

“THE ERROR MUST GET SMALLER AND SMALLER TO KEEP UP WITH THE RAZOR THIN MARGINS THAT CANDIDATES WIN BY, WHICH MEANS THAT, IN MANY CASES, EVEN THE AVERAGE ERROR OF 2 PERCENTAGE POINTS WON'T BE ESMALL ENOUGH”

understanding sampling bias becomes more and more important—especially as the deep political polarization in the US affects more and more of every-day life. It does not matter if a survey manages to accurately forecast 95% of all voter demographics if it neglects that the remaining 5% is where the deciding vote was cast.

trends in who isn't online. Online polls must therefore account for the fact that they miss a large percentage of older, low-income, and rural voters, and thereby weight demographics accordingly.

The realm of internet polling can be divided into two common types. The first option is the opt-in survey. It is both the least expensive and most commonly used type. The problems with this type of survey are exactly what you would imagine: the people who opt in are naturally going to self-select in certain directions, and these surveys face challenges in screening survey-takers. Depending on the websites a person frequents, how likely they are to have a poll advertised to them, and just the sort of personality that agrees to take online political polls, an opt-in poll can select for all sorts of confounding variables accidentally.

The second kind of poll has gotten more recent attention than opt-in surveys; they are probability-based online panels (PBOPs). You may have heard of a few of these PBOPs including: the Pew Research's American Trends Panel and RAND Corporation's American Life Panel. Both panels use this relatively new form of online polling.

Interestingly enough, one of these probability based online panels, Ipsos KnowledgePanel, has had global success through the populist wave in the last few years. In 2017, after unprecedented populist surges in France and the UK started sowing doubt in the accuracy of polls, Ipsos accurately predicted the results of the Dutch general election where the incumbent right-wing VVD party maintained their spot. They were also the second most accurate poll in India in 2019, even with the difficulties of exit polling in India. Their methods are mostly aimed at accounting for sampling biases and the demographic weighting explained above.

A Nature study assures us that despite a few spectacular left-field headlines in the past 5 years, polling in the US has grown more accurate than ever. Part of this may be the changing approach to internet polls, the way Ipsos

the island being denied representation in the Japanese government, and much of this progress was reversed during the Second World War.

MODERN ERA

Dissatisfied by the loss of Taiwan, severe economic stagnation, and failed military campaigns against Western powers, the mainland Chinese consequently overthrew the Manchu Qing Dynasty, establishing the Republic of China in its place. Today, both the mainland and Taiwanese governments credit Dr. Sun Yat-Sen, widely considered to be the Father of Modern China, for this historic occasion. After achieving victory in World War II against Japan and the remaining Axis powers, but suffering a subsequent defeat in the Chinese Civil War, the Kuomintang (Chinese Nationalist Party) fled the mainland for Taiwan. There, they re-established the Republic of China with its capital in Taipei, bringing with them much of China's gold reserves and human capital. Having endured extensive wartime bombing and an influx of mainland immigrants, Taiwan was plagued with divisions between native and immigrant populations, weakened infrastructure, and a per-capita GDP comparable to that of the Congo. Hyperinflation was rampant, and a fatigued population was faced with the arduous task of re-development.

ASIAN TIGER ERA AND THE TEN NATIONAL PROJECTS



Aware of Taiwan's weak economic situation, the Taiwanese government launched a series of reform policies, initially focusing on curbing hyperinflation and stabilizing the Taiwanese dollar in the years immediately following 1945. The government then proceeded to redistribute land from the gentry to the lower classes. Doing so expanded Taiwan's agricultural production, allowing the government to focus on improving education and industrial production. US economic aid subsidized industrial production costs, resulting in strong export growth. Drawn by low manufacturing costs, wages, and a relatively educated workforce Japanese companies began entering the Taiwanese market. Low interest rates on loans and government subsidies further boosted economic growth and large R&D investments developed the fledgling microchip industry. By the 1960s, annual real GDP growth averaged more than 10.3% and major companies, such as IBM, began sourcing chips and electronic components from the island.

