

Can computers think?

TSEconomist Teaching Awards

La reforme des retraites

TECHNOLOGICAL UTOPIA



<p>Academic</p> <p>4 INTERVIEW WITH FRANCOIS VILLEROY DE GALHAU BY TAMARA RADOVANOVIC AND ABEL REAL</p> <p>6 BUSINESS TALK WITH KRISTEN GRAUER AND HECTOR BROWN BY ALBERTO MIGLIAVACCA</p> <p>7 BUSINESS TALK WITH ETIENNE PFISTER BY ALBERTO MIGLIAVACCA</p>	<p>French Corner</p> <p>19 LA RÉFORME DES RETRAITES UNE IDÉE PAS NOUVELLE BY CHARLI GARBAL</p> <p>22 FUSION EDITIS-HACHETTE : VERS UN MONOPOLE SUR LE MARCHÉ FRANÇAIS DE L'ÉDITION ? BY ALICE CROLARD</p>	<p>No Economics in Title</p> <p>25 TAIWAN: A WAR IN THE MAKING? BY ALBERTO MIGLIAVACCA</p>	<p>Professional</p> <p>27 MASTER 2 PROGRAMS: STUDENTS' POV CURATED BY FIKRAT VALEHLI</p>	<p>On Campus</p> <p>30 TSECONOMIST TEACHING AWARDS CURATED BY FIKRAT VALEHLI</p> <p>34 WORDPUZZLE & LABYRINTH</p>	
<p>Spotlight</p> <p>TECHNOLOGICAL UTOPIA</p> <p>9 TECHNOLOGICAL UTOPIA BY CHATGPT</p> <p>11 CAN COMPUTERS THINK? BY KHASMAMAD SHABANOVI</p> <p>13 CENTRAL BANK DIGITAL CURRENCIES AND DECENTRALIZATION: CRYPTO'S LATEST DILLEMA BY CÉSAR MANUEL MARTÍNEZ SOTO</p> <p>16 ECONOMIC COMPLEXITY: A NOT-SO-COMPLEX INTRODUCTION BY JUSTIN STANDISH-WHITE</p>					
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Contact us:

the.tseconomist@gmail.com
www.tseconomist.com

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Covers:

Editslockz, Noel, Fikrat Valehli

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Editorial's Note

Welcome to the final issue of The TSEconomist's current editorial board. In this issue our magazine features articles on the intersection of technology and economics. From blockchain to artificial intelligence, our writers will delve into the exciting possibilities and potential pitfalls of technological utopia.

However, I must admit that discussing the ongoing pension reforms in France, its impact on the society, economic cost and benefits, as well as cost and benefits in a broader context would have made a great topic for the issue.

In this issue, we are also excited to announce the TSEconomist Teaching Awards, which will recognize outstanding economics professors and teaching assistants who have made a significant impact on our lives. I can probably even cite the previous sentence.

Thank you for your continued interest, and we hope you enjoy this issue of The TSEconomist.



*Fikrat Valehli
 Editor-in-Chief*

Interview with

Francois Villeroy de Galhau

by Abel Real and Tamara Radovanovich

BANQUE DE FRANCE

At what point in your life did you know that you wanted to study economics and what was your motivation behind it?

I must confess that I didn't study economics as a main orientation! I studied economics among other fields and my training was more as an engineer at Ecole Polytechnique and then at l'Ecole Nationale d'Administration so economics was just one field among others. I quickly realized, when I joined the finance ministry and then the Banque de France, that economics is absolutely key and that it is very important to have a dialogue between academics and policy makers. It's not always the case!

“I must confess that I didn't study economics as a main orientation!”

Perhaps I will surprise you, but if I look at fiscal policy or structural reforms, unfortunately, this dialogue between academics and policy makers is not strong enough. If I look at monetary policy, which is my field in the present, fortunately, there is a permanent dialogue between academics and policy makers and we share questions, new puzzles, and so on.. So, I regret that I didn't study economics as a dedicated student, but I have been learning about economics and using economics for at least 40 years.

How did your journey at the Banque de France begin, as for many graduate students it is a dream to work in institutions like that?

My case is probably slightly different. I was appointed governor of the Banque de France by the French President and the French Government in 2015 and approved by the parliament, so it's quite a different process, but I completely agree with the second part of your question! I am delighted to hear it is a dream of many economists to join the Banque de France because we need economists. We badly need young talent, and we hire tens of economists each year. We work with them both in operational policy making and in research. So if it is a dream of economists, it is even more our dream to hire them. Good news!

What would you suggest to those students who are hoping to work at the Banque de France?

They can come to us - they can apply at any time. They can also come for short term practices and we will welcome them. If I look at our relationship with TSE, it is very strong in academic research. We have a privileged partnership with TSE. We organize



workshops, we have a common prize, but we still have room for improvement if I look at the number of former TSE students who are present in the Banque de France. So, they will be extremely welcome! I promise that every application will be looked at with very positive eyes. I don't say that everybody will come to the

Banque de France but, clearly, there is room for welcoming more and more, not only economists, but especially TSE students.

What are some challenges that you face in your job at the Banque de France?

There are many! To put it in a nutshell, the number one challenge right now is fighting inflation. We are responsible, as the Banque de France and as a member of the ECB or so-called 'Eurosystem' (ECB + 19 national central banks), for price stability. This is our

" [...] if I look at fiscal policy or structural reforms, unfortunately, this dialogue between academics and policy makers is not strong enough"

mandate and we define price stability as, in the medium run, a 2% rate of inflation. We are, at present, at 10%. It is unbearable. We must run, and we will run, monetary policy in order to bring inflation back to its target within two or three years. This is my number one challenge. If I can mention two or three others: financial stability, obviously - we live in a dangerous and very uncertain economic world following Putin's invasion. Climate – this is more a long term risk but we shouldn't forget about it. There could be a short term contradiction between the Ukrainian war and climate transition. People say, look, some countries, including Europe, are going back partly to other fossil

energies- oil or sometimes even coal. These are very short term solutions. In the long run, clearly, the Ukrainian crisis is a trigger for us to still accelerate the climate transition and here central banks have a key role to play and, believe me, we play it. I would conclude by mentioning that we, at the Banque de France, created two things. First, an international network for greening the financial system, the so-called 'NGFS' with its Global Secretariat based in the Banque de France. Second, we created, internally, a CCC- Center for climate change and more and more biodiversity, probably. With several economists, we tried again to put together research and policy making. So the short term priority of fighting inflation should never derail us from long term climate transformation.

What do you like to do in your free time? Do you also go for economics or something else?

I sometimes read about economics but, to be fair, I am also a father of five and a grandfather of twelve, if I may. I usually say that my second job is to be a grandfather if you want to have a fair answer! I try to explain economics to my grandchildren, but it is not that easy. They will get older and hopefully some of them will study at TSE in the future, but I don't know yet! ■



BUSINESS TALK

Kristen Grauer
and Hector Brown

USA Consuls

by Alberto Migliavacca

On Thursday 26th of January, our university hosted US consuls Kristen Grauer and Hector Brown. Consul Grauer advised the students present to remember the interconnectedness of politics and economics and how you cannot fully understand one without understanding the other. As an example of this, she discussed how the private sector requires clear guidelines to operate efficiently while at the same time the public sector needs taxes to operate. Then we had the chance to listen to them share their views on current global challenges and their stories of a life in diplomacy.

Their proudest achievements

Consul Grauer mentioned how seeing improvements in the lives of African families is her proudest achievement so far in her career. Consul Brown mentioned how he was once refused a job because he disagreed with the policy in question - highlighting the importance to him of remaining true to his values through his diplomatic career.

War in ukraine

The war in Ukraine received much attention during this business talk. Both Consuls emphasized how heartbroken they are to see what is currently happening in Ukraine and how there is no justification for Russia's invasion of the Eastern European country. They then focused on three points: the importance of giving the right signals to other dictators that the West would not tolerate similar actions anywhere, the importance of giving military aid to Ukraine to fight off the Russian invasion and how supporting Ukraine is necessary to protect the international order underpinning, for example, global trade.

To add more on the first point, since there are other dictators who would like to perform acts similar to Putin's (they didn't explicitly mention it, but the reference to China was heavily implied) the West must react strongly to the Russian invasion by making it clear that violating the rules-based international order will not be tolerated.

Closely connected to this is something Consul Grauer said. She mentioned how supporting Ukraine would safeguard the international order from further disruptions in the future and thus the future costs we are avoiding by supporting Ukraine outweigh the present costs we are incurring right now because of Russia's retaliations. This hearkened back to what President Zelensky

told the US Congress when he visited the American capital in December 2022.

China's growing influence in Africa

One thing that was asked to Consul Grauer specifically, was how she sees the Chinese investments in Africa. She argued that the situation on the ground is more nuanced than it may look like from the outside. These words from Consul Grauer could suggest there is some room for cooperation between the two superpowers of our era.

Life and challenges of a diplomat

Some questions were more personal and allowed the two American diplomats to address some of the challenges they faced during their working life. Firstly, they discussed how it can be challenging sometimes to combine their political ideas with those of their President (the President of the United States is the country's chief diplomat). They argued that, by pointing out what they think is wrong about the policy the President wants to implement, they can make an impact to change this policy. They also highlighted how diplomats swear allegiance to the US Constitution so they are bound by a sense of duty to follow their President's wishes. This was then supplemented by a discussion on how it is possible for a diplomat to openly oppose a certain policy by either leaving the State Department or by sending an official communication to the headquarters of the State Department in Foggy Bottom expressing why they disagree with such policy. This last option can result in the diplomat leaving the State Department or being relocated somewhere else.

Another thing they have discussed is how they choose their locations to work in and how this helps them to avoid uncomfortable situations. For example, if, as a woman, you don't feel comfortable wearing a veil then you can avoid locations where this is required by the local law. Doing this is possible because each diplomat receives a significant number of possible destinations when they are being relocated.

Advice

After answering students' question, our guests gave us one important advice: do what you love because life is too short to focus on something else. ■

BUSINESS TALK

Etienne Pfister from RBB

by Alberto Migliavacca

TSE had the honor of hosting a business talk focused on the role of economists in competition law. The guest speaker was Etienne Pfister - a Partner at RBB Economics. This is a leading economic consultancy firm focused 100% on antitrust issues. Before becoming a partner at RBB Economics, he worked at the French Antitrust Authority where he had been the Chief Economist for 8 years.

Why do we care about competition law? What is the role of economists in competition law?

This was the first point touched upon by Mr Pfister and his answer is straightforward: we need antitrust regulation because firms might adopt behaviors that reduce competition and therefore reduce consumers' welfare. However, deciding what constitutes anti-competitive behavior and what doesn't is easier said than done. Here enters the vital role of competition lawyers and economists.

This is one question that certainly will intrigue a significant share of our audience. Few are more qualified than our guest to answer it. Dr Pfister argues that the role of economists in competition cases is twofold: firstly, they help to formulate the correct questions, secondly they help to give an answer to these questions.

How do we analyze a possible merger?

There are 2 main approaches used to judge competitive behavior: the SNIPP Test, and diversion ratio analysis. The SNIPP test is very easy to understand: we first define every product that competes with the products of the firms we are analyzing, and then we look at the possible loss in profits the company would suffer if it increases prices. In particular we look at the critical loss (defined as the maximum price increase after which the merged firms would incur into losses). $CL = S/S + M$ where CL is the critical loss, S is the price increase and M is the margin over the variable costs. The downside of this method is that it classifies every product as either a competing product or a non-competing product but we know this is not necessarily the case. This explains why a second method has been developed to counter this downside: diversion ratio analysis.

Suppose that Coke and Pepsi merge and, following that merger, Coke increases its price. Would this be negative for Coke? The answer is that it depends on how many consumers switch from Coke to other products and, if they switch, which products do they switch to. If consumers move towards Pepsi then this is

good for Coke because Coke and Pepsi are now a single firm but if they move toward some other product then this is not good for Coke. The percentage of Coke's customers that switch to Pepsi is called the Diversion ratio.

How do economists analyze an antitrust issue?

