Sustainable Finance Center

Toulouse School of Economics

NEWSLETTER – May 2021

Research highlights

On the impact of universal owners

BlackRock vs Norway Fund

Banque de France /TSE prizes in monetary economics and finance

Economics for the Common Good

Director's message

In search of green shoots

Will the world 'build back better' in the wake of the pandemic? The TSE Sustainable Finance Center aims to play its part by informing public debate and decisions, offering research solutions and impact analysis to investors, businesses, and policymakers. How should developing countries respond to the almighty greenback? Can low interest rates stifle growth? How is inflation shaped by beliefs? Who will push firms to embrace social responsibility? These are just some of the thorny questions grasped by researchers in this issue.

Mapping the shifting sands of 21st-century finance will be crucial to the design of sustainable policies. The Banque Centrale du Luxembourg, which has just renewed its support to research at TSE, is well aware of what is at stake here. TSE's partnership with Banque de France has also been enormously productive in this regard, and recently honored Silvana Tenreyro (Junior Prize), Emi Nakamura and Jón Steinsson (Junior Prize), and John Moore (Senior Prize) at its biennial awards ceremony. Judicious use of monetary policy will be vital as the world struggles to its feet after Covid-19, and these economists have all made notable contributions to our understanding of the role and potential of such instruments.

In addition, we are pleased to feature highlights from the work of Sebastien Pouget in this issue. His investigation of shareholder voting by major institutional investors BlackRock and the Norway Fund is an important reminder to all parties that ESG responsibilities can no longer be ignored.

Last but not least, we also welcome the successful launch of a four-year research project, FIT IN, which aims to harness digital services to boost financial inclusion in emerging economies. Research will focus on the potential of alternative competition and regulatory policies to improve digital payment systems for low-income users. Sustainability challenges will require the engagement of all sectors of society, and all generations. In this respect, we are deeply heartened by the commitment of TSE students to ESG issues, as evidenced by their engagement with the IMF's Jeffrey Franks over prospects for the green transition in one of our recent Business Talks.

We wish you an enjoyable read and hope to bring more news of encouraging developments in our next issue,

Sophie Moinas
Director, TSE Sustainable Finance Center

News

TSE researcher wins Best Young Researcher award

During the International Forum on Financial Risk and the "Rising Talents" side event organized by the Institut Louis Bachelier / Europlace Institute of Finance on March 26, the SCOR Foundation for Science awarded the 2020 Best Young Researcher in Finance and Insurance prize to TSE member **Matthieu Bouvard**.

Matthieu's research focuses on financial intermediation and the impact of technological innovation in finance (FinTech).

TSE researcher to advise French government on trade and development

In January 2021, the French Ministry for the Economy and Finance appointed **Marie-Françoise Calmette** to serve on an advisory group for the evaluation of France's aid for trade from 2009-2019. Marie-Françoise will draw on her expertise in international economics and the development of emerging countries.

A renewed partnership with the Banque centrale du Luxembourg

Our partnership with the Banque centrale du Luxembourg (BCL), which has been a supporter of research at TSE since 2015, has been renewed for another five years. This renewal is a natural result of the strong existing ties between TSE and BCL researchers who have already produced joint scientific publications. The objective of this partnership is to develop ambitious research and scientific activities in macroeconomics, monetary economics, and the economics of financial systems. With the support of BCL, TSE researchers plan to develop their research work on macro-prudential policies, and on the challenges raised by the development of e-money, virtual currencies, and central bank digital currencies. Numerous joint working sessions of mutual benefit to TSE and BCL researchers will continue to be organized in Toulouse and Luxembourg as part of this international collaboration.

Patrick Fève, *TSE researcher and pilot of this 5-year research partnership*

AXA Conference: Perspectives for the Economy and Responsible Investment in 2021 – Online, January 6

At a January conference dedicated to responsible investment and macroeconomic perspectives, AXA Investment Managers welcomed **Christian Gollier** to talk about the challenges facing French investors in 2021. The TSE director, who heads the Climate group within the Economic Commission set up by French President Emmanuel Macron to prepare for the post-Covid-19 era, gave an opening speech before taking part in a roundtable discussion on *"The world after Covid-19"*. It was moderated by Gilles Moëc, Chief Economist of the AXA Group and Head of Research at AXA IM, who also gave a presentation on the macroeconomic perspectives.

Watch the recording of the event here

Research highlights

On the impact of universal owners

Sébastien Pouget, Marie Brière and Loredana Ureche-Rangau

Do institutional investors encourage companies to be more socially responsible? New research by Marie Brière *(Amundi)*, Sébastien Pouget *(TSE)*, and Loredana Ureche-Rangau *(University of Picardy)* studies voting at shareholder meetings by two emblematic global investors: BlackRock and the Norway Fund. Their results suggest that universal ownership and delegated philanthropy incentivize large investors to pressure firms over their harmful impacts, such as greenhouse gas emissions.

Sébastien Pouget is a professor at the University Toulouse 1 Capitole and a member of TSE. His research studies finance with a multidisciplinary approach that combines economics, management, psychology, and history.

Sébastien is co-director of the research initiative on Sustainable Finance and Responsible Investments (IdR FDIR), created in 2007, sponsored by numerous asset management companies and institutional investors. He is a member of the 'Principles for Responsible Investment' Academic Network Advisory Committee and of the Haut Conseil Certificateur de Place de l'AMF, the French Financial Market Authority.

> BlackRock and, especially, the Norway Fund oppose management more frequently on environmental and social resolutions. This suggests that universal ownership prompts institutional investors to engage corporations on externality issues

What are corporate externalities?

An externality is the effect produced by an economic activity on parties that are not involved in it. Externalities are a major source of market failure since market equilibria reflect private effects that are perceived by the parties undertaking the activity, but not overall societal effects. Mattison et al (2011) estimate that, in 2008, the largest 3,000 publicly listed companies worldwide generated more than US$ 2.15 trillion, or 7% of their combined revenues, as environmental externalities such as climate change. This figure, already very significant, does not consider the companies' social externalities such as consumer safety issues and human rights violations.

Why should institutional investors attempt to improve corporate behavior?

Universal ownership, which arises when large institutional investors own shares in a broad cross-section of the economy, may offer powerful incentives to improve corporate behavior. Universal owners might engage with firms that could impose negative externalities on other firms and deteriorate the investors' overall portfolio value. For example, these investors may want to consider the negative economic impact that a firm's GHG emissions might have on other companies' businesses because of issues relating to water access, food, health or migration. Universal owners can also engage with companies to improve coordination among their environmental and social policies, which can be beneficial for all companies' financial value. For example, Benabou and Tirole (2016) show that coordinated policies on managerial compensation enable firms to avoid the damageable effects of a bonus-driven culture.

Delegated philanthropy is another potential driver of active engagement by institutional investors. Pension funds, mutual funds and sovereign wealth funds invest on behalf of clients or citizens whose values and preferences may differ from those of companies' managers. For example, the global risk generated by a firm in terms of climate change or nuclear energy might not be valued in the same way by management and investors. Institutional investors may thus want to persuade management to choose the appropriate course of action, often because they care about their own reputation among clients or citizens.

As highlighted by Morgan and Tumlinson (2019), engagement by institutional investors on externality issues may be socially desirable, for two reasons. First, companies' actions are less subject to the free-rider problem than individual shareholders would be when deciding to fight these externalities. Second, engagement makes companies' production decisions more efficient from a social viewpoint and increases the welfare of shareholders who care about these externalities.

Universal ownership is commonly cited by institutional investors to rationalize their social responsibility policies. One reason is that this approach focuses on financial returns only and is thus consistent with a narrowly defined concept of fiduciary duty. However, it requires that externalities are correctly evaluated and material to companies' profits. In addition, externalities should not materialize so far into the future that they cannot significantly affect asset valuations. Delegated philanthropy does not suffer from these drawbacks, but its strength can be attenuated by the difficulty of finding a consensus among clients' and citizens' values and preferences.

> " Institutional investors' policies ought to reflect the values of their clients or beneficiaries. Pass-through voting – collecting votes from clients and beneficiaries to send to general meetings – might be useful here

How do you test these approaches empirically?