By the 1970s, Premier Chiang Ching-Kuo's Ten Major Construction Projects had built infrastructure across Taiwan, increased electricity production, and boosted steel production,

“DESPITE PRODUCING ONE OF THE WORLD’S MOST EDUCATED WORKFORCES, THE GOVERNMENT HAS FAILED TO CREATE JOBS THAT FULLY HARNESS

critical components of the infrastructure-fueled boom. Costing over \$10 billion in costs, the completion of Premier Ching-Kuo's projects signaled Taiwan's entry into the modern era. FDI inflows spiked, supporting investments such as the Hsinchu Technology Park and the expansion of family businesses, which form the backbone of the current economy. By the early 21st century, Taiwan's GDP per capita had risen from \$1400 immediately following World War II to more than \$50,000 on purchasing power parity (PPP), higher than that of most developed European nations at the time. Though GDP per capita on a nominal basis remained at around \$20,000, the economy appeared to be on solid footing.

TAIWAN IN THE 21ST CENTURY

However, the export-dependent economic engine began to stagnate as mainland China opened special economic zones towards the mid-1980s, granting access to cheaper labor. Companies began relocating supply chains elsewhere to China and Southeast Asia, causing Taiwan's GDP growth to drop. This emphasis on pursuing lower labor costs discouraged innovation while companies left Taiwan for Southeast Asia, due to the region's relatively lower wages and abundant raw resources. Taiwan's focus on family-sized businesses and inability to produce global brands, such as South Korea's chaebol Samsung and LG Electronics, stunted its competitiveness. Furthermore, exclusion from multiple free trade

agreements depressed exports, which account for a sizable portion of GDP. Consequently, wage growth has remained stagnant for nearly two decades. Despite producing one of the world's most educated workforces, the government has failed to create jobs that fully harness college graduates' know-how. The resulting brain drain of professionals was therefore hardly surprising.

Multiple China-friendly Kuomintang (KMT) administrations have vowed to bolster relationships with China, promoting higher trade volume and stronger tourism ties. However, a skeptical public rejected such measures, voting the independence-leaning Democratic Progressive Party (DPP) into power by 2016. To reduce dependence on China, Taiwan embarked on the New Southbound Policy to attract new investments and consumers in Southeast Asia. This policy appeared especially sound given that only a small percentage of Taiwan's exports are covered by free trade agreements. Despite this, China continued to account for a sizable share of exports and diversification has been slow in this area.

GENERAL OUTLOOK

Recent figures indicate economic growth at around 2.7% for 2019, a slight drop from 2018, but nevertheless an improvement from 0.8% in 2015. A recent bill which raised the monthly minimum wage by 3% and hourly minimum wage by 5% is expected to boost disposable income and consumption spending for fiscal year 2020. Businesses relocating to Taiwan to avoid tariffs from the US-China trade war are expected to temporarily create jobs and fuel investment spending. However, the possibility of further trade agreement phases between the US and China, in addition to lucrative opportunities in Vietnam, are likely to reverse such gains. Despite relatively decent performance, growth is hampered by trade tensions and future growth may decline if companies return to the mainland.

IS THE NEXT GLOBAL DEPRESSION IMMINENT?

BY SAVR KUMAR

The question of whether the next global depression is due is a fascinating, albeit worrisome, one. While speculation and accompanying fear around the next recession spiked in 2018 and early 2019, the attention on the topic has reached a relative lull, as the public and media focus on more immediate news such as that of the coronavirus, upcoming US elections, and political unrest around the world. Discussing the possibility of another recession is not any less necessary, however, especially considering the fact that events like these are inextricably tied to the global economy.

The global volume of negative-yielding debt is now 17 trillion dollars. Forbes economist Martin Fridson suggests that the argument that bond investors will make losses at some point in the future is an obvious one. According to him, the eventual rebound of the interest rate that will cause those losses will be followed by a recession. Some of the questions we must ponder include when this potential recession might be, what commonalities are present between the potentially upcoming recession and previous ones, and how government actions might mitigate or exacerbate it.