After dealing with the theory, Mr. Pfister concluded his presentation by going through the different analytical tools used by economists in practice to help answer the questions previously mentioned. The main tools used by economists are:

Consumer surveys. These can be used to see what other goods people would buy in the case of a price increase. The idea is simple: you conduct a survey asking people what they would do if the price of a certain product they consume increased. For example, when Carrefour wanted to buy Bio c'Bon, a consumer survey was conducted to see whether organic food customers would switch to traditional grocery chains like Carrefour or not. The consumer surveys conducted showed that organic food chains are a market on their own so Carrefour was allowed to buy Bio c'Bon.

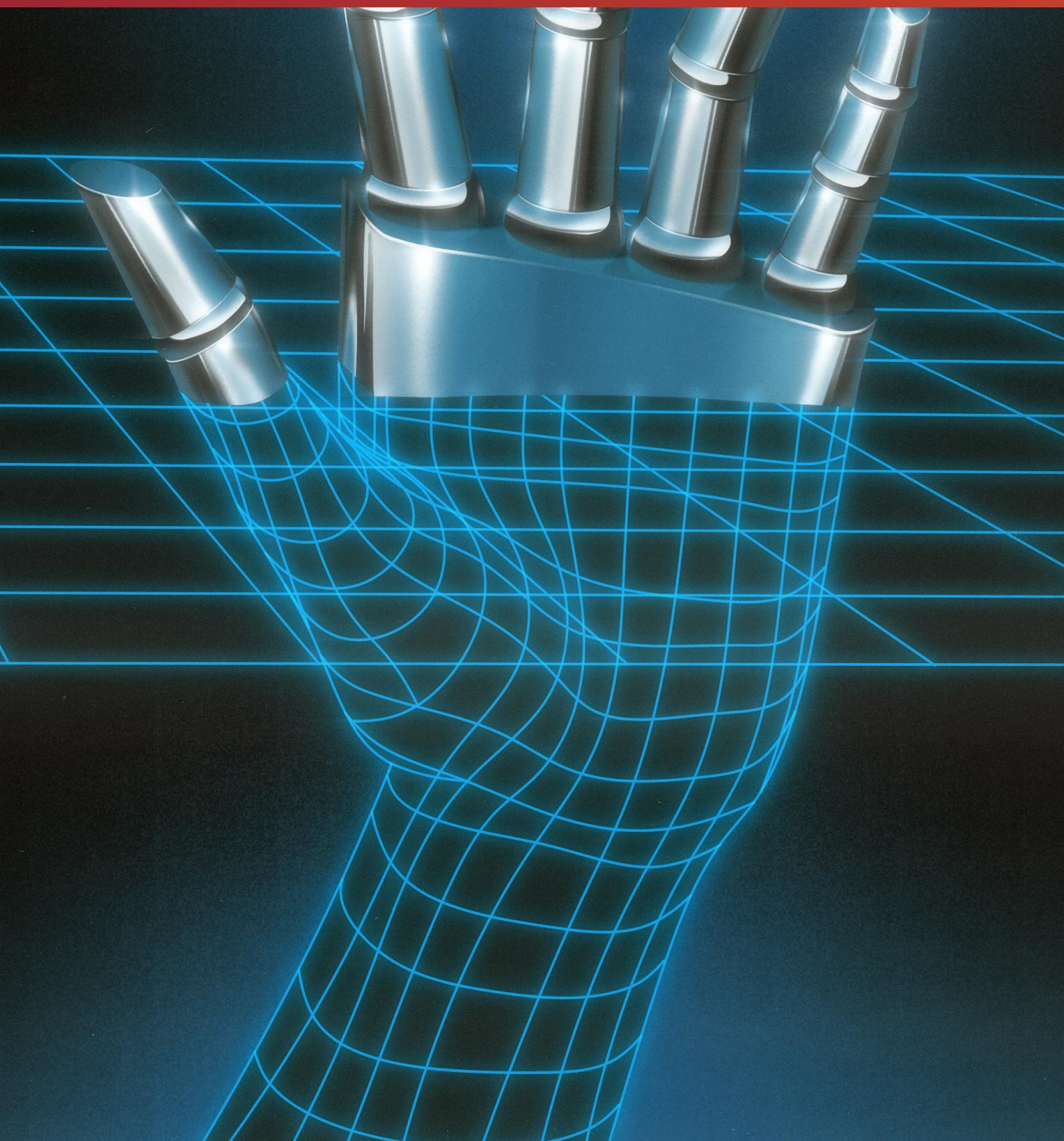
Price Correlation analysis. The idea is the following: if two products are close substitutes then they should have highly correlated prices. The analysis is somewhat more complicated than what it first appears because two prices might be correlated simply because they rely on common inputs or because they are exposed to similar demand.

Price Evolution analysis is based on the following idea: if two products compete against one another then their prices cannot be significantly different for a long time otherwise the one charging higher prices should incur a reduction in demand sooner or later.

Shock analysis is another tool used and the idea behind can be explained with the following example: in 2008 Eurotunnel (the tunnel connecting the UK to France) had to unexpectedly close for a week following a fire. What then followed was all Eurotunnel customers switching to two sea routes operated by Sea France between Calais and Dover. This allowed economists to see that the sea routes were the only competitors to Eurotunnel so no firm could be allowed to control both the sea routes between Dover and Calais and the Eurotunnel.

The last tool used by economists is the good old **regression analysis**. The downsides of this method are that the time constraints can be binding and we may lack the relevant data. ■

SPOTLIGHT





TECHNOLOGICAL UTOPIA

ChatGPT

The concept of a technological utopia is one that has been explored by thinkers and visionaries for centuries. From the earliest days of science fiction, writers have imagined a future where technology has solved all of our problems and created a world of abundance and harmony. While such a vision may seem far-fetched, recent advances in technology suggest that we may be closer than ever to realizing this dream.

At its core, the idea of a technological utopia is one of abundance. In a world where technology has solved all of our problems, resources would be limitless and everyone would have access to everything they need. This would allow individuals to pursue their passions without worrying about material needs or financial constraints, freeing them to explore their full potential and creativity.

The idea of abundance is closely linked to the concept of personal freedom. In a world where technology has solved all of our problems, individuals would be free to pursue their interests and passions without the constraints of financial or material needs. This would create a society where everyone is fulfilled and happy, and where individualism and creativity are valued.

Another important aspect of a technological utopia is the idea of efficiency. In such a world, technology would enable

individuals to accomplish their goals with maximum efficiency and minimal waste. This would free up time and resources for other pursuits, allowing individuals to focus on the things that matter most to them.

Despite these many benefits, the idea of a technological utopia has been criticized by some who argue that it is impossible to achieve. They point out that even if we could develop technology that could solve all of our problems, it would inevitably create new ones. For example, advanced artificial intelligence could lead to mass unemployment, and the abundance of resources could lead to environmental degradation. Additionally, some argue that a society where everyone pursues their own interests could lead to social isolation and a breakdown in community.

While these criticisms are valid, it is important to remember that the idea of a technological utopia is not one that is set in stone. Rather, it is a vision of a better world that inspires us to work towards a better future. As we move closer to a technological utopia, we must be mindful of the potential risks and unintended consequences, and work to mitigate them as much as possible.

One of the key challenges of creating a technological utopia is the issue of wealth distribution. In a world where resources

are abundant, it is important to ensure that everyone has access to them. This may require new forms of wealth distribution, such as a universal basic income or a wealth tax, to ensure that everyone benefits from the abundance of resources. Additionally, we must ensure that the benefits of technological advancement are shared equitably across all segments of society, rather than concentrated in the hands of a few.

Another important challenge of creating a technological utopia is the issue of environmental sustainability. While abundance of resources may seem like a good thing, it can also lead to overconsumption and environmental degradation. As we move towards a future of abundance, we must be mindful of our impact on the planet and work to develop sustainable technologies that minimize waste and preserve the natural world for future generations.

Despite these challenges, there are many reasons to be optimistic about the potential of a technological utopia. Advances in renewable energy, autonomous vehicles, and advanced robotics are bringing us closer to a world where resources are abundant and problems are solved. Additionally, the rise of the internet and social media has created a global community that allows people to connect and collaborate on a scale never before possible.

One of the most exciting developments in the world of technology is the rise of artificial intelligence (AI). AI has the potential to revolutionize the way we live and work, solving many of our most pressing problems and creating a world of abundance and harmony. For example, AI could be used to create more efficient transportation systems, reducing congestion and pollution. It could also be used to improve healthcare, allowing doctors to diagnose and treat diseases more accurately and effectively.

However, the rise of AI also presents some significant challenges. As AI becomes more advanced, there is a risk that it could become uncontrollable or even dangerous. For example, an AI system that is designed to optimize resource allocation could end up making decisions that are harmful to humans or the environment. Additionally, there is a risk that AI could be used to create new forms of inequality, as those who control the technology could gain significant power and influence.

To ensure that AI is developed in a way that benefits everyone, it is important that we approach the technology with a critical and ethical mindset. This means considering the potential risks and unintended consequences of AI, and taking steps to mitigate them as much as possible. It also means involving a diverse range of stakeholders in the development of AI, including representatives from marginalized communities and those who may be most affected by the technology.

Another important aspect of a technological utopia is the idea of personalized technology. In a world where technology has solved all of our problems, individuals would have access to personalized technology that is tailored to their individual needs and preferences. This would allow individuals to live their lives in the most efficient and fulfilling way possible, without the constraints of a one-size-fits-all approach.

However, the rise of personalized technology also presents some significant challenges. For example, there is a risk that personalized technology could lead to a breakdown in social cohesion, as individuals become increasingly isolated and disconnected from one another. Additionally, there is a risk that personalized technology could be used to create new forms of inequality, as those who can afford the most advanced technology gain an unfair advantage over others.

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In conclusion, the concept of a

technological utopia represents a powerful vision of a future world where technology has solved all of our problems and created a society of abundance, personal freedom, and happiness. While this vision may seem impossible, the rapid pace of technological development in recent years suggests that we are closer than ever to achieving it. However, we must approach this vision with caution and critical thinking, ensuring that technology is developed in a way that benefits everyone and does not create new problems or unintended consequences. By doing so, we can work towards a future that embodies the best of what technology has to offer and creates a more just, equitable, and sustainable world for all. ■

Can Computers Think?

Khasmamad Shabanovi

This “essay” was written as a part of the author’s admission application to TUM. The interpretations of the ideas presented in this article were realized within the boundaries of my limited knowledge and might not reflect the original intent and thought of the authors perfectly.

Alan Turing (1950), in his famous paper, puts forth the question “can machines think?” and suggests that the discussion of this question requires defining what a machine is and what it means to think. Instead of discussing definitions and attempting to answer this particular question, Turing changes the question and asks, “can a conceivable digital computer play against a human and win the imitation game?”

Daniel Dennett (2004) argues heatedly that the imitation game, or the so-called Turing Test, in its original definition by Turing, is underestimated in its difficulty for computers. Rightly so. In the original Imitation Game, unlike in its variations where extra constraints are introduced like in the earlier versions of the Loebner Prize competition (Dennett, 2004), the human judge is allowed to ask questions with arbitrary degrees of generality. Consider the scenario proposed by John Searle (1980) in his phenomenal paper “Minds, Brains, and Programs.” The following story is presented to the computer contestant:

A man went into a restaurant and ordered a hamburger. When the hamburger arrived it was burned to a crisp, and the man stormed

out of the restaurant angrily, without paying for the hamburger or leaving a tip. (p. 417)

Then, it is asked, “did the man eat the hamburger?” Although this question is very easy to answer for humans, this is an extremely difficult task for a computer. Answering this question requires general knowledge of restaurants, hamburgers,

“[...]a computer can imitate mental processes but this does not necessarily make it intelligent”

and the idea behind leaving a tip, and an understanding of how the way these factors are presented in the story relates with the reasoning of the human character.