We study institutional investors' votes at shareholder meetings on resolutions related to both environmental and social issues. Focusing on shareholder meetings is useful because it provides us with a large amount of data on shareholder voting on clearly identified externality issues. To be even more precise in terms of identification, we also restrict our attention to greenhouse gas emissions, a clear example of an externality that companies produce.

We focus on the Norway Fund, a responsible sovereign wealth fund, and BlackRock, an asset manager, with more than $1 trillion and $5 trillion, respectively, under management in 2017. The Norway Fund also has a delegated philanthropic mission, monitored by the Norwegian parliament and an independent Council on Ethics. Given their large, global and well-diversified equity portfolios, these institutional investors are both universal owners and likely have a significant influence on corporate behavior across the world.

We gathered data covering 2014 and including BlackRock and Norway Fund votes at 35,382 resolutions for 2,796 firms worldwide. Our data also include managers' recommendations as well as various financial and environmental, social and governance characteristics of firms. We classified resolutions into several categories according to the sponsor (management versus shareholders) and the topic (financial, governance, social and environmental issues). Our variable of interest is the support of investors to resolutions that request firms to deal with externalities.

What are your key findings?

We find that both BlackRock and the Norway Fund oppose management more frequently on environmental and social resolutions than on financial ones, which we use as a benchmark. This result suggests that universal ownership prompts institutional investors to engage corporations on externality issues.

Of the two institutions, however, the Norway Fund puts more emphasis on shareholder resolutions concerning externalities – despite management opposition – than on those relating to governance. The difference between the two investors' voting behavior is larger when we focus on resolutions related to greenhouse gas emissions. Our results hold with and without country fixed effects. Investors' holdings seem not to affect their voting policy.

Overall, our findings suggest that both universal ownership and delegated philanthropy provide incentives for institutional investors to combat negative externalities generated by firms. Delegated philanthropy, though, seems to be a stronger motivation.

Are there any policy implications?

Our findings suggest that corporations that have an influence on the future of the planet are unlikely to be firmly disciplined by institutional investors simply because these investors hold well-diversified portfolios. Instead, we find that institutional investors'

corporate engagement policies ought to reflect the values of their clients or beneficiaries. Pass-through voting – collecting votes from clients and beneficiaries to send to general meetings – might be useful here. Regulators could also request institutional investors to display their voting policy more clearly in their prospectuses in order to inform clients about the type of externalities, if any, they intend to deal with.

On the other hand, our findings also indicate that there is a clear difference of objective between various shareholders regarding companies that have negative externalities. This suggests that the basic tools used in corporate finance, such as net present value, need to be revisited. These tools should consider not only the financial wealth created by the firm, but also the social value of its externalities, which have, by definition, no direct financial consequences for the firm itself. One way to measure them is through cost-benefit analysis. This could be the topic of future research.

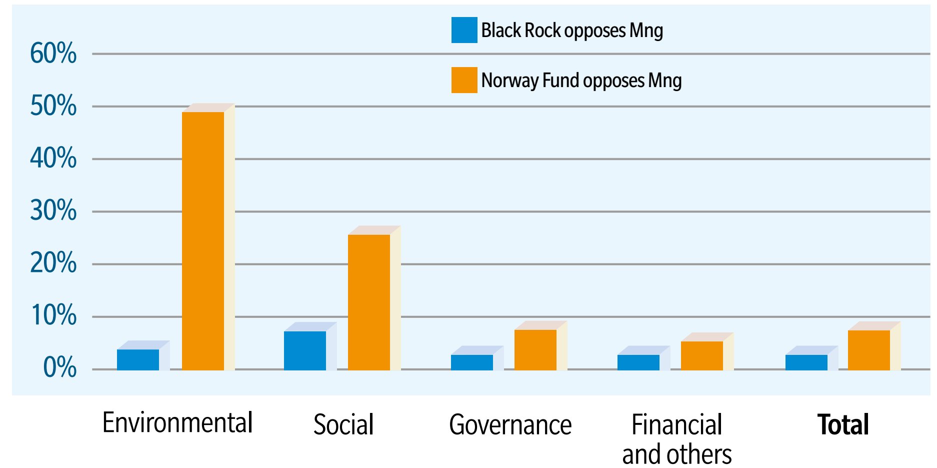

Figure 1: Rate of opposition to management depending on the issue

This figure shows how BlackRock and the Norway Fund voted in 2014. Figure 1 focuses on all 35,382 resolutions, including 69 on Environmental issues, 257 on Social issues, 28,396 on Governance issues, and 6,660 on Financial and other issues.

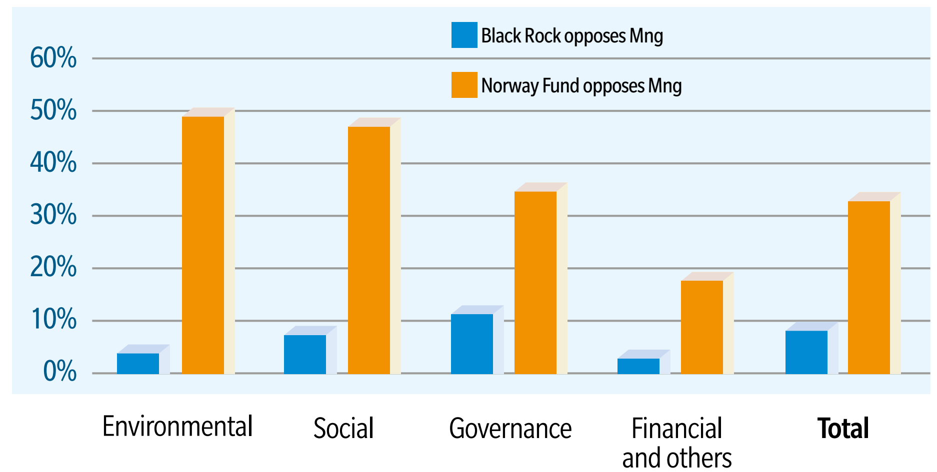

Figure 2: Rate of opposition to management depending on the investor and the issue

This figure shows how BlackRock and the Norway Fund voted in 2014 on shareholder-sponsored resolutions. Figure 2 focuses on the 811 shareholder resolutions including 69 on Environmental issues, 117 on Social issues, 398 on Governance issues, and 227 on Financial and other issues.

Summing up

This research finds that both institutional investors favor shareholder resolutions on environmental and social issues more often than financial ones. Support for resolutions on reducing negative externalities is stronger at the Norway Fund than at BlackRock. Delegated philanthropy appears to be a stronger incentive than universal ownership for encouraging firms to reduce negative externalities.

Outreach

Toulouse School of Economics

BANQUE DE FRANCE
EUROSYSTÈME

Banque de France-TSE prizes in monetary economics and finance

Every two years, the Banque de France and TSE distinguish researchers who have developed fundamental concepts in monetary economics and finance. The aim of these prizes is to encourage research that contributes to a better definition and implementation of policies conducted by central banks.

The 2021 prizes will be awarded on May 17 by François Villeroy de Galhau and Sylvie Goulard *(Banque de France)* and Jean Tirole and Christian Gollier *(TSE)* at virtual conference broadcast from Paris.

Research presentations by laureates **Silvana Tenreyro** *(Junior Prize)*, **Emi Nakamura** and **Jón Steinsson** *(Junior Prize)*, and **John Moore** *(Senior prize)*, were followed by an engaging roundtable discussion on the theme **"Money and Liquidity in Times of Crisis"**.

Since 2007, the Banque de France and TSE have worked together as part of a long-term scientific partnership based on the exchange of ideas, information, and scientific expertise. Workshops, public seminars, and conferences have inspired joint publications and research projects by some of the finest specialists in the fields of microstructure, financial intermediation, risk, and macroeconomic analysis.

Is the Phillips Curve getting flatter?

Emi Nakamura, Jón Steinsson, Jonathon Hazell and Juan Herreño

Emi Nakamura is a Chancellors professor of Economics at UC Berkeley.