Let's begin by discussing the US economy, the world's largest economy since 1871. Most, if not all, global financial crises in history have been inextricably connected to the United States, from the 2008 recession to the Great Depression of the 20th century. The US economy's expansion invariably affects the world economy's growth. As of July 1st, 2019, the US economy has reached the longest expansion in US history. Part of the reason why speculation about the next recession may have decreased is due to the persistence of this expansion; the third quarter of 2019 beat market expectations and lengthened the period of expansion, which began roughly a decade ago.

However, many speculate that a global depression is fairly likely for reasons such as the mounting debt and the

United States' lack of preparation for a possible recession. Financial writer and author John Mauldin suggests that we must focus on the vulnerabilities of the American economy. The United States has a deficit that is already running a trillion dollars, that could "easily" be running a trillion five, a trillion six" during a recession, when automatic stabilisers kick in. There will be a decline in revenue and increased spending, culminating in a 7 to 8% deficit in the GDP. Fiscal irresponsibility may create a dollar crisis which could affect economies around the world.

According to Ryan Avent, a senior editor at the Economist, warning signs have appeared from the mid-2010s onward, but economic vulnerabilities such as those mentioned by Mauldin (like the massive US current account deficit and substantial global value of debt) aren't quite as large as during the 2008 crisis. All the same, these vulnerabilities are significant enough that we could see a slowdown in GDP growth and trade. He purports that the real risk is the lack of preparedness and the lack of room for global cooperation. These may initially lead to a minor downturn at first, but may turn into something much larger and more difficult to deal with. Thus, Avent's perspective is that, although the next recession is likely, its scale will likely be smaller due to the fact that the vulnerabilities are different. However, his predictions do not take into account complexities such as the emergence of the coronavirus and the ever-increasing stakes of the trade war.

Where the financial crisis will begin is also likely to be different. The last big financial downturn was in the US with the collapse of the housing bubble. The next financial crisis may start somewhere in the emerging world, in economies like India and China. These economies possess a much larger share of the global output than they used to, and have also gone on a 'borrowing binge' over the last 10 years, which could be due for a reckoning. According to the Institute of International Finance, as a result of monetary easing by the central banks in emerging economies, there have been lower borrowing costs which encouraged emerging economies to take on new debt. Sonja Gibbs, the IIF's managing director for global policy initiatives suggests that once rates go back

up, debts are hard to pay down without compromising on other important objectives such as productive investment within a country. In dollar terms, the combined debts of 30 of the largest emerging economies rose to over 69 trillion dollars in 2019.

There are also reasons to be concerned about the Eurozone, particularly Italy which has an enormous debt problem. The market has been slightly jittery about Italy's ability to pay back its debts, which could relaunch the Eurozone debt crisis from 5 years ago. A debt crisis is a situation when a government, due to a prolonged period of its spending exceeding its revenue, loses the ability to pay back its debts. Many debt crises in the past, such as Germany's debt crisis after the First World War, had serious ramifications for the global economy. This is because one country's inability to pay back a large debt usually means that other economies, or organizations such as the IMF, must help bail them out.

Raghuram Rajan, former RBI governor of India, agrees that much of the growth in global trade is tied to emerging markets. He discusses a different set of vulnerabilities that he feels will most likely shape the upcoming crisis. One such vulnerability is the leverage that has built up across the globe, not just in flows to emerging markets but also within industrial countries. Leverage can refer to the amount of debt that a firm makes use of to finance its assets. It also refers to the investment strategy of using borrowed money to increase potential return on investment. Fast growing pockets of debt include examples such as American student loan debt (roughly 1.5 trillion). Other sectors that have become very highly leveraged include the housing sector in Australia, and the shale industry in the US. Similar pockets of leverage were present preceding the 2008 crisis. As debt grew in the mortgage market preceding the 2008 crisis, a housing bubble was created as more and more people would borrow money to purchase houses that were skyrocketing in price. Eventually, when no one could pay for these houses, the bubble burst, which led to the 2008 financial

crisis.