When John Searle confronted the philosophical debate around the thinking machines, it was obvious to him that the idea of an intelligent computer was a frivolous one. He argues, through his Chinese room

thought experiment, that no conceivable digital computer can ever be intelligent. He explains that even if a computer, or a Turing machine, is able to answer all the questions proposed to it and passes the Turing test despite its difficulty, in doing so, it is merely following the set of rules presented to it, i.e. it is executing a program, and although its outputs are indistinguishable from those of an intelligent human, the computer does not have the slightest understanding of either the questions or the answers.

Put it differently, a computer can imitate mental processes but this does not necessarily make it intelligent. This is to say that intelligence arises only from the properties of biological constituents of brains. So, a non-biological machine that is built in a way to bring forth the feats of intelligence cannot produce or explain intelligence. Gottfried Wilhelm Leibniz (1714) expresses similar concerns in his windmill analogy. Leibniz imagines a machine capable of cognition enlarged to be of the size of a mill. He argues that one can enter such a machine and, upon an investigation of its mechanical parts, cannot find anything that can explain cognition.

Perhaps, this reasoning is challenged in

the most intuitive way by Daniel Dennett's (2002) metaphor of zombanks. A zombank (zombie bank) is an imaginary financial institution that performs all the functions of a traditional bank but is not

"Computer science [...] allows us to step aside from the philosophical turmoil and make measurable improvements"

a real bank since it lacks an invisible essential property of real banks. The fallacy here is in the definition of a real bank, since a bank can be defined completely based on its functions and services. It is absurd to think that a financial institution like a zombank does not count as a real bank because of an undefined mysterious property that it lacks. Similarly, the idea of a machine that reacts and interacts in the same way as an intelligent being but which is not intelligent because it lacks some mysterious property is absurd.

This brings us to the functionalist approach to our original question. From a functionalist perspective (e.g. Putnam, 1975), the mind is a functional system and it can be designed by identifying its functional parts and their relations with each other. This approach discards the requirement of biological essence. It claims that it suffices to implement a system capable of performing functions similar to those of our brains, irrespective of whether it is a biological or a non-biological system. Thus, the functionalist view allows the idea of implementing programs that models the human mind that can be run and tested on computers.

When John McCarthy and others proposed the Dartmouth Summer Research Project on Artificial Intelligence in 1955, they conjectured that "...every aspect of learning or any other feature of intelligence can in principle be so precisely described that a machine can be made to simulate it." Without delving into the further debate of simulation versus replication, this conjecture, perhaps, is the most productive in the advancement of the philosophy of mind. In Joscha Bach's (2009) words, implementing programs "...may soon become a prerequisite to

keep philosophy of mind relevant in an age of collaborative and distributed expertise" (p. 16).

Different approaches and ideas can be converted into formal models and implemented as a program. Such a program can be tested against the available cognitive data and its validity simply depends on whether it can explain the data. Any mismatch between the predictions of the program and the data indicates weaknesses in the model implemented by the program and the gaps in the understanding of the implementer. Also, a program is free from the confines of the imagination of a single implementer as anyone else can understand utterly and contribute to it.

Computer science is the best thing that happened to the philosophy of mind. It allows us to step aside from the philosophical turmoil and make measurable improvements. I suggest that we postpone answering the question "can machines think?" and focus our efforts on building our "Leibnizian mill." Then we can ask our mill to give us the answer to that question, if we still have not figured it out ourselves in the process of building it. ■

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Central Bank Digital Currencies and Decentralization Crypto's latest dilemma

César Manuel Martínez Soto

Money has become a pivotal element for human social interaction ever since its conception thousands of years ago. Going from the first Chinese paper notes and coins circa 700 B.C., trade and human labor obtained standardized exchange rates. As time went by, economic activities became more complex and thus gave rise to new money forms including fiat or government-backed currencies in the eighteenth and nineteenth centuries, giving earlier spawned economic actors (banks and financial institutions) a stronger influence in society. The aforementioned economic conditions paved the way to the notion of a decentralized currency that eradicated any potential biased institutional control, an idea that would come to life in 2009 under the name of Bitcoin along with the computerized cryptography advancements from the past few decades.

This pioneering cryptocurrency would mark the way for several other projects —Litecoin, Ethereum, Ripple...— while consolidating a new community that saw decentralized finance (DeFi) as the future of 21st Century economics. However, classic institutional and state actors did not neglect this event and have been looking for ways to become notable market participants in recent years. Most notably, national governments are planning to introduce National Digital Currencies while regulating cryptocurrencies' exchange

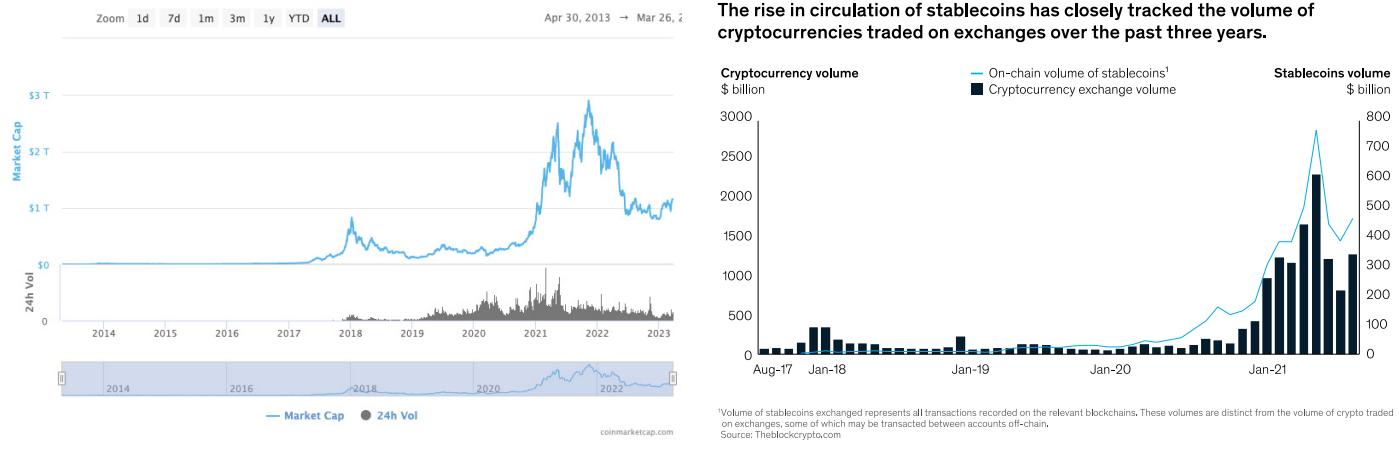
companies and cryptocurrency utilization amongst their citizens. Ultimately, the situation has become crypto's latest dilemma: a DeFi system conceived as an alternative to traditional centralist models is so popular today that it is now threatened to be forced into exactly that financial structure it tried to escape. Are National Digital Currencies a real threat to the crypto community and the DeFi utopia?

“[...] the notion of a potential rivalry between CBDCs and cryptocurrencies may originate from the fact that the former has been advertised as an upgraded, safer version of the latter. “

Let us first properly comprehend the concept of a national digital currency. Also

known as Central Bank Digital Currency (CBDC), this is the digital form of a sovereign state's fiat currency. In that sense, a CBDC's intrinsic value is not financially backed up by any form of tangible asset, but rather by its government's trustworthiness as an economic actor. While most commercial banks already have online sites where money can be electronically saved and later withdrawn from an ATM machine as physical bank notes, CBDCs are meant to stay digital at all times. The latter would allow for major economic advantages for central banks worldwide: a gradual transition towards a 100% digitized, eco-friendly economy; enhanced opportunities to surveil financial operations looking to reduce counterfeiting and fiscal frauds; and to diminish overall transaction costs for all economic actors at both small and large scales. Currently, digital currencies are still at early research and development stages —the Digital Dollar Project for the United States is a well-known example of this.

There are also projects at testing phases; in October 2020, the Bahamian Sand Dollar became available to the country's citizens. A year later, both the Chinese Digital Yuan and Nigeria's e-Naira also began trials in specific regions within their respective countries. When it comes to comparing CBDCs with cryptocurrencies, these are not the same, either. Bitcoin as a cryptocurrency, for instance, is non-fiat money,



Total Cryptocurrency Market Cap, coinmarketcap

meaning that no government entity will guarantee its financial value and that it can easily be transacted to other currencies while also following a decentralized scheme only limited by the 21 million Bitcoin units available for buyers to obtain (not all cryptocurrencies have a specific unit-existence limit). CBDCs, on the other hand, have governments' full support at the cost of being controlled by their corresponding central banks, having its transactability bound to foreign affairs' policies, and being directly affected by inflation adjustments, re-establishment of interest rates, and other economy events.

Although it is a multifaceted situation, the notion of a potential rivalry between CBDCs and cryptocurrencies may originate from the fact that the former has been advertised as an upgraded, safer version of the latter. Governments with digital currencies' research projects already in progress are looking to synthesize crypto's well-known benefits (24/7 funds' access, providing financial services to underbanked regions, lower transaction fees...) into their national currencies in an attempt to convince cryptocurrency users to switch to these. Another notable advantage of this includes eliminating capital tax costs given that these aren't applicable to any sovereign currency within its own borders. Other states have simply halted cryptocurrency activity entirely based on the uncertainty of citizens choosing a CBDC over Litecoin or Ethereum. Nigeria is a clear example of this circumstance with the crypto ban on its whole territory to stimulate e-Naira usage, while other states such as Iran have monopolized crypto activity benefits like Bitcoin mining and have forced individuals to sell all of their digital assets to their Central Bank.

Both CBDC's proposal itself and crypto ban cases do raise the question "why are cryptocurrencies and their DeFi system so heavily fought against?". To answer this question, let us recall the fundamental political controversy of cryptocurrencies since their conception back in 2009: decentralization prevents full regulation. Globally, government officials agree that cryptocurrencies require stricter surveillance to prevent fraudulent activity and to be considered serious currencies. In that sense, CoinShares' Chief Strategy Officer Meltem Demirors admitted that "financial regulation has historically been dependent on physical jurisdiction, which is challenging to define in the world of digital assets [...]" . Quotes like this show a clear concern on current technological capabilities to supervise financial activity happening amongst the crypto community as its market relevance continues to rise. Statistics confirm this: as of February 2023, cryptocurrencies' market cap stands at over 1 trillion USD while stablecoins' trading volume (a specific form of cryptocurrency) reached more than 3 trillion USD during the first half of 2021. As a result, it

should not come as a surprise that four-fifths of central banks worldwide have already begun to explore CBDCs within their own territory as of 2020. Cryptocurrencies and the DeFi system have caught enough attention to force financial centralist actors to come up with a proposal of their own.

In return to the surge of these CBDC projects, the crypto community has yielded interesting outputs at both financial and social levels. Based on the narrative held by government officials when referring to CBDCs, cryptocurrencies' trading volumes shift by notable margins. More specifically, to quote the International Monetary Fund researcher Alexander Copestake, "from November 2016 to December 2021 [...] (cryptocurrencies') trading volume falls by up to 55% in the week after the announcement of a ban, and by up to 25% after a CBDC-supportive speech by senior central bank officials". These market volatility circumstances were notably well illustrated after cryptocurrency exchange Binance was banned by United Kingdom regulators from offering crypto-derivatives like market option trading, future contracts, among others, to British clients in June 2021. The rising popularity of CBDCs worldwide has led to further academic approximation of the close relationship between DeFi crypto and CBDCs, resulting in the conception of two measuring indexes: the CBDC Uncertainty and the CBDC Attention Indexes. The indexes, which account for how much projects of the like are being referred to on massive media outlets, focus on either the uncertainty of project completion or the attention given to these projects, respectively. All of the previous evidence comes together to suggest that the crypto community is effectively observing CBDCs' rise as a serious, relevant force within the DeFi market and reacting to the potential effects on their own enterprises.