She taught at Columbia before joining UC Berkeley in 2018. She is a recipient of the John Bates Clark medal, the Elaine Bennett Research Prize, an NSF Career Grant, and the Sloan Research Fellowship. She is a Co-Editor of the *American Economic Review*, a member of the executive committee of the American Economic Association, co-director of the Monetary Economics program at NBER, and serves on the Congressional Budget Office's Panel of Economic Advisers. Her research focuses on monetary and fiscal policy, business cycles and macroeconomic measurement.

Jón Steinsson is a Chancellors professor of Economics at UC Berkeley.

He taught at Columbia before joining UC Berkeley in 2018. He is co-director of the Monetary Economics program at NBER.
He is a Foreign Editor of the *Review of Economic Studies* and an Associate Editor of the *Quarterly Journal of Economics* and the *American Economic Review: Insights*. His research in empirical macroeconomics focuses on monetary economics, fiscal policy, and understanding business cycles. He participates actively in the political and economic discourse in Iceland.

The Phillips curve remains an influential, if controversial, tool for predicting inflation. Joint winners of the TSE-Banque de France Junior Prize, Emi Nakamura and Jón Steinsson *(UC Berkeley)* challenge previous estimates of the slope of the curve in the US using new state-level price indexes for non-tradeable goods.

Working with Jonathon Hazell *(Princeton & LSE)* and Juan Herreño *(Columbia & UCSD)*, their results suggest that disinflation in the early 1980s was mostly due to shifting expectations about long-run monetary policy, while the stability of inflation since the 1990s is mostly driven by long-run inflationary expectations becoming more firmly anchored.

What is the Phillips curve?

The curve is a formal statement of the common intuition that high demand in a booming economy will provoke workers to seek higher wages, and firms to raise prices. According to the New Keynesian formulation, inflation is determined by three factors: expected inflation, the output gap - measured as the difference between unemployment and the natural rate of unemployment-and cost-push shocks. The slope of the curve represents the sensitivity of inflation to an increase in demand.

How have ideas about it been shaped by US economic history?

In the early 1980s, Paul Volcker's Federal Reserve sharply tightened monetary policy. Unemployment rose sharply and inflation fell sharply. Assuming that inflationary expectations are adaptive, the conventional interpretation is that the slope of the Phillips curve was steep prior to and during the Volcker disinflation, but has flattened considerably since then.

> "The conventional interpretation is that the slope of the Phillips curve was steep prior to and during the Volcker disinflation, but has flattened considerably since then

The insensitivity of inflation to changes in unemployment over the past few decades has led many economists to suggest that the Phillips curve has disappeared-or is "hibernating." During the Great Recession, unemployment rose to levels comparable to those during the Volcker disinflation, yet inflation fell by much less. The "missing disinflation" of the Great Recession gave way to "missing reinflation" in the late 2010s as unemployment fell to levels not seen in 50 years, but inflation inched up only slightly. A similar debate raged in the late 1990s. Some have argued that the apparent flattening of the curve signals an important flaw in the Keynesian model.

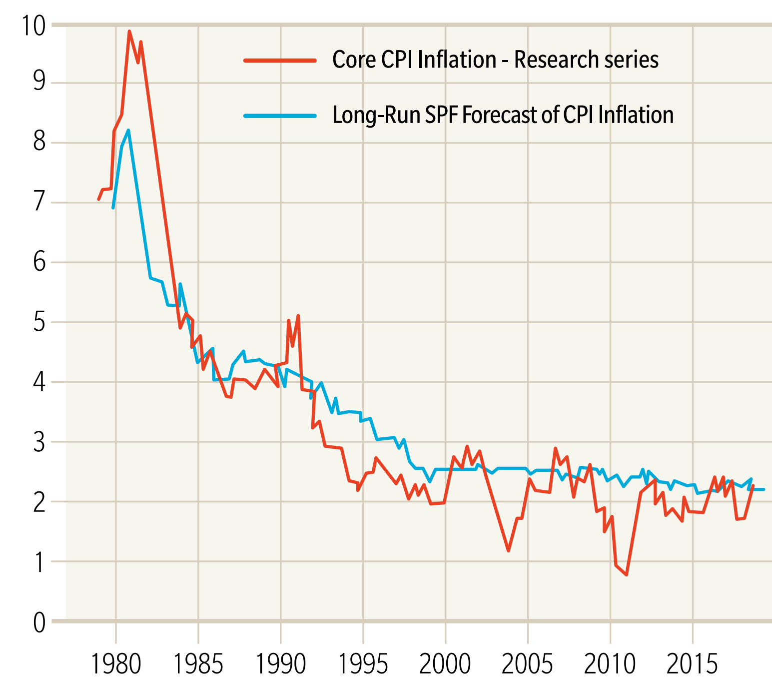

Figure2: PCE Core Inflation and Long-Term Inflation Expectations

Note: The blue line plots 10-year-ahead inflation expectations for the CPI. From 1990 onward, these come from Survey of Professional Forecasters. For the 1980s, these come from BlueChip. The red line plots 12-month core CPI inflation using the Bureau of Labor Statistics' research series. This research series uses current methods to calculate inflation back in time.

An alternative interpretation for the Volcker disinflation is that it was driven by shifts in beliefs about the long-run monetary regime. Volcker's sharp regime shift was imperfectly credible initially, but gradually became more credible. The resulting large and sustained decline in long-term inflation expectations over the 1980s was perhaps the primary cause of the rapid fall in inflation rather than high unemployment. Since 1998, by contrast, long-term inflation expectations have been extremely stable.

How does your research address the estimation challenges?

Standard methods for estimating the Phillips curve attempt to control for inflation expectations, as beliefs may co-vary with the output gap. However, estimates are quite sensitive to details of the specification. Aggregate data lacks sufficient variation to allow researchers to separately identify the coefficients on unemployment and expected inflation. In addition to this identification problem, researchers also face the classic simultaneity problem of distinguishing demand shocks from supply shocks. Several recent papers have argued that regional data can help. Central banks cannot offset regional demand shocks using a single national interest rate.

We show formally how estimating the Phillips curve using regional data provides a solution to the problem of shifting values of long-term inflation expectations. We derive a regional Phillips curve in a multi-region model of a monetary union. The model clarifies the interpretation of the slope of regional curves relative to that of the aggregate curve. We also use the model to show that changes in the long-run monetary regime are absorbed by time-fixed effects when the regional curve is estimated using a panel data specification. The intuition is that such long-run regime changes are common to all regions and therefore "cancel out" across regions within the monetary union.

Our analysis uses new state-level consumer price indexes for the United States that we have constructed back to the 1970s. We also construct state-level price indexes for non-tradeables and tradeables. Importantly, we focus our analysis on the behavior of the prices of non-tradeable goods. For prices set at the national level - as is more likely for tradeables - the slope of the regional curve will be zero no matter how large the slope of the aggregate curve.

Finally, the regional setting, along with our new inflation indexes, allows us to leverage new forms of variation. We develop a new "tradeable demand spillovers" instrument based on the idea that supply shocks in tradeable sectors will differentially affect demand in non-tradeable sectors in regions that are differentially exposed to the shocked tradeable sectors. For example, an oil boom will increase demand for restaurant meals in Texas relative to Illinois.

> We conclude that a majority of the rapid decline in core inflation during the Volcker disinflation arose from a rapid decline of long-term inflation expectations

What are the implications of your new estimates?

We estimate that the slope of the Phillips curve is small and was small even during the 1980s: a one percentage point increase in unemployment lowered inflation over time by a mere 0.41 percentage points in the 1980s. This implies that the five percentage-points increase in unemployment during the Volcker disinflation lowered inflation by only about two percentage points. Our estimates therefore indicate that only a modest fraction of the large run up and subsequent fall in inflation between 1979 and 1986 can be accounted for by the direct effect of unemployment working through the slope of the Phillips curve. In contrast, movements in long-run inflation expectations were large over this period as is evident from Figure 2. In particular, long-run inflation expectations fell by about four percentage points from 1981 to 1986, accounting for about two thirds of the fall in core inflation during this period. We conclude that a majority of the rapid decline in core inflation during the Volcker disinflation arose from a rapid decline of long-term inflation expectations, associated with a rapidly changing monetary regime.