On top of all this, interest rates have been rising. The Federal Reserve will likely continue raising interest rates as the US employment rate is rising and inflation is picking up. The last time the Fed raised rates, the US economy was doing well and was accepting exports from Asian markets. Now, the Fed is faced with a different US economy—one with a strong dollar and higher interest rates, but limitations on Asian exports due to increasing trade barriers from the current US-China trade war. Thus, there is a greater degree of uncertainty.

There are numerous economists who, on the other hand, argue that a great recession is not coming any time soon. Yuwa Hedrick-Wong, an ex-economist at Mastercard and current faculty at the National University of Singapore, approaches the topic from the perspective of the Chinese economy. He states that beliefs about China's slowing economy is more myth than reality. Although China's real GDP growth peaked in 2007 at 14.2% and has been trending downward since, Hedrick-Wong argues that the decreasing growth rates would be perfectly acceptable if the Chinese economy continues to grow around 6-7% in real terms. He says that it is not necessary or desirable to maintain that unmatchable level of growth. He acknowledges that other factors, such as the decline of the Chinese stock market, signal that the slowing Chinese economy is being affected by the trade war. However, he concludes that, unlike the

US, China's stock market has few substantial links with the rest of the economy.

Furthermore, Hedrick-Wong believes that since China dealt with a worse debt situation in the 1990s, it can do so again. He takes contrasting stance to that of Raghuram Rajan and Ryan Avent, suggesting that a high level of debt by itself is not a problem if it is productively invested. He believes that the best solution to China's debt overhang is, therefore, to gradually increase productively invested debt. He concludes that the emphasis on deleveraging is more exaggerated than need be; he opposes the idea that the recession is coming and that economies like that of China are vulnerable.

Ray Dalio from Bridgewater Associates suggests that the problem with debt is that most countries do not have debt denominated in their own currency. He thinks that the significance of debt has less to do with the direct economic vulnerabilities it poses, but with the political implications. He states that our current period is very similar to the period around 1935-1940. From 1929 to 1932, we experienced a debt crisis amidst the Great Depression and interest rates hit zero. A similar debt crisis took place in the period from 2000 to 2007. In these situations, central banks buy money and print financial assets, pushing financial assets up, injecting liquidity, and contributing to a greater wealth gap. As a result of this widening wealth gap, in both periods of time, populism tended to come to the forefront. The economic consequences of such policies are uncertain but asset prices are sensitive to changes in monetary policy. Ray's argument is similar to Raghuram Rajans' in that it focuses more on the political shock that may impede the progress of the global economy. Governments printing a lot of money and investing in financial assets may contribute to an increasing wealth gap, which may add to the impetus of the recession. When there are huge disparities in income, the middle and lower classes are particularly vulnerable to economic shocks.

In any case, if a recession does strike, shaky governance will only exacerbate the situation. According to Avent, there are numerous obstacles to government officials reaching a consensus and taking action to counteract a financial crisis at both the national and multilateral levels. Within countries, governments have become much more polarized, while across the world there has been an increase in populist and nationalist parties. This may make it harder to reach the much-needed agreement to launch big spending programmes, or other legislation of that nature. Ultra-nationalist leaders tend to have incendiary rhetoric and many, over the course of history, have found isolationist policies appealing to their political agenda. Rivalries between countries also make it likely that there will be contentious policies such as increases in tariffs or currency and trade wars. Avent believes a recession is not

inevitable and attempts can be made to avoid it. There are concerns from other economists, however, that these attempts may not work.

The tools governments usually use to fight a recession won't be available to combat a forthcoming recession. Central banks usually cut interest rates to stimulate spending and growth to curtail recessions, but they may not be able to do so since the interest rates are currently very low. Avent suggests governments may have to resort to less-tested methods such as quantitative easing, or printing money to buy bonds. Quantitative easing was utilized in the last recession, and works in a much more uncertain way.