Considering the current development phase CBDCs are in right now, it is only natural to wonder what the future will bring to these national digital currency projects. As previously mentioned, there are potential advantages to CBDCs replacing physical currency and even perhaps private cryptocurrencies around the world. But it would also be pertinent to state another determinant factor for this crypto-CBDC battle: states' technological and financial capabilities. States with a more limited existing payment infrastructure are more likely to develop payment programs and build, from the ground up, a CBDC. For those states with well-established currency and payment systems, a switch towards a digital sovereign currency might seem more complicated than investments in cryptocurrencies due to the evident trustworthiness from the national population on their current currency model. Bitcoin and the crypto community

have recently found a way into historically unstable states, whose leaders may push for even making them one of their states' official currencies. This has been the famous case of states like El Salvador and South Africa with Bitcoin, although with those decisions have also come financial uncertainty inherent to crypto volatility for their citizens. Of course, the future of CBDCs will also be closely attached to how well they can potentially respond to common cryptocurrencies' threats, with credential theft and loss, privileged users, and corruption being only a few of the most relevant concerns.

Having factored in all relevant financial, economic, political, and social components regarding CBDCs' growing popularity and centralized nature, can the crypto world realistically aspire to keep its decentralized model as it continues to enter the mainstream financial markets and national digital currencies get closer to become a reality? A final take on the matter is that, most likely, both cryptocurrencies and CBDCs will coexist in a mixed environment at least during the first couple of years after the latters start being definitely implemented around the world. A key component to the CBDC vs Crypto discussion will be the interdependence among commercial markets worldwide; variables affecting CBDCs' development projects can have a long-lasting impact on crypto's market volatility (especially when considering that around one billion people used or at least consulted a cryptocurrency exchange site in 2022). All in all, challenges will surge for both CBDCs and cryptocurrencies in the years to come: cryptocurrencies will have to maintain their decentralized nature to remain a relevant financial alternative despite possible regularization and banning attempts. CBDCs, on the other hand, will need to prove absolute immunity against traditional human security threats and prevent their own fall like other exchanges did in the past, since a whole country's financial stability could fall together with them. ■

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Economic Complexity

A not-so-complex introduction

Justin Standish-White

A central question that draws a lot of people, including myself, to economics is, "What makes some countries rich and others poor?". A simple question with innumerable complex answers. Standard theories of development will ascribe these differences to institutional quality, trade liberalisation (or a lack thereof), history, geography or, most commonly, some deeply opaque combination of 'aggregate capital and labour'. These theories are almost impossible to verify, which has led to development economists increasingly turning to the smaller questions that are far easier to solve, as seen in the explosion of randomised experiments in the development space.

However, this doesn't address the core question of many policy makers in developing countries: in the highly interconnected global economy, what policies are required to initiate and accelerate structural transformation? Structural transformation being the process by which economic activities in a country shift from low- to high-productivity sectors, a more general notion of industrialisation that is more applicable to the modern economy.

Attempting to fill this gap, the theory of economic complexity has developed over the past 15 years. This article provides a brief, intuitive overview of the space and how it can be applied in a policymaking context. Mostly, I draw from the Atlas

of Economic Complexity (2014) which was co-authored by César Hidalgo, the Director of the Center for Collective Learning at the Université de Toulouse.

Intuition and Mechanics

The central idea of economic complexity is that economic development reflects the accumulation of productive knowledge. Countries develop by learning how to make increasingly advanced products, generating income, and increasing living standards. The ease of international trade accelerates this process by further enabling specialisation into advanced goods that can be traded for necessary imports. Importantly, this productive knowledge is collective. It refers to the collectively held knowledge on how to build a specific product and the necessary coordinating institutions that make production possible.

Therefore, we can expect more productive economies to produce not only a wider variety of goods, but also goods that are more complex to produce. Similarly, we can expect that more complex products will, on average, be produced by fewer countries. Using trade data, we have reliable, granular export data at the country-product level. Thereby, we have data on how many goods each country produces and how many countries produce each good - initial proxies for economic and product complexity respectively.

Then, using a recursive process updating according to the underlying complexity of products exported by a country (and vice versa), we derive the Economic Complexity Index (ECI) and the Product Complexity Index (PCI) for countries and products respectively.

"The central idea of economic complexity is that economic development reflects the accumulation of productive knowledge"

The validation of this approach comes from how well ECI predicts GDP per capita, far outperforming other methods of modelling income differences between countries. Additionally, countries that are below their expected GDP per capita in a given year tend to grow more quickly in subsequent periods and vice versa for over performing countries. Hence, countries show convergence to the income level predicted by their level of economic complexity.

Applications

So, that's the gist of the theory. What can we do with it? There are a range of applications, and it is a rapidly developing field. Herein, I'll only focus on one application, namely identifying export diversification opportunities. That is, how to use this theory to identify the optimal industries in which an economy should develop productive capacities. This would provide a basis for the formation of strategic industrial policy.

In essence, this entails ranking potential products according to several criteria. The first criterion is simply the complexity of the product, PCI. More complex products are generally more valuable and gaining these productive capabilities will improve economic complexity, theoretically driving economic growth. Next, we want to consider how costly or difficult it would be to develop these productive capabilities. A good proxy for the overlap in required capabilities between products A and B is the probability that a country produces B, conditional on it producing A. Aggregating this over all products, one gets the 'proximity' of a potential new product, or how similar it is to existing products.

Finally, there is also the strategic element to consider. Product C may be costly to begin producing, but it may create future production opportunities in similar products that make the initial costs worthwhile. This is the type of thinking that is present in the best examples of ambitious industrial policy, such as South Korea. The measure for this is called the complexity opportunity gain and is easily calculated from the results already derived.

Using these three criteria, optimal products can be identified that are feasible to produce whilst also being likely to drive structural transformation and economic growth. Of course, actual industrial policy will need to be far more nuanced, looking into the export markets for these products and the specific details of their production, but this provides a rather simple starting point founded in a transparent empirical procedure.

Additionally, this basic approach can be augmented with other product-level information aligned with alternate policy goals, such as data on labour-intensity or environmental criteria relevant to specific products. For a specific example, a project by the Development Policy Research

Unit at the University of Cape Town (referenced below) used this methodology to specifically identify opportunities in the fibrous plant industry in South Africa, which is particularly well suited to revitalising degraded mining land, mitigating the socioeconomic effects of mine closures in areas with limited economic opportunities.

To wrap up, this is just one type of application of this theory, and it is rapidly expanding to provide fresh tools by which to understand and stimulate economic development. The complexity approach is well suited to providing the starting point for actionable policy insights which can be refined, as usual, with real world insights and practical considerations. Most importantly, in my opinion, it shows the value in really grappling with the big, messy questions in development, balancing against the current trend of looking solely at the smaller questions where the answers are more straightforward and publishable. ■

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FRENCH CORNER



LA RÉFORME DES RETRAITES

UNE IDÉE PAS NOUVELLE

by Charli Garbal

La réforme des retraites représente un enjeu majeur pour le gouvernement qui lui permet de démontrer sa capacité à réformer le pays. Cependant, ce dernier devra convaincre la population du bien-fondé du projet, alors qu'un sondage Ifop estime que 68% des français seraient hostiles à la réforme des retraite. Le gouvernement devra de surcroît faire face à des mobilisations et des appels à la grève dans tout le pays, l'intersyndical ayant appelé à « mettre la France à l'arrêt » le 7 mars.

Comment fonctionne le système des retraites en France ?

En France, le système des retraites repose sur un système de répartition. Les cotisations encaissées auprès des actifs par les différents régimes, sont redistribuées aux retraités de la même année. C'est le principe de solidarité entre générations, les actifs paient la retraite de leurs aînés.

“Le projet de la réforme s’inscrit dans la continuité des réformes précédentes et consiste à reporter l’âge légal de la retraite à 64 ans et à supprimer les différents régimes spéciaux [...]”

Il y a en France plusieurs caisses (ou régimes) de retraite selon la profession du bénéficiaire. Ces caisses sont des organismes privés et sont financées par les cotisations. Cependant lorsqu'elles sont déficitaires, leurs déficits peuvent être couverts par l'Etat de façon temporaire ou structurelle. Les principaux régimes en France sont : le régime général qui couvre les travailleurs salariés, les indépendants et les personnes à très bas revenus. Le régime agricole qui couvre les agriculteurs. Il y a également le régime des indépendants qui couvre les artisans, les commerçants et les professions libérales. Et enfin les régimes spéciaux qui couvrent certains secteurs d'activités tels que les militaires, les marins, les fonctionnaires mais également certaines entreprises comme la SNCF, la RATP, l'Opéra National de Paris ou bien les industries électriques et gazières... Les régimes spéciaux offrent certains avantages tels qu'un âge de départ à la retraite plus tôt et une durée de cotisation moins longue. Pour combler le déficit de ces régimes, l'Etat a déversé 6 milliards d'euros. Ainsi, aujourd'hui,

les régimes spéciaux font débat et certains appellent à leur suppression. L'existence de ces régimes remonte pour certains à loin, et rentre parfois dans le cadre de revendications anciennes.

L'Histoire de la retraite en France

En France, la première profession à avoir son système de retraite est celle des marins. En 1673, Jean-Baptiste Colbert (alors secrétaire d'Etat à la marine sous Louis XIV) fonde la Caisse des invalides de la Marine. Il s'agit alors de la première caisse de retraite par répartition. Il s'ensuit la mise en place de plusieurs régimes de retraite pour des catégories socio-professionnelles liées à l'État : 1831 : loi sur les pensions militaire, 1853 : loi sur les pensions civiles des agents de l'Etat, 1909 : loi créant le régime de retraite des chemins de fer, etc. A partir de la fin du XIXème siècle, des caisses sont créées pour le secteur privé. Entre 1910 et 1930, plusieurs lois sont adoptées pour mettre en place différentes caisses de retraite pour les paysans et les ouvriers, ainsi que des assurances sociales pour les risques de maladie.

A partir de 1945, le système des retraites français connaît une période d'amélioration continue. Dès 1944 pendant la guerre, le Conseil National de la Résistance propose dans son programme la mise en place d'un « plan complet de sécurité sociale visant à assurer, à tous les citoyens, des moyens d'existence dans tous les cas où ils sont incapables de se les procurer par le travail ». Ce sera chose faite après la guerre, par l'ordonnance des 4 et 9 octobre qui crée le système de sécurité sociale en France. Le projet visait également à instituer un régime général, mais il va se heurter à une forte résistance à celle-ci, notamment de la part des bénéficiaires des régimes spéciaux mais également du monde agricole et des indépendants qui vont créer leurs propres régimes de retraite, conservant ainsi la multitude de régimes. Bien que ce nouveau système représentait un progrès majeur, les retraités touchèrent seulement 20% de leurs salaires de leur année de référence. Plusieurs retraités se retrouvaient donc dans une situation précaire. Pour pallier ce problème, les partenaires sociaux des différentes professions ont créé leurs propres complémentaires retraite.

Dans les années qui suivirent, plusieurs améliorations ont été apportées au système des retraites. En 1971, la loi Boulin décrète que le calcul des retraites se base sur les 10 meilleures années par rapport aux salaires, et non plus sur les 10 dernières. Cette loi augmente également le taux maximal de la pension de retraite qui passe de 20% à 25% du salaire moyen des années de référence, pour les personnes qui partent à la retraite à 60 ans (l'âge légal minimum de l'époque).

L'Histoire de la retraite en France

En 1981, François Mitterrand accède à la présidence de la République. Dans les premières années de son mandat, plusieurs réformes ont été mises en place pour encore améliorer le système. En 1982, l'âge à partir duquel il est possible de partir à la retraite à taux plein, pour les hommes et les femmes ayant cotisé 150 trimestres validés (soit 37,5 années), est abaissé de 65 à 60 ans. Cependant, la population française devenant vieillissante et le régime général de la sécurité sociale étant déficitaire pendant l'année 1991, l'inquiétude montait quant au financement du système de retraite dans les années à venir. Sous le mandat du premier ministre socialiste Michel Rocard, un rapport interministériel fut rédigé, présentant la situation de l'ensemble des régimes des retraites et sur leurs perspectives d'évolution. En 1993, la Gauche perd les élections législatives et François Mitterrand est contraint de nommer Edouard Balladur comme premier ministre. Celui-ci va la même année appliquer les recommandations du rapport de 1991, et va notamment indexer la revalorisation des pensions de retraite sur l'évolution des prix, gelant ainsi le pouvoir d'achat des retraités au niveau atteint en 1993. Dans les années qui suivent, les règles se durcirent peu à peu. De 1994 à 2003, le nombre de trimestre requis pour bénéficier de la retraite à taux plein passe de 150 à 160 trimestres de cotisations (soit de 37,5 à 40 années de cotisations) pour le régime général et les régimes alignés. De 1994 à 2008 le nombre d'années de référence pour calculer les pensions passe des 10 aux 25 meilleures années.