We estimate a modest flattening of the Phillips curve when we split our sample in 1990: the curve in the post-1990 sample is flatter by a factor of about two. In sharp contrast, a specification without time-fixed effects yields a 50-100 times steeper curve for the pre-1990 sample. This suggests that shifting long-run inflation expectations can seriously confound estimates of the Phillips curve.

Our estimates of the slope of the curve imply no "missing disinflation" during the Great Recession or "missing reinflation" in the late 2010s or late 1990s. We conclude that the stability of inflation since 1990 is due to long-run inflationary expectations becoming more firmly anchored.

Summing up

When managing inflation, the elephant in the room is long-run inflation expectations. This view contrasts sharply with the conventional view that managing inflation is about moving up and down a steep Phillips curve. A crucial question for inflation dynamics is why long-run inflation expectations are sometimes so firmly anchored but at other times move sharply? Beliefs about inflation in the long run are governed by beliefs about the long-run behavior of the monetary authority and ultimately the political process that shapes this behavior. Using regional data, the researchers shed new light on an issue of crucial importance for the conduct of monetary policy.

FURTHER READING

See Jonathon Hazell, Juan Herreño, Emi Nakamura and Jón Steinsson, **'The Slope of the Phillips Curve: Evidence from U.S. States'**, 2020, NBER Working Papers.

Dollar dominance and monetary policy

Silvana Tenreyro

Silvana Tenreyro is a professor at LSE and external member of the Monetary Policy Committee at the Bank of England.

Her research focuses on monetary policy, macroeconomic development, and international trade and finance. She is also president of the European Economic Association, an associate editor of the *Quarterly Journal of Economics*, and a research associate at CEP and CEPR.

Can monetary policy stabilize economies in a world of dollar dominance? Joint winner of the TSE-Banque de France Junior Prize, Silvana Tenreyro *(LSE)* argues that unrealistic assumptions of monopoly power and sticky prices have major policy implications. Working with Michael McLeay at the Bank of England, her forthcoming paper provides important insights for non-US economies that rely on the greenback to trade in competitive export markets.

Even though international trade with the United States represents little more than 10% of global trade, nearly 50% of international trade is invoiced in US dollars. From 1999 to 2014, for example, the average share of UK exports to the US was 17%, while the share of UK exports invoiced in US dollars was nearly 30%. For countries like Argentina or Brazil, the share of exports invoiced in dollars is nearly 100%, even though their export shares to the US are well below 20%.

How has dollar dominance influenced ideas about monetary policy?

The emerging policy view is that an exchange-rate depreciation by a non-US country invoicing in dollars does not boost exports. In the economics jargon, there is no expenditure-switching towards that country's exports when its currency depreciates. It is argued that flexible exchange rates have a more limited role as automatic stabilizers and, hence, that the exchange-rate channel of monetary policy is weak or weaker. The implication for policy suggested by the IMF is that other stabilization tools, perhaps even capital controls, may need to be deployed.

There are two key assumptions underlying this thinking: first, that exporters have monopoly power; second, that prices are sticky. If prices are sticky in US dollars, an exchange-rate fluctuation by any non-US country does not change the export price in dollars. In this conceptual model, there is no increase in demand or quantities demanded.

These seemingly innocuous assumptions are much less likely to hold outside the US. Many developing- and emerging-country producers tend to be price takers. They export commodities, or commodity-like products, with little market power. Although the prices

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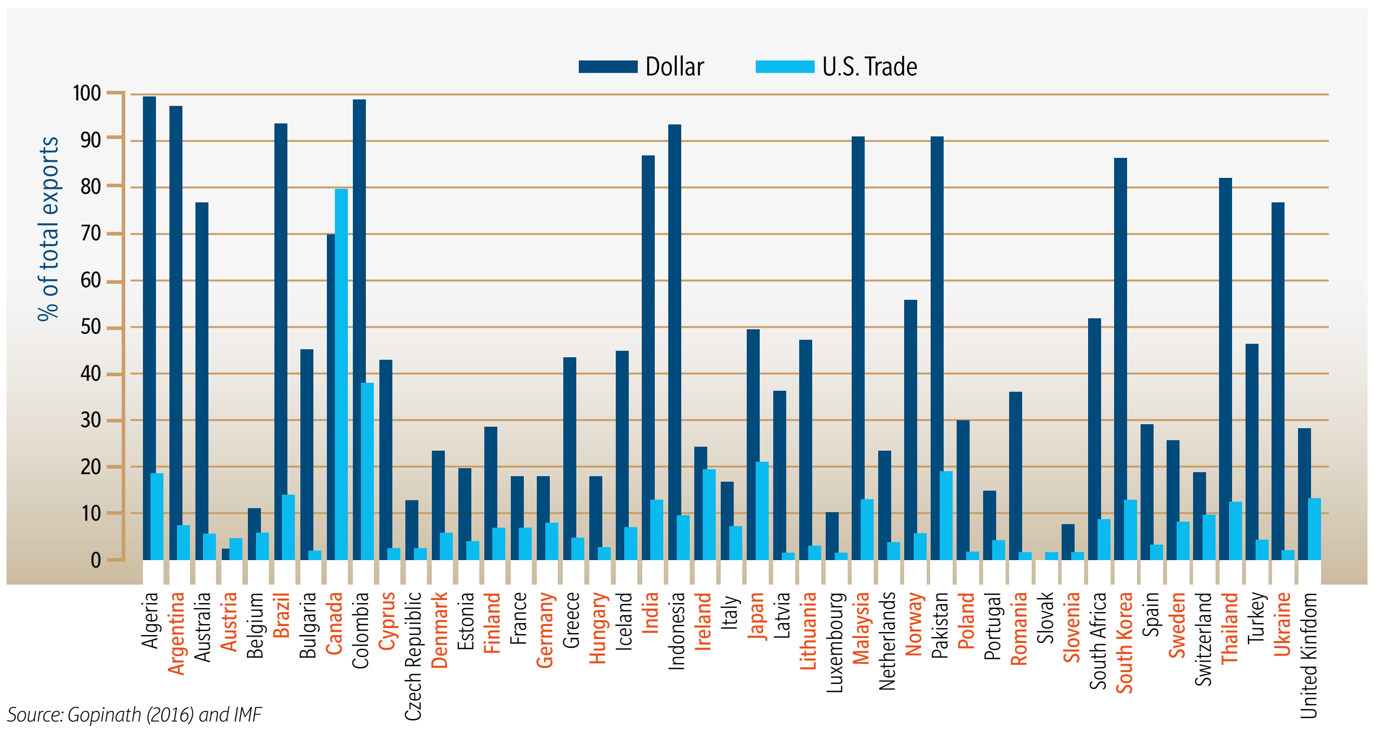
These seemingly innocuous assumptions are much less likely to hold outside the US. Many developing- and emerging-country producers tend to be price takers. They export commodities, or commodity-like products, with little market power. Although the prices of those products are often quoted in US dollars, those prices are completely flexible. Even in advanced economies, producers often face very elastic demands in global markets with quite flexible prices. In these conditions, an exchange-rate depreciation does not affect dollar export prices much, but causes a large increase in export quantities. Monetary policy can thus give a big boost to exports and output. The limit to any expansion is on supply capacity, not demand.

The dominant currency literature has encouraged more serious consideration of the implications of vehicle currencies. But its unrealistic assumptions are immensely consequential for monetary policy and the advice the IMF might give to its client economies.

How does your research challenge standard assumptions?

Our model considers a small open economy in a standard New Keynesian setting. Unlike the dominant currency paradigm, we assume exporters have low market power, flexible prices (invoiced in dollars), and high elasticity of demand. Both models predict

Dollar invoicing dominates trade



Source: Gopinath (2016) and IMF

"In reality, many exporters in developing and emerging countries do not have monopoly power, and tend to face highly elastic demands, being closer to price takers. They may quote prices in vehicle currencies, but those prices are not sticky. In those settings, depreciations can have a large impact on exports

that pass-through from exchange rates to export prices in dollars is low. But, crucially, the dominant currency model predicts no export quantity response, whereas our model predicts a large response of export volumes to the exchange rate. In our model, the constraint is capacity.