According to Avent, governments should be modifying their central bank targets, and preparing their budgets to include measures that increase spending automatically should the economy weaken. Doing so proactively would help avoid legislative fights regarding whether to expand spending when the time comes. Most importantly, governments should coordinate their actions with each other in order to avoid a recession. According to him, these measures would deter a repeat of the 1930s, when tariff barriers went up and spiked currency wars and competitive devaluations. Geopolitical tension has the potential to produce a self-reinforcing cycle of hostility, trade wars, and diplomatic strain. Although it may seem premature to discuss governmental response to a recession that may or may not occur, it is crucial to consider which economic policies governments should employ in response to a possible downturn.

The reasons put forth for the imminent occurrence of the next global recession include highly leveraged industries in countries from the US to Australia, similarity to problems that caused the 2008 crisis, and vulnerabilities of various kinds in countries such as Italy and China. On the other hand, counterarguments posit that China's slowdown in trade is overemphasized, that the US economy's expansion may continue its trend of growth, and that debt is not as threatening of a problem as it's made out to be.

It is questionable whether arguments such as those made by Yuwa Hedrick Wong entirely negate the worries of those who predict a financial crisis. While economists such as Ragan and Avent focus on discussing the vulnerabilities that exist, Wong shows that these vulnerabilities do not necessitate disaster. The situation, however, continues to change and is ostensibly unpredictable such that events such as the Coronavirus outbreak may catapult the economy into recession. Due to these previously unforeseen factors and the precarious position of the global economy, it is difficult to predict with certainty whether a recession is imminent. Signs indicate that a recession is certainly possible and that it may be exacerbated without the right preventative multilateral actions from governments around the world.

ESSAY CONTEST

SHOULD BIG TECH COMPANIES BE BROKEN UP?

BY KATHERINE STEVENSON

Monopolies are often reminiscent of corporations like Standard Oil and Carnegie Steel Company. Under this older notion, we equate monopolies with higher prices, less innovation, and exploitation of the consumer. However, in the 21st century, monopolies now exist in the form of big tech corporations. Although they partake in some of the same habits as the monopolies of old—Apple alone buys roughly one company every two to three weeks—these corporations have a new type of currency they monopolize: data. Tech companies like Alphabet, Apple, Facebook, and Amazon illustrate some of the most flagrant examples of data monopolies, representing a growing trend of controlling entire markets and the data those markets produce. For the consumer, that means less security and competition in the market and, as such, these companies should be broken up. Allowing big tech companies to continue acquiring companies hurts competition.

Facebook's purchases of the social networking platforms WhatsApp and Instagram, as well as smaller deals for lesser-known platforms such as Beluga, contributed to their capture of 50.68% of US social media, while LinkedIn, Tumblr, and Reddit combined constitute less than 1% of the market share. Even more notably, Google's share of the search engine market is 87.96% worldwide. Meanwhile, Bing accounts for a measly 5.27% and Baidu, China's premier search engine, accounts for a little over a half of a percent. Although it is unlikely for Facebook to be broken up in court if the decision is based upon precedents and existing laws such as the Sherman Antitrust Act—precedents indicate that a court typically won't consider a company a monopoly unless its market share exceeds at least 55%, if not above 70%—these precedents don't account for the changing face of monopolies today. Although many of these companies' platforms may be free to use, they display products, sites, or posts that benefit them. For example, if a shopper were looking up vitamins on Amazon, Amazon would display a Whole Foods brand (a company they acquired in 2017) before displaying a product from a competitor. Companies have changed how they monopolize industries, but the effects of limiting competition to the detriment of the consumer are the same.

When only a handful of companies have control over

these markets, they provide less security to customers as well. Companies that hoard data and are the biggest competitors in the industry feel less pressure to offer better privacy protections. This became all the more evident during the 2016 election, when Facebook sold Cambridge Analytica user data, which it then used to display targeted ads in support of Donald Trump on Facebook's platform. Further, they feel fewer obligations to reveal what data they collect, how they will use that data, and who they will sell it to. When there are no other competitors offering more transparent policies, companies like Google feel no need to change their privacy policies.