Plusieurs réformes se succédèrent : celle de François Fillon en 2003, qui élève le nombre d'année de cotisation jusqu'à 42 ans, et instaure un système de « surcote » le montant de la pension sera plus important si on cotise plus de 42 ans et de « décote » de 5% sur la pension par années manquantes. L'alignement des durées de cotisations des différents régimes spéciaux (SNCF, RATP, Banque de France ...) sur celle du régime général sous le quinquennat de Nicolas Sarkozy, et la réforme Woerth en 2010 qui repousse l'âge légal de départ à la retraite à 62 ans et l'âge de départ à taux plein à 67 ans pour 2022. En 2012, l'élection du socialiste François Hollande remet la Gauche au pouvoir. Cependant, cette dernière maintient la tendance avec la réforme Touraine en 2014 qui a pour objectif d'augmenter une fois de plus le nombre d'année de cotisation minimum à 43 ans pour 2035, mais instaure néanmoins un compte personnel de pénibilité pour les personnes exerçant un métier difficile.

La réforme Macron

Le 24 avril 2022, Emmanuel Macron est réélu à la présidence en promettant notamment de réformer le système de retraite. Le projet de la réforme s'inscrit dans la continuité des réformes précédentes et consiste à reporter l'âge légal de la retraite à 64 ans et à supprimer les différents régimes spéciaux pour affilier les nouveaux embauchés dépendant de ces régimes au régime général. Le projet comporte également des mesures augmentant le minimum de pension de 100€, la prise en compte des congés parentaux dans la validation des trimestres, et la prise en compte des personnes qui doivent réduire leurs activités pour s'occuper d'un proche ou de leurs enfants.

Le gouvernement justifie la réforme par le fait qu'elle permettra d'équilibrer le budget du système de retraite et de maîtriser les dépenses. L'espérance de vie augmentant, le nombre d'actifs qui cotise rapporté au nombre de retraités est de plus en plus faible et le gouvernement estime que le système ne sera plus viable si des mesures ne sont pas prises.

Cependant, beaucoup de personnalités politiques remettent en cause la véracité de cette affirmation. Leur argument se base principalement sur le rapport publié par le Conseil d'Orientation des Retraites (COR) en 2022. Le COR est une instance indépendante composée de parlementaires, d'experts, de représentants syndicaux et de retraités. Mis en place par le gouvernement Jospin en 2000, sa mission est d'analyser les perspectives à moyen et long terme du système de retraite français. Ce rapport prévoit une dégradation du solde du système de retraite dans les prochaines années, cependant le COR s'attend à ce que le solde financier du système de retraite soit de nouveau à l'équilibre à l'horizon 2045. Le COR estime également que le déficit des retraites ne dépassera jamais 0,8% du PIB, ce qui est insuffisant pour déstabiliser le système étant donné les réserves dont disposent les différentes caisses. Le projet de réforme semble donc avoir pour objectif de diminuer les dépenses publiques, les dépenses de retraite représentant un quart de ces dépenses.

“Le COR estime également que le déficit des retraites ne dépassera jamais 0,8% du PIB, ce qui est insuffisant pour déstabiliser le système étant donné les réserves dont disposeront les différentes caisses”

De plus, en 2021, 23% des Français les plus pauvres (30% des hommes) sont décédés avant l'âge de 65 ans, contre 5% pour les plus riches. Par conséquent, beaucoup dénoncent le fait que le gouvernement ne prenne pas en compte la mortalité des Français les plus pauvres, lorsqu'il affirme que puisque l'espérance de vie a augmenté, il est normal de travailler plus. Les opposants à la réforme pointent également le fait que la réforme ne prenne pas en compte quatre facteurs de pénibilité (manutentions manuelles de charges, postures pénibles, vibrations mécaniques et agents chimiques dangereux) ayant été exclue par la loi de travail voulue par Emmanuel Macron en 2017. Pour de nombreux opposants, cette réforme va exacerber les inégalités. Dans son discours devant l'assemblé le 6 février, le député insoumis François Ruffin dénonce une réforme qui va toucher les plus pauvres sans toucher au 0,1% des plus riches. Enfin, la retraite représenterait pour certains, un droit à la paresse en dehors du temps de travail. Une période où on profite des années de vie qu'il nous reste afin de voyager, de s'engager en tant que bénévole ou bien de s'occuper de ses petits-enfants...

Beaucoup appellent à des mesures alternatives pour réformer le système des retraites. Certains appellent à mettre plus à contribution les grandes fortunes pour réduire les inégalités, d'autres à encourager les seniors à travailler au moins à temps partiels, d'autres encore à augmenter l'âge de départ à la retraite et, en contrepartie, indexer les pensions sur les salaires, et non plus sur les prix, pour pallier au déclin du niveau de vie des seniors... ■

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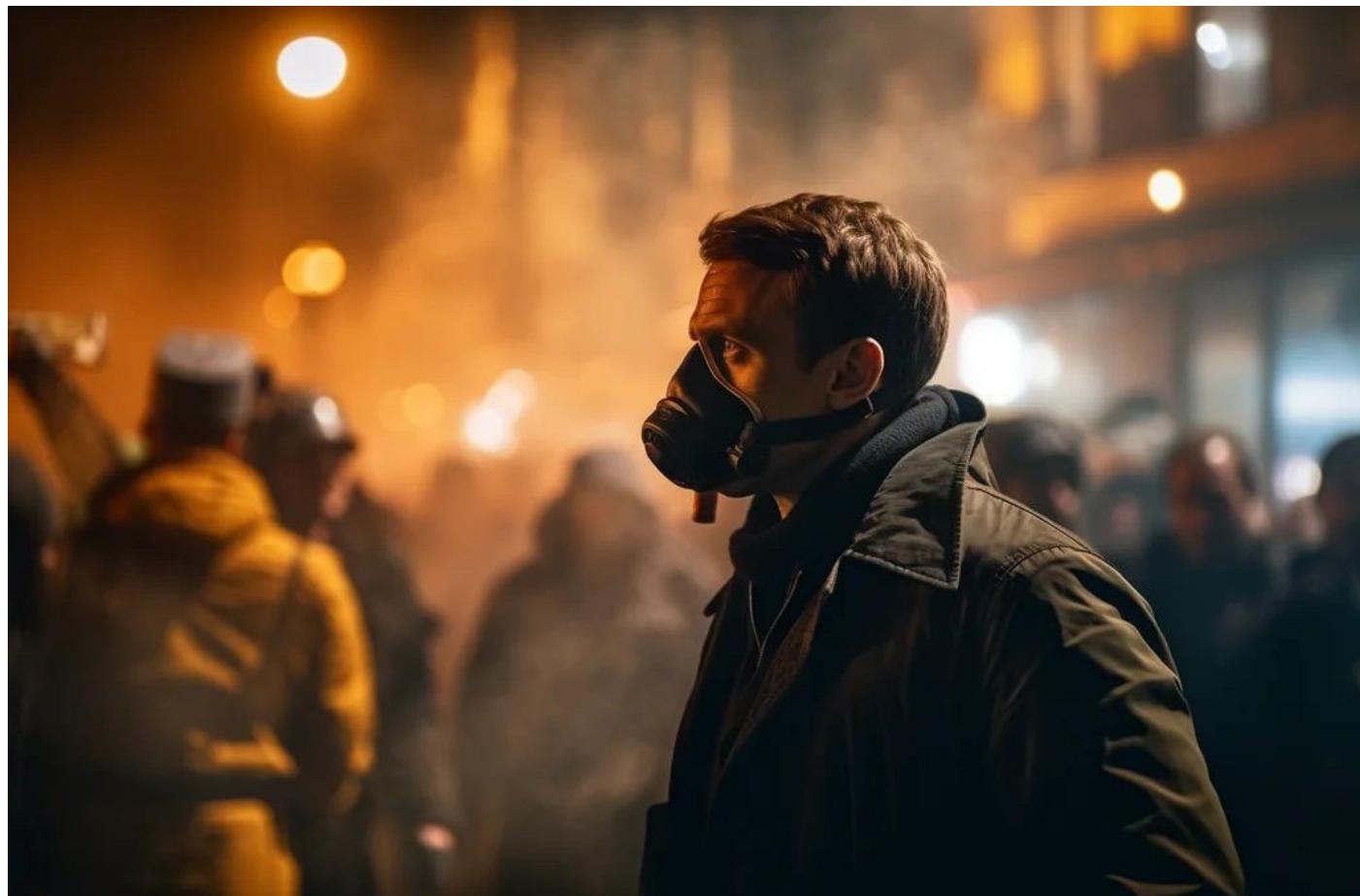
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FUSION EDITIS-HACHETTE :

VERS UN MONOPOLE SUR LE MARCHÉ FRANÇAIS DE L'ÉDITION ?

by Alice Crolard

En février 2022, le groupe français Vivendi, propriétaire de la maison d'édition Editis, lançait une offre publique d'achat sur Lagardère, propriétaire de la maison d'édition Hachette, dont il détient désormais 57% du capital. Cependant, ce projet d'acquisition a suscité de nombreuses préoccupations quant à son impact sur le marché français de l'édition. En effet, la fusion entre Editis et Hachette pourrait entraîner des problèmes de concurrence sur plusieurs marchés et sur l'ensemble de la chaîne de valeur du livre. Vivendi ne passera donc pas sous le radar des autorités de concurrence : le 25 octobre 2022, la Commission européenne a

ouvert la première phase de son enquête sur le projet d'acquisition de Lagardère par Vivendi, et rendra sa décision en avril prochain.

Le secteur de l'édition en France

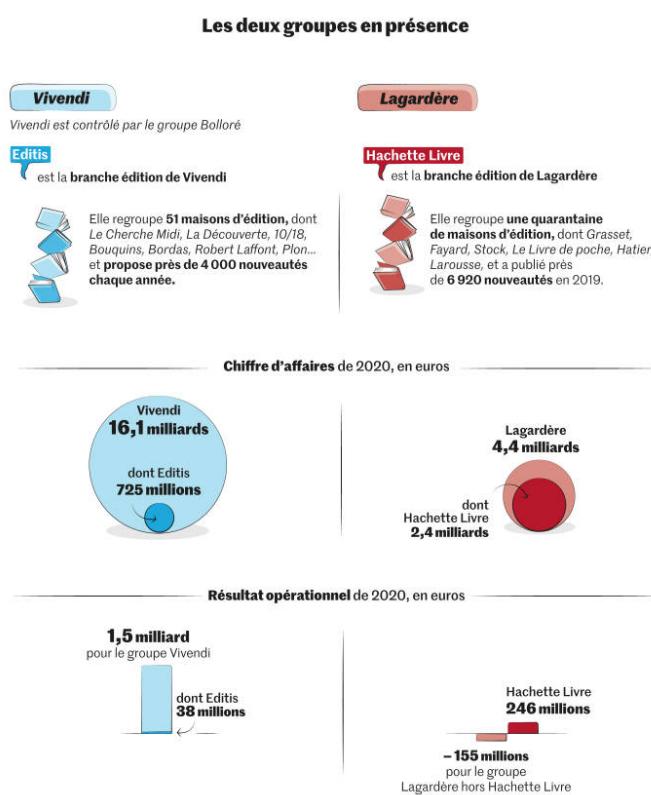
En France, l'édition et la distribution de livres sont des secteurs très concentrés et forment un marché caractérisé par une concurrence oligopolistique. Hachette et Editis sont les numéros un et deux de l'édition et de la distribution française, avec une part de marché cumulée de 45% en 2021. Les deux géants français de l'édition sont suivis de près par Madrigall et Médias-Participations.