In reality, there is a mix of fully fixed and flexible extremes: some exporters adjust prices more frequently; others face more or less elastic demands. The key empirical question is: which conditions are faced by dollar-pricing exporters?

Our model is more suitable for representing most non-US economies, especially developing and emerging economies. In theory, producers with lower market power in homogeneous good markets will tend to price in foreign currencies, as they would stick closely to the competitive prices in those markets. This is echoed by arguments that dollar pricing is more likely among exporters of more homogeneous goods, which face more elastic demands.

Using microdata on Canadian imports, Goldberg and Tille (2016) show that the likelihood of dollar pricing is higher for exporters selling homogeneous goods, especially those who rely heavily on commodities. Dollar pricing decreases with the market share of the exporting country. These correlations are consistent with the notion that goods are priced in dollars when they have high demand elasticities.

Empirical evidence also suggests high price flexibility for goods and services in competitive markets. Commodity prices, even though they do not react to exchange-rate fluctuations in the home economy, change at very high frequency. Gopinath and Itskhoki (2010) find that for the 50% of dollar-invoiced US manufacturing imports that have the highest price frequency, 30% reprice each month, corresponding to a median price duration of around three months. Price durations are shorter still for more homogeneous goods.

How do you test the dominant currency paradigm?

The key test concerns the behavior of export quantities. There are two alternative approaches. The first, followed by the IMF, is to regress bilateral trade flows on bilateral exchange rates. However, exchange rates move for a reason, they are not exogenous. When exports are falling, monetary policy tends to expand and exchange rates tend to depreciate. So the reverse causality stemming from quantity to prices will tend to bias the estimated coefficient in the opposite direction. Similarly, if there is a fall in actual or expected productivity in tradeables, for example, exports will fall and exchange rates will depreciate to counterbalance that fall. More generally, many other variables in the gravity equations are endogenous, making the causal inference challenging.

A second approach is to analyze the effect of monetary-policy shocks, which move exchange rates but should be orthogonal to other determinants of export volumes. Essentially, monetary-policy shocks can be thought of as external instruments for the exchange rate. It's difficult to measure their effect in emerging and developing economies, where there is more variability in monetary-policy institutions and regimes. But in more advanced small open economies, identification is easier.

Champagne and Sekkel (2018) find that Canadian export volumes fall in response to a monetary-policy tightening that leads to an initial appreciation of the Canadian currency. Imports also fall, eventually, with the overall fall in GDP. Similarly, Cesa-Bianchi, Thwaites and Viconda (2020) use high-frequency identification to isolate the response of the UK economy to a tightening of UK monetary policy. Again, they find a significant appreciation of sterling in response to the monetary shock. There is also a sharp and significant fall in exports and imports. These findings are consistent with our approach and model: export quantities respond a lot, even in settings such as the UK with vehicle currencies.

Summing up

Standard assumptions of monopoly power and sticky prices in export markets are unrealistic for most non-US advanced economies. Exporters invoicing in dollars appear more likely to be flexible price takers. In these flexible and competitive markets, even with dollar dominance, monetary policy and the exchange rate can stabilize the economy via trade channels. As we recover from Covid, many emerging and developing countries will be much more constrained in their fiscal capacity. Silvana's results are a timely reminder that monetary policy can be helpful as a countercyclical tool.

Credit horizons

John Moore, Nobuhiro Kiyotaki and Shengxing Zhang

John Moore has been a professor at the University of Edinburgh since 2000, and at the London School of Economics since 1990.

His research spans microeconomic and macroeconomic theory, with a focus on the nature of contracts, and the interplay between the financial system and the rest of the economy. His prizes include the 1999 Yrjö Jahnsson Award, the 2010 Stephen A. Ross Prize, and the 2020 BBVA Foundation Frontiers of Knowledge Award.

Why do firms generally borrow against near-term revenues? Winner of the TSE-Banque de France Senior Prize, new research by John Moore *(University of Edinburgh and LSE)*, and his coauthors Nobuhiro Kiyotaki *(Princeton)* and Shengxing Zhang *(LSE)* examines how credit horizons interact with firm dynamics and the evolution of productivity. Their results suggest that persistently low interest rates can deter investment and growth, and even lead to a drop in everyone's welfare.

What motivated your research?

When financing long-term capital investment, entrepreneurs raise external funds either against collateral assets or future revenues. In the latter case, entrepreneurs typically borrow against, say, the first few years of their future income stream, even though investment may be of longer duration. We wanted to investigate their apparent struggle to borrow against the long-term horizon.

In this context, our paper examines whether persistently low real interest rates can stifle aggregate investment and growth. In Japan, the economy has struggled to regain robust growth despite interest rates being close to zero for more than two decades. Recently, this has become a concern for other developed economies too.

Many economists observe that credit booms linked to asset price booms are often followed by financial crises – with such booms being associated with excessive expansion of credit and asset values, outstripping productive capacity, as occurred in Japan in 1980s and southern Europe in the early 2000s. Our model, focusing on a small open economy where the world interest rate is exogenous, provides a different perspective.

How do you model the interaction of credit horizons with firm dynamics and productivity?

Think of an engineer-cum-entrepreneur, Emma, raising funds to invest in a plant. It does not matter whether the building is leased long-term or purchased outright. The critical thing is the ongoing flow of fixed costs to maintain production in the long run – either on rent or the opportunity cost of owning the building. There is no obstacle to Emma raising funds against the plant: this can be sold at the time of investment. But Emma cannot sell her engineering expertise, her human capital, which is acquired through learning by doing associated with her gross investment.

A saver, Sam, who buys the plant, together with an obligation to pay the fixed costs, will need engineers' expertise to maintain productivity. We assume that tomorrow's plant productivity is a function of both today's productivity and today's engineering input. Hence, long-run future productivity will mostly depend upon the cumulative effort of engineers.

> In Japan, the economy has struggled to regain robust growth despite interest rates having been close to zero for more than two decades. Recently, this has become a concern for other developed economies too

We allow for an ex post competitive market in which plant owners hire the maintenance services of engineers. Thus Emma's share of ex post surplus is determined through competition. Each day, either Sam or some other plant owner pays Emma her forward-looking marginal product, her contribution to future productivity.

A primary concern for Emma is: How much funding can she raise from savers at the time of investment? That is, her borrowing capacity is the amount Sam is willing to pay per unit of new plant, which in turn depends on Sam's assessment of his share of the future surplus. The scale of Emma's investment will be given by a critical ratio: namely, her net worth divided by the downpayment needed – unit investment cost minus borrowing capacity. The key insight is that the fraction of plant productivity attributable to engineers' cumulative maintenance rises with the age of the plant, and engineers cannot precommit to work for less than their forward-looking marginal product. Concomitant with the engineers' share of gross return from the plant rising, Sam's share falls through time; and the price of the new plant – Emma's borrowing capacity – is largely governed by revenues in the near horizon.

> Overall, aggregate investment can fall with a fall in interest rates, as can the growth rate of the economy. We show numerically that these effects may reduce the welfare of everyone in the domestic economy

What happens if the real interest rate falls permanently?

Sam's share of gross revenue is predominantly near term, while his obligation to pay the fixed costs of the building is long term. When the real interest rate falls, because the present value of his long-term obligations increases proportionately more than that of his near-term revenue share, Sam's willingness to pay for the new plant can be lower. This means that Emma's borrowing capacity is lower – overturning the usual notion that lower interest rates benefit borrowers.

Notice the driver here: the denominator – investment cost minus borrowing capacity per unit of investment – of the critical ratio (net worth/downpayment) rises as the real interest rate falls, owing to the fall in the borrowing capacity. In the macrofinance literature, the focus has been on how the numerator – credit-constrained agents' net worth – might move in perverse ways following shocks to an economy. In our model, the numerator behaves as might be expected – a fall in the real interest rate raises net worth – but this can be more than offset by the rise in the denominator. Overall, aggregate investment can fall with a fall in interest rates, as can the growth rate of the economy. We show numerically that these effects may reduce the welfare of everyone in the domestic economy: a fall in the real interest rate may lead to a Pareto deterioration.

Are there any avenues for future research?