These tech monoliths have also posed a high barrier to entry for potential competitors. In the search engine market, Google's algorithm has evolved such that it uses a user's historical searches and the websites they use to then improve future searches. This improves search results by up to 31%. Even if a new player has a better algorithm, it would not have the trove of user behavior statistics that more established competitors have, making it nearly impossible for startups to get into the playing field. Beyond the search engine market, these data-based barriers exist in agriculture, academia, and even medicine, where hospitals which specialize in certain diseases have sole ownership of the data they collected.

Certainly, claiming that tech companies should be broken up is a lot easier than deciding how to accomplish those results. Of the many possible routes that regulators could take, the three most popular options are: restricting the markets these companies can enter, splitting off their platform businesses, and undoing past acquisitions. When it comes to regulating big tech companies, the most likely answer is that regulators will use a combination of those three tactics depending on each case. For Apple, the solution might be preventing them from entering the transportation industry. Meanwhile, Amazon might be forced to carve out its e-commerce marketplace from other operations. In regards to reversing acquisitions, Facebook could be forced to undo its purchases of WhatsApp and Instagram. All of these solutions pose their own risks, and though none of them are perfect, the far greater and more pressing risk is allowing these monopolies to grow and force out other competitors.

PROFESSOR INTERVIEW PREVIEWS

Every semester, Berkeley Economic Review's Research & Editorial team interviews economics professors and researchers from UC Berkeley and around the world to publish in our journal. Below are highlights from interviews we have published in the Spring 2020 cycle.

Read the full journal at econreview.berkeley.edu.

INTERVIEW WITH PROFESSOR ANDRES RODRIGUEZ-CLARE

BY GRACE JANG

Q: What led you to choose international trade as your subfield?

A: That goes back to my studies of Economics at the University of Costa Rica in the 80s. This was a time when Costa Rica was moving from policy of import substitution and protectionism... Costa Rica then started discussing the need to open up to trade... And Costa Rica being a small country, trade policy was very critical to its performance because Costa Rica relies a lot more on trade than, let's say, the US, which is a large country and doesn't rely as much on trade. So I thought I wanted to understand how international trade affects a country's possibility to grow and how efficient the economy would be, and what the implications would be for distribution and inequality.

INTERVIEW WITH PROFESSOR DAVID ROLAND-HOLST

BY ANI BANERJEE

“For me, the fascination is probably analogous to what a field biologist would feel when they go into a rainforest, or a marine biologist when they go into the coral reef environment. There's just a fantastic diversity and excitement in evolutionary processes, it's all there—you just walk into an open market in a developing country and you get that same feeling, the vibrancy. The complexity can be really demanding for us, to try to come up with theories that explain human behavior, but the real motivation for doing that—for me at least—is to improve livelihoods.”

INTERVIEW WITH PROFESSOR EMMANUEL SAEZ

BY SAVR KUMAR

I think that the two biggest problems for the sustainability of society are, one, climate change and the second is the ratio of how resources are distributed, which is the inequality problem. The problem is that a very large fraction of the US population doesn't have that buffer because they have essentially zero wealth. Inequality makes the cost of volatility higher. I think that the US has the possibility of reinventing tax progressivity for the 21st century and one important effect would be cracking down on very large accumulated fortunes. So, a wealth tax that is well enforced and therefore is successful—we do think that the US can make that demonstration: it could have big impacts on countries in the world that have seen a lot of wealth concentration.

INTERVIEW WITH PROFESSOR JEEYANG RHEE BAUM

BY ALLY MINTZER

Politics is messy. I believe that while you can have an economic theory driving certain sets of macroeconomic policies, at the end of the day you have to factor in the local politics. That's where I think general theories or models of economic development fall short.

Thank you for reading Berkeley Economic Review's

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