La chaîne de production d'un livre se compose de plusieurs étapes : d'abord, l'auteur écrit un livre et le soumet à un éditeur. Si la décision est prise d'éditer, le livre est imprimé, puis diffusé (ensemble des opérations de marketing pour faire connaître le livre aux revendeurs), et distribué (transport, stockage). Enfin, le livre est vendu aux consommateurs finaux dans différents points de vente (librairies, grandes surfaces, etc.).

Pour les grands groupes d'édition comme Editis ou Hachette, une partie de cette chaîne de production est verticalement intégrée, ce qui signifie que la commercialisation, la distribution et la vente des livres sont assurées par les entreprises elles-mêmes. Par exemple, Editis commercialise tous ses livres par l'intermédiaire de sa filiale Interforum. De même, Hachette distribue ses propres ouvrages à travers sa filiale Hachette Distribution. Lagardère dispose également de plusieurs points de vente avec son enseigne Relay, qui représente plus de 1000 boutiques en France dans les aéroports, gares et hôpitaux.

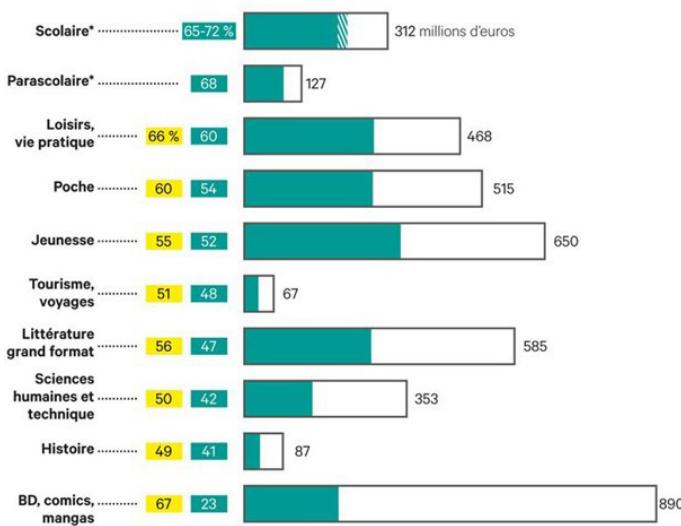
La fusion Editis-Hachette : une forte concentration

En faisant l'acquisition de Hachette, Vivendi deviendrait le premier acteur du secteur de l'édition de livres francophones, ainsi que le principal groupe intégré sur ce marché, avec une part de marché globale de 45%. Sur certains segments, comme les livres scolaires ou les livres de poche, cette part pourrait même atteindre 50 à 60%.



Hachette-Editis : une méga-fusion sur le marché français de l'édition

Marché global des secteurs concernés par la fusion, en millions d'euros, en 2021 et part de marchés en cumulé après une éventuelle fusion entre Hachette et Editis, en %



Ces seuils de concentration sont encore plus élevés si l'on inclut la distribution. Par exemple pour la bande dessinée, leur part de marché cumulée dans l'édition et la diffusion est de 23% en 2021, mais elle atteint 67% si l'on inclut le rôle des distributeurs. Dans les petits points de vente, leur part de marché cumulée pourrait même être de 100%.

Plusieurs problèmes de concurrence

Ce degré élevé de concentration soulève plusieurs problèmes de concurrence. Premièrement, tout en haut de la chaîne de production, la domination d>Editis-Hachette pourrait permettre à Vivendi d'attirer les auteurs de best-sellers en promettant d'importantes opérations de marketing dans leurs propres médias, privant ainsi les éditeurs concurrents de sources de revenu essentielles pour soutenir leurs activités.

Deuxièmement, la structure verticalement intégrée des deux éditeurs pourrait restreindre l'accès des petits éditeurs aux services de marketing et de distribution. Outre la distribution et la

“En faisant l'acquisition de Hachette, Vivendi deviendrait le premier acteur du secteur de l'édition de livres francophones, ainsi que le principal groupe intégré sur ce marché, avec une part de marché globale de 45%”

commercialisation de leurs propres livres, Editis et Hachette, par le biais de leurs plateformes Interforum et Hachette Distribution, commercialisent et distribuent également des éditeurs indépendants. Avec le rachat du groupe Hachette par Editis, les petits éditeurs qui externalisent cette partie du processus de production pourraient voir leurs prix augmenter en raison de la réduction de la concurrence sur ce marché.

Enfin, tout en bas de la chaîne de production, la position dominante de Vivendi pourrait lui donner un pouvoir de négociation considérable sur les vendeurs, qui verront leurs marges réduites. Celle-ci serait entièrement répercutée sur le consommateur final : depuis 1981 en France, le prix de vente des livres est réglementé par une loi sur le prix unique. Les vendeurs peuvent vendre les livres à un prix compris entre 95% et 100% du tarif fixé par l'éditeur.

Une autre préoccupation concerne la diversité des livres sur le marché français. La concurrence sur le marché de l'édition favorisant la diversité des idées, de nombreux acteurs du secteur s'inquiètent de l'impact que cette fusion pourrait avoir sur la liberté d'expression et de création. Cette inquiétude a été largement relayée par la presse car Vincent Bolloré, l'actionnaire principal du groupe Vivendi, est connu pour ses opinions politiques conservatrices. Par exemple, CNEWS, une chaîne d'information française appartenant à Vivendi, a été accusée d'avoir largement contribué à la couverture médiatique du candidat d'extrême droite à l'élection présidentielle de 2022, Eric Zemmour.

“La concurrence sur le marché de l'édition favorisant la diversité des idées, de nombreux acteurs du secteur s'inquiètent de l'impact que cette fusion pourrait avoir sur la liberté d'expression et de création.”

Pour préserver la diversité éditoriale, le PDG des éditions Madrigall a appelé à l'extension de la loi Léotard de 1986 au secteur de l'édition. Cette loi vise à garantir “le respect du caractère pluraliste de l'expression des courants de pensée et d'opinion” dans les secteurs de l'audiovisuel et de la presse en limitant, par exemple, la propriété de plusieurs médias. Cette loi a notamment contribué à l'abandon de la fusion entre les deux chaînes de télévision françaises TF1-M6 en septembre 2022.

Arguments présentés par Vivendi

Dans les médias, Vivendi justifie cette fusion en affirmant que celle-ci vise à faire face à la “guerre de l'attention” actuelle, et ainsi de mieux concurrencer les autres secteurs du divertissement. Par cet argument, Vivendi tente d'élargir le marché pertinent en incluant tous les secteurs du divertissement, comme le cinéma, la télévision ou encore les jeux vidéo.

Vivendi affirme également que cette fusion permettrait au secteur français de l'édition de résister aux Gafam (Google, Facebook, Amazon, Microsoft). Cet argument a aussi été avancé récemment aux États-Unis lors du projet de fusion entre les deux maisons d'édition Penguin Random House et Simon & Schuster, qui a été bloqué en novembre 2022. Cependant, cet argument peut difficilement être appliqué au marché français, car Amazon représente environ 50% du marché aux Etats-Unis, alors qu'il ne

représente qu'un peu plus d'une vente sur dix en France.

Conclusion

Réalisant qu'il n'obtiendrait pas le feu vert de la Commission européenne sans remèdes concurrentiels, Vivendi a annoncé vouloir vendre Editis. La vente d>Editis se ferait de deux manières : d'une part, par une cotation des actions sur Euronext Paris, et d'autre part, par la vente de 29,5% à un ou plusieurs par-

“Réalisant qu'il n'obtiendrait pas le feu vert de la Commission européenne sans remèdes concurrentiels, Vivendi a annoncé vouloir vendre Editis”

naires. Cependant, l'issue de cette décision est encore incertaine, car la Commission européenne doit encore donner son approbation finale à la vente d>Editis et évaluer si les remèdes proposés par Vivendi sont suffisants pour garantir la concurrence sur le marché de l'édition en France. ■

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Taiwan: A war in the making ?

Alberto Migliavacca

In the last few years there has been much talk around the possibility of an invasion of Taiwan from Mainland China. Two main ideas have been brought forward to support such situation; the expectation that China's president would opt for a Russian-style invasion of Taiwan; China to expand their role in the semiconductor industry by conquering the leader of a part of this industry. Such an invasion would have profound consequences for the whole world for different reasons and one of the main consequences would be on the semiconductor industry, an industry at the core of much of modern advanced technology like AI. Some policy-makers, especially the ones in the USA, believe that we should adopt a hawkish stance on China. I believe we should prevent a violent annexation of Taiwan, but rather than opposing China on every topic, we should take a more balanced and nuanced stance on China.

How the supply chain works

It's important to pay attention to what is happening in Taiwan because semiconductors are at the heart of many advanced technologies that are going to shape our future like AI. Before dealing with other matters, It's useful to know how the supply chain for the semiconductors

industry works.

This is a crucial question to tackle because it deals directly with the impact the war has on people's everyday life. Imagine you want to buy a new car but you can't because there is a shortage of semiconductors or you want to buy a new laptop and you can't for the same reason, this would affect you in your personal life and would incentivize you to push your government to support Taiwan.

The significant aspect shown by this graph is how there are many steps in the supply chain and even if China conquered Taiwan the sanctions the West could impose on China would be so severe they would destroy China's ability to contribute to the semiconductor industry. A contributing factor to this is connected to the contribution of the different stages of the supply chain to the total value added of the chain as shown by the following graph.

China is an important player when it comes to the Assembly part of the supply chain but is not a big player in the other stages therefore if the Chinese wanted to conquer Taiwan. Even by conquering Taiwan, a big player in the foundry industry as I will show, China would still be unable to control the supply chain in the dominating manner some people fear.

Taiwan in the semiconductor industry

One reason why some policy-makers and think tanks fear an invasion of Taiwan is the possibility of China to gain control of Taiwan's foundry Industry (the foundry industry is the outsourcing of semiconductors' manufacturing). Defining Taiwan's role in the semiconductor industry as crucial would be quite an understatement. According to Taipei-based research firm Trend Force, Taiwan accounts for 64% of the foundry industry. TSMC (Taiwan Semiconductors Manufacturing Company) alone accounts for 54% of the foundry industry. The following graph, taken from a CNBC article on the Taiwanese foundry industry, clearly shows Taiwan's role in the foundry industry.

Of the companies listed in the graph, the following are Taiwanese: TSMC, UMC, PSMC, VIS. This helps to explain why a war between the 2 countries would be disastrous: the damage to global supply chains would be enormous because it would take years before the rest of the world catches up with Taiwan's semiconductors production capabilities.

Military situation

We can finally tackle the military situation - is a war in Taiwan really possible ? What could help to prevent it ?