Having purchased the new plant, Sam has to choose between a 'stopping' or a 'continuing' strategy: Either he curbs maintenance costs and allows productivity to deteriorate until he decides it is no longer worth paying the fixed costs and exits. Or he pays the costs with a view to staying in production over the long haul. For an open set of parameters, even though all plants start off identical in terms of productivity, some will improve while others deteriorate and eventually shut down. This may be a rich new vein for research into firm/plant dynamics, which should inform the study of how aggregate productivity evolves.

Does your research suggest any policy implications?

When the competitive equilibrium is not efficient, the government can tax the payroll for engineers of each plant owner, and use the tax revenue to subsidize engineers per unit of investment. This increases social welfare, if we define it as the population-weighted average of the expected discounted utilities of engineers and savers. By taxing the payroll of the plant owners, the government acts as a collective creditor – the receipts from which subsidize investment. Crucial to the effectiveness of this policy is the government's ability to keep an eye on all the various units of plant, to tax the owners' payments to engineers, in a context where the identities of the engineers cannot be traced.

Summing up

This research examines how credit horizons interact with firm dynamics – specifically, plant dynamics – and the evolution of productivity. The model offers a potential explanation for near-term borrowing and shows that a permanent interest-rate fall can reduce aggregate investment and growth, damaging everyone's welfare. Credit and asset values boom before stagnating in the long run, not because the boom is excessive, but because the underlying growth of productive capacity declines.

Shared perspectives

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Christian Gollier, TSE director, and **Olivier Garnier**, Director General of Statistics, Studies and International at the Banque de France, discuss the opportunities and challenges facing the TSE-Banque de France partnership.

What inspired this BdF-TSE partnership when it started out in 2007?

Christian Gollier: At that time, Banque de France and TSE wanted to reinforce their macrofinance research programs. It so happened that it was a top priority for both institutions. The idea to combine our forces seemed obviously beneficial to both parties, at a time when the financial crisis was just beginning.

Olivier Garnier: Back in 2007, this partnership emerged from a shared appetite for sound research in the service of better policy. The aim of this partnership is to support and complement the scientific expertise developed at the Banque de France, and to foster joint research efforts in monetary economics, banking, and finance. To a large extent, this endeavor has been crowned with success, conducting joint research on a broad range of topics, from the study of disinflation policies to the shape of the Laffer curve.

What are the benefits of this partnership for TSE?

CG: The combined crises of the subprimes, the euro, and climate change raise extraordinary challenges for central banks and the monetary regulation of the economy. As is always the case at TSE, our research partnerships with key market players improve our capacity to access key information and data, and to make our scientific contributions more visible and useful to the public debate and for the shaping of better policies. In the long run, this process raises our academic reputation and the attractiveness of TSE to researchers and students. Thanks to Banque de France and other partners of the financial sector, TSE has a strong reputation in various related domains, such as the regulation of fintechs, the solvency of financial intermediaries, and climate finance.

Banque de France, together with other members of our "Club des Partenaires de TSE" chaired by Michel Pébereau, also plays an important role in our governance, since François Villeroy de Galhau (Governor, Banque de France) is a very active member of our board.

What are the benefits of this partnership for Banque de France?

OG: There are several benefits. First, through a series of joint seminars, we are exposed to cutting-edge research, putting us in an ideal situation to judge whether new results can be feasibly applied to the policy process. Second, we benefit from TSE feedback on our own in-house research. This has played a crucial role over the years. Finally, this partnership is the ideal starting point for long-term joint research projects, such as those I mentioned before.

How does the continuous dialogue between TSE and the BDF teams impact the work of TSE researchers?

CG: With TSE-Partnerships, TSE has a unique framework to link its researchers to real-world economic issues. Many of their best publications originate from exchanges with TSE partners in which new research questions emerged. It is quite inspiring for us to be able to cover a scientific question from its most abstract mathematical modeling to its most operational policy recommendations, often using unique data from the partner, writing op-eds and discussing papers at conferences to present the arguments to different audiences.

How does the work of TSE researchers and their continuous dialogue with the BDF teams impact the debate on monetary economics and finance?

OG: Let me offer a couple of very concrete examples. First, from a policy point of view, some of our models have severe defects, especially when it comes to analyzing the effects of forward-guidance policies. It turns out that TSE is at the frontier of a new paradigm that emerged precisely because of these shortcomings. The type of questions raised in this research agenda – such as coordination of private expectations, or forward-lookingness – feeds back on the very design of actual policies.

What are your thoughts on the role of academic researchers in the time of a pandemic?

CG: The Covid-19 pandemic triggered a new type of macro-crisis, with a health dimension and an economic dimension. When saving lives deepens the economic crisis, the whatever-it-costs dogma has its limit, as we see from the weak lockdown rules of the second and third waves of the pandemic. Can we characterize an "efficient" policy that combines the health and economic consequences at the same time? In this context of low interest rates, are we freed from the public budget constraint? How can central banks balance the necessity to support debt-stricken economic agents in these harsh times with the risk of creating financial bubbles? Economists have here an exciting new research agenda for the years to come. In the spring and summer of 2020, more than 50 TSE researchers worked together via a weekly internal webinar on Covid economics.

OG: There are at least two pressing issues. From a statistical point of view, we will need to come up with new ideas to address the peculiar impact of Covid-19 on GDP dynamics. This shock has raised issues for most of our models. From a policy point of view, we also need new models to think about these unprecedented shocks, which are both demand shocks and supply shocks. TSE has already invested in this particular issue and we are eager to see more.

Recent events

FIT IN Workshop: Mobile Money and Digital Financial Services / *Online, April-May*

In April and May, TSE organized a series of three workshops on mobile and digital financial services. These workshops are part of the FIT IN (Financial Inclusion Through Interoperability) initiative which was launched by TSE last year with support from the Bill & Melinda Gates Foundation. The initiative aims to catalyze new research into the design and regulation of interoperable digital financial services systems in low- and middle-income countries.

MAY 7

- Shirley Mburu *(Senior Project Implementation Specialist, BFA Global)*: Interoperability in instant payments review
- Carlos Serrano *(Chief Economist, BBVA Mexico)*: Mobile money and digital financial services
- Shalini Unnikrishnan *(Global Lead for Societal Impact in the Consumer and Social Impact practices, Boston Consulting Group)*: CICO Agents Interoperability

APRIL 16

- William Cook *(Financial Sector Specialist, CGAP, Consultative Group to Assist the Poor)*: Building Faster Better: A Guide to Inclusive Instant Payment Systems
- Maha Bahou *(CEO, JoPACC, Jordan Payments & Clearing Company)*: The Economics of Interoperability
- Hennie Bester *(CENFRI, Centre for Financial Regulation and Inclusion)*: Mobile Money Usage

APRIL 2

- Harish Natarajan *(Lead Financial Sector Specialist on Payments and Market Infrastructures, World Bank)*: Ongoing Innovations in Payments and Implications for Interoperability and Competition
- Cédric Lemaire *(Head of Orange Money Business and Digital for Middle East and Africa, Orange)*: Financial Digitization with (and of) Orange Money
- Raúl Morales Reséndiz (*Financial Markets and Infrastructures Manager, CEMLA, Association of Central Banks of Latin America and the Caribbean*): Payments Interoperability and Inclusion in Developing Payment Systems

More information about the FIT IN Initiative here

SCOR-TSE Workshop: Behavioral Insurance Economics / *Online, April 15*

Insurance decisions provide fertile ground for identifying the existence and consequences of human behavioral limitations. They involve risk, uncertainty, and complexity as well as death-related, long-term and passive decisions. In a workshop organized as part of the activities of the "Risk Markets and Value Creation" Chair supported by SCOR Corporate Foundation for Science, TSE researchers presented and discussed some papers using different methods (e.g., theory, experiments, econometrics) and interdisciplinary research.