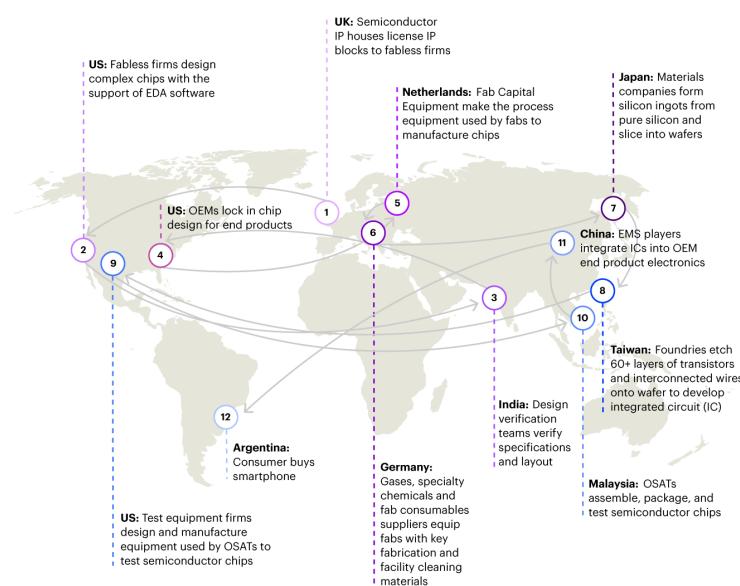
Let's look at the fact first: the idea of a Chinese invasion of Taiwan is centered on a few elements:

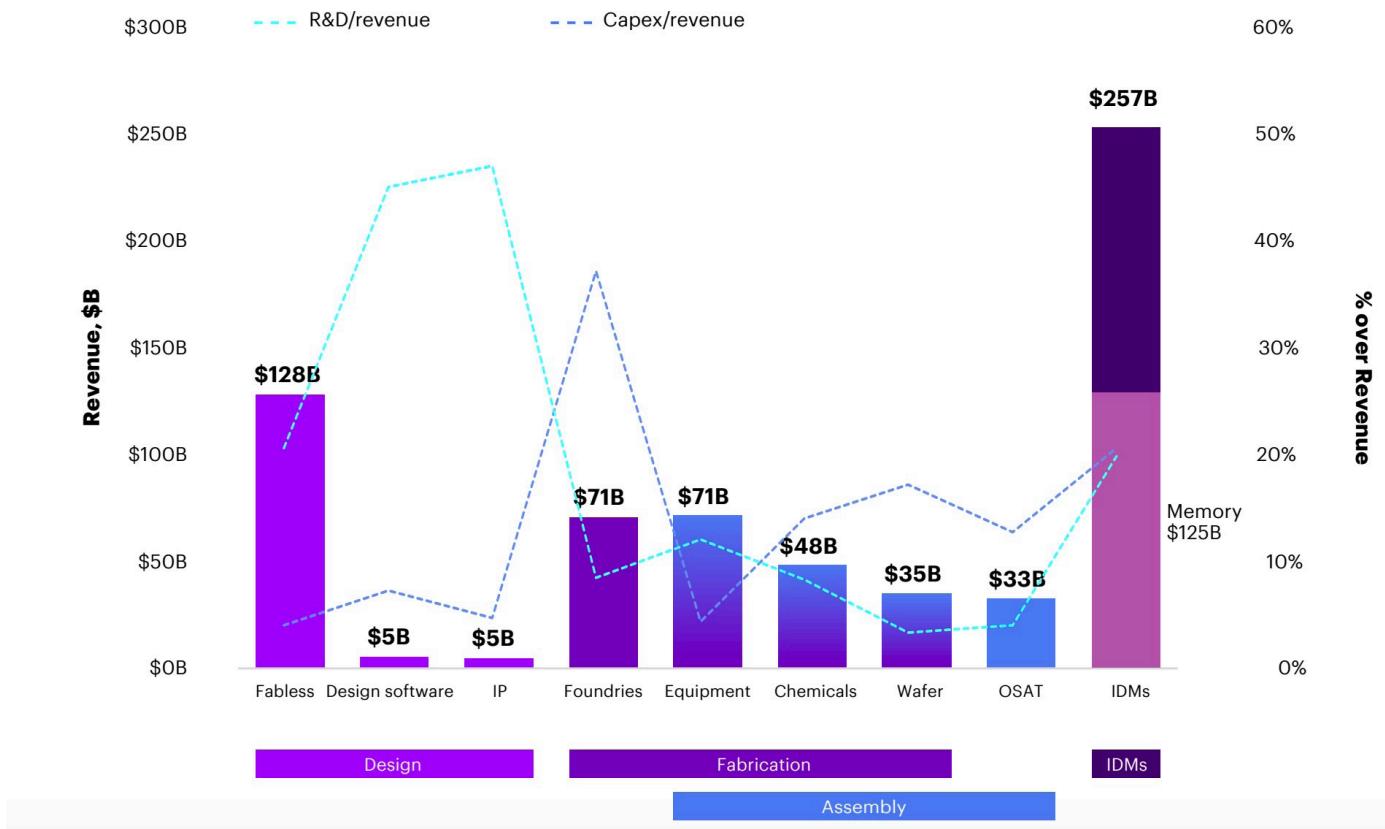
- As China has gotten richer in the last 30 years, its military budget has followed a similar trajectory reaching 293.35 Billions of US Dollars in 2021 according to the World Bank. This means China has evermore resources it can dedicate to its military

- We can constantly read stories of Chinese forces entering Taiwan's aerospace industry.

- The Chinese President Xi Jinping has repeatedly said he wants Taiwan to join the People's Republic of China (a.k.a. China).

- Russia's invasion of Ukraine has





increased public opinions attention to a similar operation by China.

Given these facts, one question quickly rises - Is an invasion of Taiwan really possible? Two scenarios come to my mind:

- A russian-style invasion of Taiwan, where China decides to invade Taiwan no matter what;
- A democratic unification of the two countries.

The second scenario is clearly the better option between the two and something that no one would be opposed to in the West, but the second scenario is clearly

a very negative one for reasons already mentioned. The main factor that can deter China from following Putin's example is clearly how the West reacts to the Russian invasion of Ukraine. The Chinese government has built its legitimacy in front of the Chinese people on the following promise: "You (Chinese people) give up some of your rights in exchange for the economic growth we (the Chinese Communist Party) can deliver to you". Were this promise to be broken, the CCP could face a strong crisis that could result in its loss of power. It should be

clear by now that the harder we respond to Russia's invasion of Ukraine the more we are increasing China's expected costs for invading Taiwan; this is precisely the one key factor we control that could prevent China from invading Taiwan.

So far, it looks like preventing a Russian style invasion of Taiwan has a clear strategy that should be employed. Unfortunately, we have to remember than in the last few years the CCP has invested a lot of time in pumping up the nationalistic rhetoric against the West (just Google "unequal treaties China" to see what i am referring to), this could lead in the future to a situation where the CCP's legitimacy derives from its ability to defeat the West, just like in Putin's regime. If this turned out to be the case then a war over the control of Taiwan would happen regardless of the economic costs it would impose on the Chinese people.

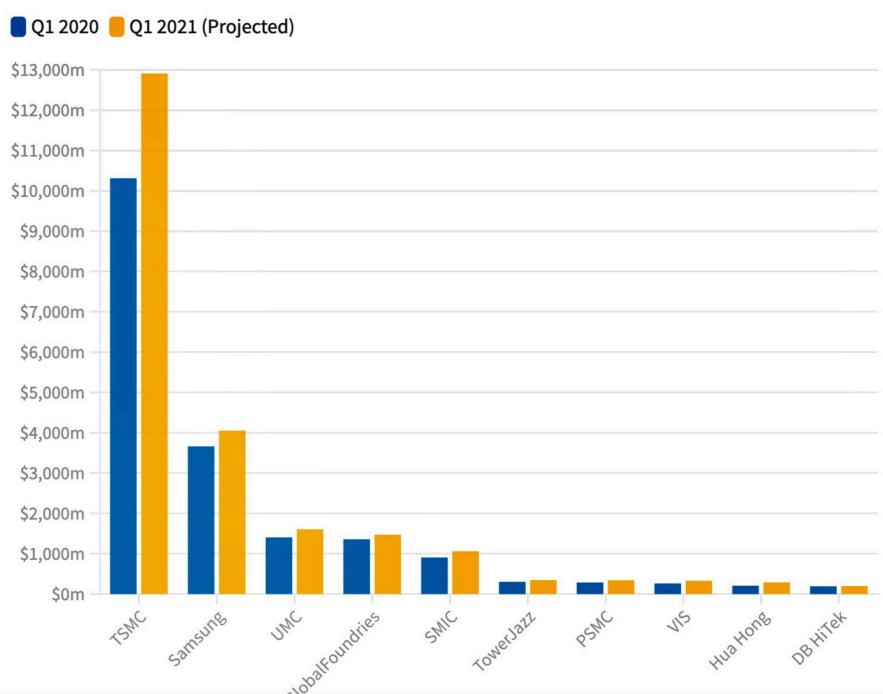
In this latter situation, the only thing we could do is help Taiwan with military aid like we are doing with Ukraine.

Conclusion

To conclude, there are two things we can do to prevent a Chinese invasion of Taiwan:

- Give a strong and united answer to the Russian invasion of Ukraine.
 - Provide military aid to Taiwan.
- Obviously this is not a perfect recipe to deter China but is certainly a good starting point. ■

Top semiconductor foundries by revenue



Master 2 Programs: Student POV

Master in Public Policy and Development

Which aspects of your chosen program were the most challenging?

As a Master 2 student in Public Policy and Development (PPD), I have been fortunate to have access to a wide range of valuable learning opportunities and experiences. However, like any academic pursuit, certain aspects of the program proved more challenging than others. In my experience, one of the most demanding aspects was the workload associated with each course. The successful completion of research projects, intensive group discussions, and presentations required meticulous organization and time management.

Although the workload associated with these projects was significant, I valued the opportunity they provided to apply the theoretical knowledge we had gained since our first year of university to real world policy-making issues. These projects really challenged us to become more independent in our thinking and analysis, simulating situations we might encounter in our future careers. Overall, I believe these experiences have helped me develop a more critical approach to economic questions and better prepare me for the challenges I will face in my professional life.

Which was your favourite course(s) and why?

Despite the challenges, certain courses stood out as particular favorites of mine. Specifically, I was drawn to courses that provided a comprehensive understanding of the intricate interplay between theory and practice.

One such course was “Structural Models,” which focused on estimating the parameters of the core components of economic models to rationalize the observed data, thereby facilitating policy-making decisions. Although the course was quite challenging, I believe it is essential for any student interested in program evaluation, policy decision making, and working with statistical software.

Another course that I greatly appreciated was “Economic Effects and Political Sociology of Institutions,” which was more empirical. Through the study and review of well-published economic papers, the course provided us with an understanding of topics related to corruption, political connections, and the long-term effects of institutions while formalizing each context with a precise and interesting econometric approach. What I enjoyed most about this course was the opportunity to discuss the papers, share our insights and knowledge of a particular country or context, and learn more about important results in the economic literature related to these topics.

What do you plan to do next?

I am thrilled about my upcoming end-of-studies internship with the Tax Inspectors Without Borders, a joint OECD and United Nations Development Program initiative to help developing countries’ tax administrations build capacity in international taxation.

Looking ahead to the future, whether I ultimately decide to pursue a career in public organizations or in the private sector, I feel confident that the skills and knowledge I have gained through my studies will serve me well in any number of different contexts. The diversity of the courses and the pluri-disciplinarity



**Célia
Devant-Perrotin**

of the Master helped PPD students, like myself, acquire skills ranging from program evaluation and impact assessment to more abstract ones like effective teamwork and public speaking. Additionally, studying high-quality papers on diverse topics such as education, infrastructure, health or institutions has helped me and my peers acquire a crucial understanding of economic development and I am confident that this knowledge will serve us well in our future careers.

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Master Economics and Ecology

Which aspects of your chosen program were the most challenging?

I chose the M2 Economics & Ecology for two reasons. First, because I think that those are the key two disciplines needed to make human-ecosystem interactions better, and I think that we desperately need that. Second, because I think that too much of Environmental Economics is not informed by natural science. I have had many courses at both TSE and other universities, where professors with no background other than Economics have tried to explain how we should best deal with nature. Whenever I presented their ideas to someone with a natural science background, they would start laughing or shake their head in disgust. I have learned not to trust the science those people put out in the world, and I don't want to be part of them.

Which was your favourite course(s) and why?

My favourite course in the M2 was the “Introduction to Ecology”. It was just four of us economists learning the very fundamentals of Ecology. Our teacher, Sam Snow, was awesome. We even went on a bird watching trip together. It’s impressive how much basic intuition for the field this course built up. I’d recommend it to anyone.

The most challenging part of the M2 for me personally was that there was very little rhythm. Many of the courses or course modules were offered in blocks, and those blocks were staggered through the semester. That meant an ever-changing schedule, and many different little group projects and assignments. I would have preferred a steadier rhythm and more focused evaluations.

What do you plan to do next?

After the M2, I want to do a PhD in an interdisciplinary field and become an ecosystem policy researcher. To that end, I’m currently exploring the effects of forest protection policies in Canada on the deer and wolf populations that live there for my Master’s thesis. The M2 Economics & Ecology has set me up well for that, and I’m excited for more research projects like this one.



applied mathematics in general. The amount of knowledge that one has to learn is enormous, in my case I had to catch up with a lot of basic things because I don’t have a very strong background. In general, even though it can be quite difficult to catch up with and learn from different fields at the same time, it is still very useful to get a sense of how mathematics is being applied in different fields.