Find more information about the SCOR-TSE partnership here

Philippe Trainar, Stéphane Villeneuve and Nicolas Treich

Financial Risks International Forum: FinTechs & Covid-19

Institut Louis Bachelier, March 25

TSE director **Christian Gollier** was a guest speaker at this year's Financial Risks International Forum, organized by the Institut Louis Bachelier, in cooperation with the Fondation du Risque, the Europlace Institute of Finance, and the Louis Bachelier "Finance and Sustainable Growth" Laboratory. This Forum focused on two themes: **"FinTechs"** and **"Covid-19: Learning from a Pandemic Crisis?"**. Christian Gollier presented his new paper entitled **"The welfare cost of vaccine misallocation, delays and nationalism"**.

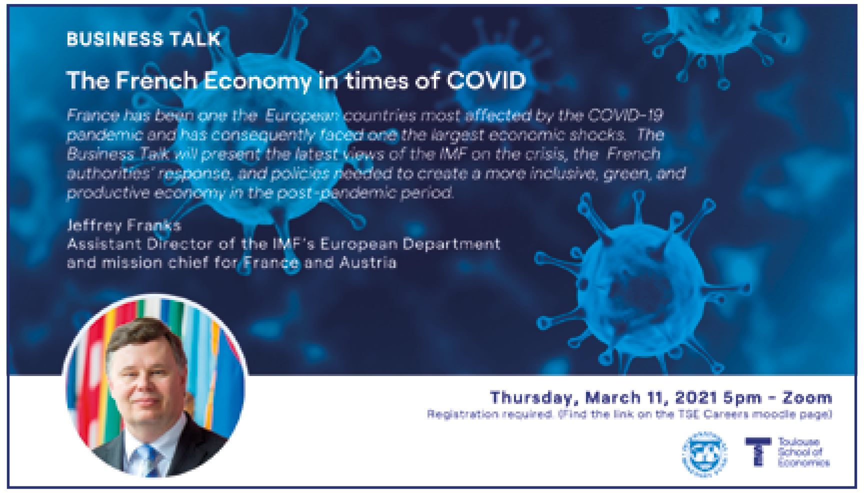
Business Talk with Lea Deleris, BNP Paribas: "Data Science"

Online, February 25

Data science in a financial institution: **What does it mean in practice and what are the key challenges?**

This was the topic of the Business Talk given by Lea Deleris, Head of Risk Artificial Intelligence Research at BNP Paribas, in February. TSE students, alumni, and staff enjoyed a glimpse into the ecosystem and day-to-day challenges of a data science team in a large financial institution.

IMF business talk: Can France build back better?



Jeffrey Franks is a 28-year veteran of the International Monetary Fund (IMF). For an audience of TSE researchers and students on March 11, the former director of the IMF's Europe Office presented his IMF analysis on the impact of the Covid-19 crisis on the French economy.

TSE students Noémie Martin, Stephen Mathew and Louise Damade look back on the key elements of this talk and the discussion that followed about the energy transition.

Stephen: *What is your main takeaway of Jeffrey Franks' presentation on the impact of Covid-19 in France?*

Louise: The pre-crisis economic situation in France was rather good but the economy has been heavily impacted by the Covid-19 crisis. Although growth was accelerating before the pandemic, France was experiencing a decline in productivity – a common feature of rich economies – as well as an increase in public and private debt. Even if economic inequalities (measured with the Gini index) were not increasing in France as much as in countries such as the United States, they were increasing for some groups in the population.

Despite this rather positive pre-crisis outlook, France' GDP per capita decreased sharply. The main reason for this decline, Jeffrey Franks appeared to suggest, may be the more conservative behavior of EU citizens. I think he meant that because EU citizens took more time to adopt health measures, the pandemic had a bigger impact on the economy.

For the IMF, it seems, the future is still full of uncertainty. France appears unlikely to recover faster than the European average in the short term; and it will struggle to catch up with its pre-crisis trend in the long term. The next five years will reveal much of the damages, but predicting them is hard because the structure of the economy might change after this crisis.

Stephen: *What did you understand about the IMF's recommendations?*

Noémie: On the fiscal side, the IMF considers that the policies adopted by France are sufficiently timely, flexible, and proportional. For instance, it is good that several fiscal amendments were introduced over the year to adapt to the evolution of the crisis. However, the IMF now recommends more targeted packages, to avoid disincentivizing some sectors.

Jeffrey Franks cautioned that public debt remains a concern, even if its increase was appropriate during the crisis. The fact that interest rates are currently really low is encouraging, but Jeffrey Franks warns that this is likely to change in the long run. The IMF's advice is to avoid using fiscal policy to decrease public debt until GDP catches up to its pre-crisis level and a satisfactory level of growth returns. However, attaining pre-crisis GDP levels is likely to take several years.

Other recommendations included keeping an eye on mortgages, as job losses can increase the likelihood of default. Jeffrey Franks also suggested thinking about a better allocation of resources in the case of unprofitable firms that manage to just repay their interests thanks to government policies, instead of exiting the market and giving space for more productive firms.

Another IMF recommendation is to design greener, more inclusive and productive policies. On this subject, the IMF seems to consider that the French "plan de relance" did an excellent job. In terms of greenhouse gas (GHG) emissions, the French package on recovery assistance is the greenest compared to other countries, focusing on the building and transport sectors.

Jeffrey Franks concluded that the immediate challenge to facilitate economic recovery is to increase vaccinations while continuing protective measures, as well as continuing to support firms and jobs but with more targeted policies.

My personal opinion is that France could have gone further in its "plan de relance". The GHG metric at the heart of the French package on recovery assistance considers only one among many environmental issues.

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The TSEconomist is the student magazine of the Toulouse School of Economics. It is produced entirely by students and gives a voice for them to express their thoughts on economic issues and more.

Media

Members of the Center regularly publish blog posts and newspaper op-eds that can be consulted in *TSE Debate's section*. Here we feature some of the recent posts

Debate

The European carbon market borders - Claude Crampes & Stefan Ambec */ April 8, 2021*
The border carbon adjustment mechanism adopted by the European Parliament will change the way the EU-ETS operates.

A winter in Texas - Stefan Ambec & Claude Crampes */ March 5, 2021*
How do you ensure that an economy is still running under critical weather conditions? The polar episode that recently hit Texas provides us with some answers on the economic and political dimensions of the question.

Relying on the market to fight air pollution
Stefan Ambec & Claude Crampes */ February 24, 2021*
How far should we go to improve air quality? Market instruments inform us about the costs of depollution. This information is useful for improving our public policies with regard to health and environmental damage.

We need to build a climate coalition - Jean Tirole */ February 10, 2021*
The Covid-19 vaccine has demonstrated our societies' capacity for radical, collective action to address global challenges. But the development of vaccines responded to a problem with immediate impact. The fight against global warming is no less urgent, but its delayed impact has led to a large market and political failure. We all have our part to play, says TSE founder Jean Tirole, in urging the international community to prevent global warming from inflicting lasting damage on future generations. Drawing on his book *Economics for the Common Good,* he maps a common-sense path to putting earlier negotiations back on track.

Europe bets on hydrogen - Stefan Ambec & Claude Crampes */ January 27, 2021*
European governments are risking billions of euros on a bet that hydrogen will gradually become a "clean, safe and affordable" energy carrier. But this may be wishful thinking, say TSE energy experts Claude Crampes and Stefan Ambec, unless there is a significant decline in production and distribution costs.

The economic regulation of electricity storage - Stefan Ambec & Claude Crampes */ January 22, 2021*
With the deployment of wind and solar installations, electrical power generation becomes more variable with circadian and seasonal cycles, cloud cover, and wind patterns. Smoothing the supply of green energy through storage is becoming a necessity. So not only must we make progress in energy storage technologies, but we must also create a regulatory framework that provides incentives for storage.

EU's climate pledges: from 20/20 to 100/50 - Stefan Ambec & Claude Crampes */ January 05, 2021*
After the famous 20-20-20 target in 2020, the European Union has committed to carbon neutrality by 2050. Assessment and prospects.

Articles

- Ce qui va changer aux frontières du marché européen du carbone
  Stefan Ambec and Claude Crampes, *La Tribune*, April 4
- Un hiver au Texas : quels enseignements tirer de la défaillance du système électrique ?
  Stefan Ambec and Claude Crampes, *La Tribune*, March 3
- S'appuyer sur le marché pour lutter contre la pollution de l'air
  Stefan Ambec and Claude Crampes, *La Tribune*, February 22
- Quelle régulation économique adopter pour le stockage de l'électricité ?
  Stefan Ambec and Claude Crampes, *La Tribune*, January 21
- Prix FIR-PRI "Finance & Développement Durable" : Un excellent millésime 2020
  Catherine Casamatta, *OptionFinance*, January 20
- EDF : "Hercule", un projet constitué de différentes parties hétéroclites
  Emmanuelle Auriol, *Le Monde*, February 19

- **Les engagements climatiques de l'Union européenne : de 20/20 à 100/50**
  Stefan Ambec and Claude Crampes, *La Tribune*, January 4
- **Entre santé publique et économie, quel est le bon dosage ?**
  Frédéric Cherbonnier, *Les Échos*, December 24
- **Le bac à sable de la régulation**
  Stefan Ambec and Claude Crampes, *La Tribune*, December 1

Interviews

- **La France a-t-elle peur du risque ?**
  Christian Gollier, *Le Figaro,* April 13
- **Rythme de vaccination : l'Union européenne, lanterne rouge de sa catégorie**
  Christian Gollier, *Libération,* April 2
- **Et si la France avait appliqué la stratégie Zéro Covid…**
  Christian Gollier, *Mediapart,* April 1
- **Nouveau tour de vis, une défaite pour Macron ?**
  Christian Gollier, *Europe 1 Radio,* March 31
- **Suspendre par précaution la vaccination cause des morts supplémentaires**
  Christian Gollier, *L'Express,* March 17
- **Jean-Marc Jancovici, l'écolo qui atomise tout le monde**
  Christian Gollier, *L'Obs,* March 11
- **Le bitcoin : son origine, son potentiel, ses risques en sept questions**
  Matthieu Bouvard, *Le Figaro,* March 8
- **Stop and go ou Zéro Covid : que disent les économistes ?**
  Christian Gollier, round table on France Culture, March 1
- **Covid : les gériatres s'opposent au scénario d'un autoconfinement des personnes âgées**
  Christian Gollier, *Le Monde,* February 24
- **Faut-il changer de manière durable notre rapport à l'aviation ?**
  Christian Gollier, Europe 1, February 21
- **Bitcoin goldrush sparks fears of speculative bubble**
  Mathieu Bouvard, *AFP,* February 19
- **Quand le Bitcoin sort de la clandestinité**
  Catherine Casamatta, *Le Point,* February 4
- **Pour l'Occitanie, le cumul crise et Brexit est préoccupant**
  Fany Declerck, *Touléco,* February 3
- **Peut-on sauver l'industrie française ? Les six questions que l'on doit se pose**
  Emmanuelle Auriol, *Ouest-France,* February 2
- **Cryptomonnaie : que se passe-t-il avec le bitcoin ?**
  Matthieu Bouvard, *Les Numériques,* January 17
- **Va-t-on bientôt pouvoir réaliser nos achats du quotidien en bitcoins ?**
  Matthieu Bouvard, *20Minutes,* January 15
- **Bitcoin : 5 minutes pour comprendre la flambée du cours, qui bat record sur record,**
  Catherine Casamatta, *Le Parisien - Aujourd'hui en France,* January 8
- **Une taxe carbone n'aurait pas d'impact sur l'économie belge**
  Christian Gollier, *LaLibre,* December 22
- **La prochaine catastrophe**
  Christian Gollier, *Les Échos,* December 21

Seminars

The Center organizes weekly academic seminars allowing faculty and members to meet and exchange ideas with fellow financial experts from leading universities, firms, and institutions. Seminars are also an opportunity for PhD researchers to get insightful information on various topics such as bitcoin, venture capital, crypto economics, banking crisis, and liquidity management.

- Ansgar Walther *(Imperial College London)*, Prudential Policy with Distorted Beliefs, April 12
- Theodosios Dimopoulos *(University of Lausanne)*, Self-Inflicted Debt Crises, March 8

Publications

Publications

Academic papers

- Jean Tirole and Emmanuel Farhi, "Shadow Banking and the Four Pillars of Traditional Financial Intermediation", *Review of Economic Studies*, August 26, 2020, forthcoming
- Catherine Casamatta (special editor), Numéro spécial : Revue d'Economie Financière sur la Finance Climatique, *AEF*, December 2020
- Tiziana Assenza, P. Heemeijer, C.H. Hommes and D. Massaro, "Managing Self-organization of Expectations through Monetary Policy: a Macro Experiment", *Journal of Monetary Economics, vol. 17*, January 2021, pp. 170–18
- Helmuth Cremer, Jean-Marie Lozachmeur and Kerstin Roeder, "Household bargaining, spouses'consumption patterns and the design of commodity taxes", *Oxford Economic Papers, vol. 73, n. 1*, January 2021, pp. 225–247
- Matthew Adler, Maddalena Ferranna, James K. Hammitt and Nicolas Treich, "Fair Innings? The Utilitarian and Prioritarian Value of Risk Reduction over a Whole Lifetime", Journal of Health Economics, vol. 75, n. 102412, January 2021
- Matthieu Bouvard and Adolfo de Motta, "Labor leverage, coordination failures, and aggregate risk", *Journal of Financial Economics*, January 2021, forthcoming
- Milo Bianchi, Rose-Anne Dana and Elyès Jouini, "Shareholder Heterogeneity, Asymmetric Information, and the Equilibrium Manager", *Economic Theory*, January 2021, forthcoming
- Patrick Fève, Pablo Garcia Sanchez, Alban Moura and Olivier Pierrard, "Costly Default and Skewed Business Cycle", *European Economic Review*, vol. 132, February 2021
- Tiziano De Angelis, Fabien Gensbittel and Stéphane Villeneuve, "A Dynkin game on assets with incomplete information on the return", *Mathematics of Operations Research, vol. 46, n. 1*, February 2021, pp. 28–60
- Laurent Miclo and Stéphane Villeneuve, "On the forward algorithm for stopping problems on continuous-time Markov chains", *Journal of Applied Probability*, February 21, 2021, forthcoming
- Jieying Hong, Sophie Moinas and Sébastien Pouget, "Learning in Speculative Bubbles: theory and experiments", *Journal of Economic Behavior and Organization, vol. 185*, March 2021, pp. 1–26
- Nicolas Treich and Yuting Yang, "Public safety under imperfect taxation", *Journal of Environmental Economics and Management, vol. 106, n. 102421*, March 2021
- Andrea Attar, Thomas Mariotti and François Salanié, "Entry-Proofness and Discriminatory Pricing under Adverse Selection", *American Economic Review*, March 2021, forthcoming
- Ulrich Hege, Elaine Hutson and Elaine Laing, "Mandatory Governance Reform and Corporate Risk Management", *Journal of Corporate Finance*, April 2021, forthcoming
- Andrea Attar, Eloisa Campioni, Thomas Mariotti and Gwenaël Piaser, "Competing Mechanisms and Folk Theorems: Two Examples", *Games and Economic Behavior, vol. 125*, 2021, pp. 79–93
- Linqun Liu and Nicolas Treich, "Optimality of Winner-Take-All Contests: The Role of Attitudes toward Risk", *Journal of Risk and Uncertainty*, 2021, forthcoming
- Bruno Biais, Florian Heider and Marie Hoerova, "Variation margins, fire-sales and information-constrained optimality", *The Review of Economic Studies*, 2021, forthcoming
- Christian Gollier, "A general theory of risk apportionment", *Journal of Economic Theory*, 2021, forthcoming

Working papers

- Jessica Martin and Stéphane Villeneuve, "A Class of Explicit optimal contracts in the face of shutdown", *TSE Working Paper, n. 21-1183*, January 2021
- James K. Hammitt and Nicolas Treich, "Fatality Risk Regulation", *TSE Working Paper, n. 21-1177*, January 2021
- Nicolas Treich and Yuting Yang, "Public Safety under Imperfect Taxation", TSE Working Paper, n. 21-1188, February 2021
- Linqun Liu and Nicolas Treich, "Optimality of Winner-Take-All Contests: The Role of Attitudes toward Risk", TSE Working Paper, n. 21-1194, February 2021

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