Which was your favourite course(s) and why?

I would say the “reading course”. In this course you have to read

Master in Mathematics and Economic Decision

Why did you choose this master ?

I chose this master due to its flexibility to choose your courses from different programs. It is even possible to choose a course from M2 RI from UT3, which is hardly possible in other programs.

Which aspects of your chosen program were the most challenging?

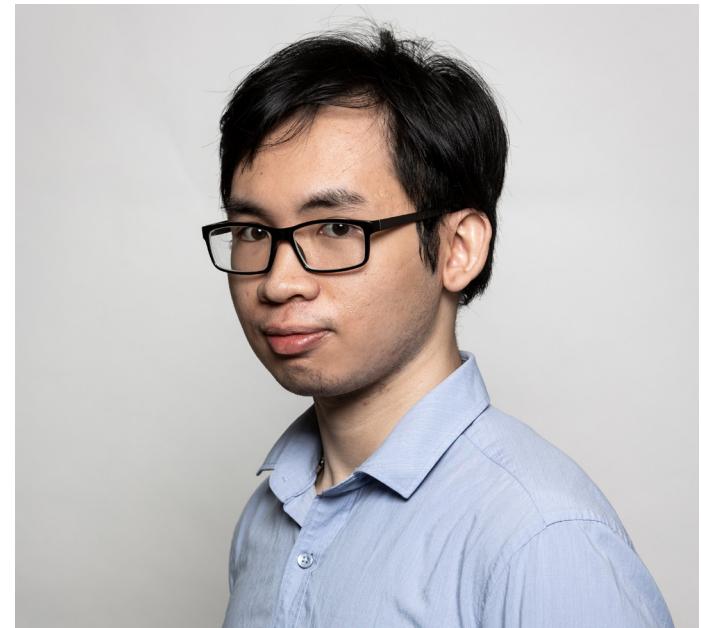
The MED’s main goal is to provide you with a solid background in applied mathematics, and thus for doing further research in

papers about one particular topic, writing proofs, and in the end give a presentation and a memoir about what you have read and proved, which are very difficult to follow at first. But this exact course will give you a sense of doing research as well as necessary skills that are necessary when doing research. Moreover, what is more valuable is the amount of knowledge you can and have to acquire doing this time.

What do you plan to do next?

I'm planning to apply to a PhD program in statistics or applied mathematics.

Tung Lam
Nguyen Le



Master in Économétrie, Statistiques

Which aspects of your chosen program were the most challenging?

Baptiste : I found that the most challenging aspect was the advanced statistical modelling techniques that we learned. These models required a strong foundation in mathematical theory and programming skills, and I had to work hard to understand complex concepts and apply them effectively in my classes.

Malo : I quite agree with Baptiste, the theoretical part of the models and methods is the most difficult to master. But this is also what is interesting at TSE, we do not just learn the results by heart, but also excel in understanding and explaining the way to obtain them, and analysing the potential drawbacks or biases. However, every theoretical aspect is accompanied by a project, which makes the master's course enjoyable even for people who are in a hurry to apply their knowledge.

Which was your favourite course(s) and why?

Baptiste : My favourite course in the program was scoring and web mining. I enjoyed learning about the various scoring models and techniques used in data mining, as well as exploring the vast and diverse world of web data. I particularly appreciated the practical applications of these techniques, such as analysing social network data and building recommendation systems, applied in the finance scope. These courses also improved my programming skills, especially in working with graph data, which could be valuable in my future career as a data scientist.

Malo : I am not doing my master's in apprenticeship, so I had access to the statistical consulting course. This course allowed us to work in groups on a problem proposed by a company. We are supervised both by tutors from the company and by TSE teachers. It is thrilling to be able to carry out projects involving the different stages of data science, from the preparation of data to the visualisation of results. I also really liked the marketing econometric course, where a trainer from the professional world talks about methods frequently used in the data and marketing departments of companies, such as customer segmentation.

What do you plan to do next?

Baptiste : My plan is to gain work experience in the data science world, preferably abroad. Since I did not take a gap year during my studies, I am eager to explore different cultures and work environments while using my skills in statistics and econometrics. I hope to work on projects that involve graph data to solve real-world problems. Ultimately, my goal is to continue to grow and develop as a data scientist and make my best to help future companies for which I will work

Malo : I will start my internship in the data division of the brand Sezane. I hope to be able to apply the methods I learned at TSE and develop my skills. I wish to find a job where I can continue to learn new methods, which seem to me very important in the field of data science which evolves very quickly.



ON CAMPUS





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Mathematics Economic Decision,
Data Sciences For Social Studies and
Econométrie, Statistiques

Yasser Abbas



**Best Professor for L3 Program
and L3 Economics and Law**

Christine Maurel

Best Teaching Assistant for M1
Economics and Law

Anais Fabre



Best Professor for L3
Mathematics and Economics

Pascal Bégout

Best Teaching Assistant for M1
Standard Track

Wenxuan Xu

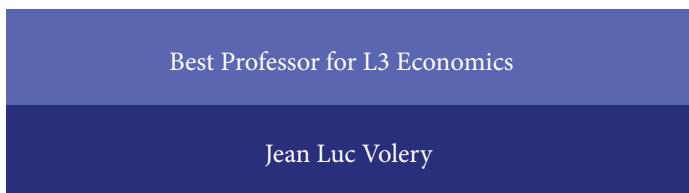


Best Professor for M2
Economics and Ecology

François Salanie

Best Teaching Assistant for M2
Economic Theory and Econometrics

Wenxuan Xu

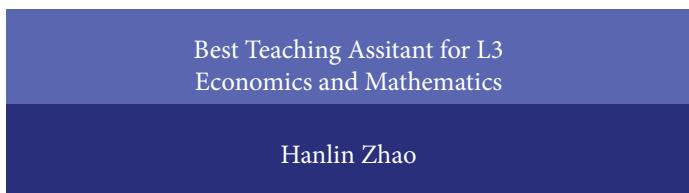


Best Professor for L3 Economics

Jean Luc Volery

Best Teaching Assistant for M1
International Track

Léa Bignon



Best Teaching Assistant for L3
Economics and Mathematics

Hanlin Zhao

Best Teaching Assistant for L3
Economics

Alexandre Montaru

The TSEconomist congratulates all winners of a teaching award for the academic year 2022/23. As students at TSE we appreciate the efforts to implement new teaching methods, the time taken to explain complex matters and the friendly approach towards students presented by the teachers who received an award. After all, it is only through good teaching that we eventually develop a passion for topics in Economics and learn as much as possible during our time at TSE.

Puzzled, Perplexed, Befuddled

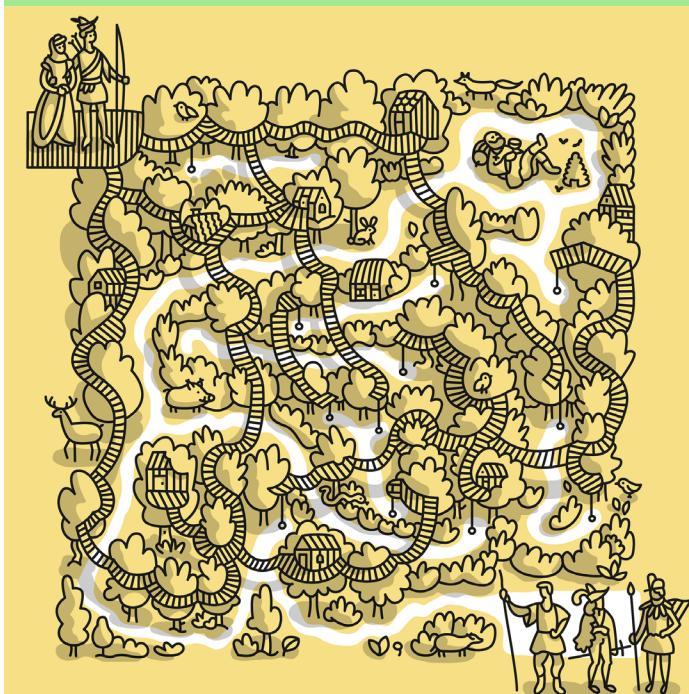
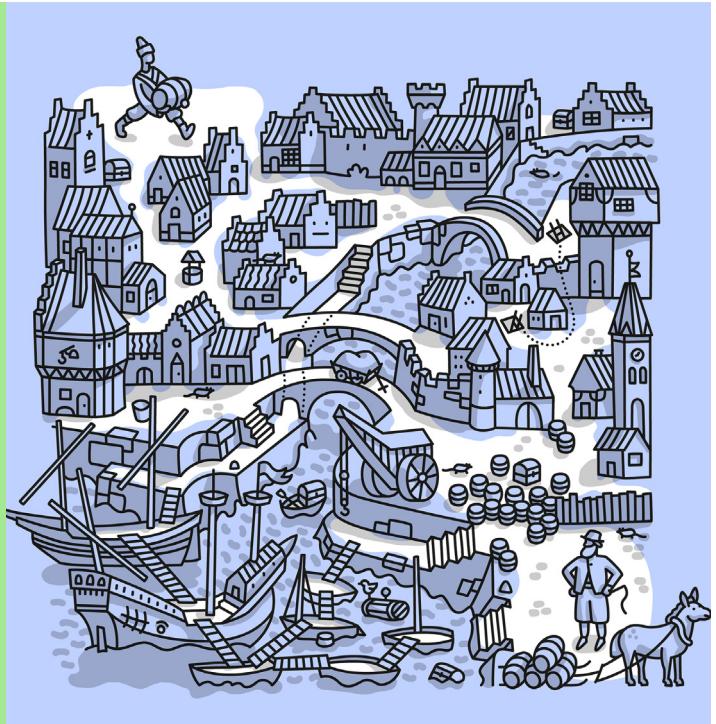
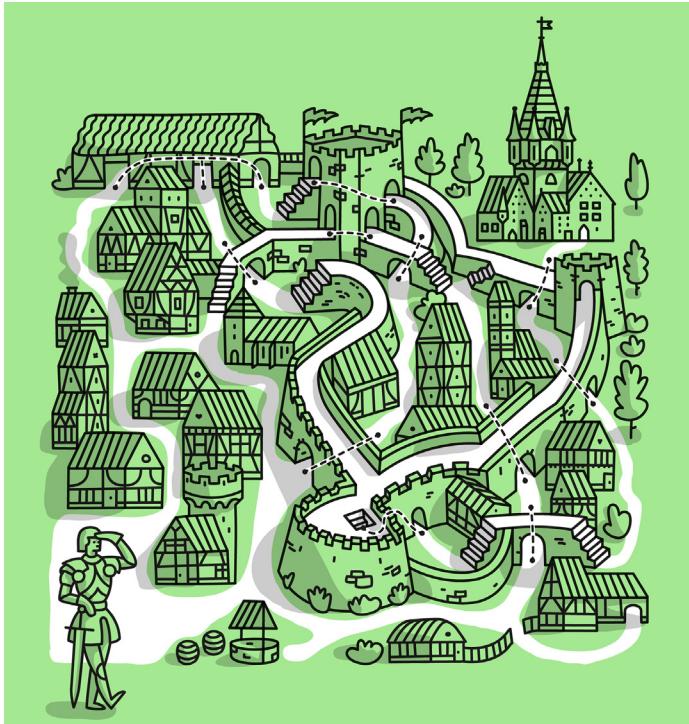
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A	P	B	A	R	C	V	L	T	R	E	T	S	Y	O	J	R	R	E	W
D	P	X	K	O	S	O	D	Y	S	T	O	P	I	A	E	A	V	G	J
L	L	T	S	I	M	O	N	O	C	E	S	T	A	S	Z	T	U	A	N
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N	C	V	C	M	F	E	E	W	I	T	T	D	N	R	A	A	I	A	I
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Enjoy the journey



Hope you enjoyed reading the issue!



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