CompNet Annual Conference

14th/15th October 2021, Banque de France, Paris

Bruno Cabrillac, Deputy Director General Economics and International, inaugurated the Annual Conference hosted by Banque de France with his opening speech and welcomed **Filippo di Mauro**, Chair of the Competitiveness Research Network (CompNet). Filippo di Mauro introduced the research and data provided by CompNet, highlighting the newly released 8th Vintage of the CompNet database.

Session 1, chaired by Jan de Loecker (Katholieke Univ., Leuven), focused on the impact of the pandemic on productivity and business dynamism.

Beatriz Gonzalez (Bank of Spain) presented the first paper of the conference. Using firm-level heterogeneity and the design of Spanish pandemic employment protection schemes, she and her team found that firms strongly decreased spending, in particular on temporary workers, to protect tenured employees. This is a direct result of frictions created by Spanish labour regulations.

Andrea Colciago (Bank of The Netherlands, Univ. of Milano-Bicocca) then presented results from a business dynamics model including an SIR model calibrated to observed characteristics of the COVID pandemic. Given an economy which balances consumption between a social sector and a sector not dependent on social interaction, the model provides thresholds for the minimum firm productivity that determines firm entry or exit. It also details the role of monetary policy in the recovery.

Jan de Loecker noted that following a shock like the pandemic, firms exit due to liquidity and operational constraints, not because they neglect their technology function. Beatriz Gonzalez explained that firms named uncertainty as their largest challenge, even after controlling for firm characteristics. The survey shows that it decreased significantly after the announcement of effective vaccines. In response to **Eric Bartelsman** (Tinbergen Institute), Andrea Colciago stated that heterogeneity in the size of new firms might explain the magnitude of the productivity effects shown by the model.

Keynote: John Van Reenen (LSE)

In his keynote speech, John Van Reenen presented a research paper on French labour regulations. These create firm size thresholds at which costs markedly increase. Particular forms of regulation have benefits, but they might have costs as well, which could inhibit innovation. Using a dynamic framework, the purpose is to study how regulation can affect the joint distribution of the firm size and innovation. A model of firms limit pricing each of their products, together with COMTRADE customs data matched to patent data, reveals that this regulation causes innovation to decline by 5.4% and artificially inflates the marginal cost of innovation. Firms below the size thresholds distort their input factor choice in order not to grow past the thresholds. Firms above the thresholds, too, innovate less due to the increased cost.

In the following discussion, **Javier Miranda** (IWH Halle) remarked that most innovation is incremental and builds on breakthroughs. John van Reenen replied that the model allows for large and small innovation, but does not consider long-term or incremental feedback effects. **Beatriz Gonzalez** asked about differences in the location and the catch-up of the innovation valleys between the model and the data, and motivated a fixed-cost view of the implied tax. John van Reenen attributed the differences to a combination of measurement error and the role of expectations about future firm size, which decrease the marginal return to size. Larger firms may prioritize defensive research over breakthroughs. An extension of the paper investigates this idea and its effect on the results.

Session 2, chaired by Carlo Altomonte (Bocconi Univ.), regarded the international dimension of firms: supply chains and corporate tax avoidance.

Matthias Meier (Univ. Mannheim) discussed research on the supply chain effects of the COVID shock. Observing that its impact was both faster and more intense than that of the Global Financial Crisis, the paper uses shares of 4-digit intermediate product imports from China to measure the supply chain exposure of 88 sectors. The model estimated a large negative impact of COVID on the growth of US industrial production in the first quarter of 2020, followed by a two-month reversal. No further significant effects are found in later months, possibly due to a rebuilding of inventories.

The paper presented by **Farid Toubal** (Univ. Paris-Dauphine- PSL, CEPII, CESifo & CEP) highlighted the importance of understanding corporate tax avoidance strategies. Using the effect of changes in the enforcement budget of the IRS on audit probability for identification, the model shows that Corporate Tax Avoidance results in distorted sales and allows large firms to grow larger. This finding links corporate tax strategies to research on observed long-term increases of market concentration.

Carlo Altomonte remarked that the two papers are related via changes in the organization of large multinational companies. On the one hand, a synchronization of inventory and intermediate goods may explain the large but transitory disruption. On the other hand, Corporate Tax Evasion enables investment into intangible assets, which, in turn, unlock financing that makes internal insurance against disruptions feasible. Finally, he proposed to measure changes in post-shock supply chains using the skewness of firms' organizational structure.

In the Q&A session, **Filippo di Mauro** asked why the model saw a very transitory impact of the pandemic on supply chains, whereas the business media frequently reports bottlenecks. Matthias Meier answered that after the initial shock, production in China quickly resumed and inventories recovered. **Carlo Altomonte** emphasized that a large fraction of imports takes place inside enterprise groups and with just-in-time logistics, creating an instantaneous response. **Farid Toubal** inquired about the import data, and whether the focus on US firms, who often are upstream producers, affects the results. Matthias Meier noted that the data choice is partially driven by the monthly frequency and that comparable intra-US data is not readily available.

Policy Panel

In a session chaired by **Filippo di Mauro**, five panellists, **Agnès Benassy-Quere (French Treasury), Debora Revoltella (EIB), Reint Gropp (IWH Halle), Rolf Strauch (ESM), and Isabel Vansteenkiste (ECB)** discussed how COVID was a game changer in the context of the "productivity puzzle" debate. This in relation specifically to economic structure, labor reallocation, finance, inflation, digitalization, and the green transition. **Agnès Benassy-Quere** highlighted that we have seen a dramatic reduction in defaults without a clear economic catchup. Additionally, preliminary research from the French Treasury suggests that the gap between defaulting firms and non-defaulting firms may be even greater than in pre-crisis times. Regarding firm creation, Agnès Benassy-Quere remarked that we have seen a lot of dynamism; despite greatly contracting early on in the pandemic, firm creation has now exceeded pre-crisis levels. In her closing statement, she argued that it is too early to know how COVID has changed the game, especially considering that we do not yet know what effect the green transition will have on productivity. In her opening remarks, **Debora Revoltella** emphasized that COVID is an accelerator for many issues, e. g. digitalization and the green transition, because firms using digital technologies more intensively during COVID were more productive than their less digitally inclined counterparts. In light of this, she expressed how valuable it would have been for workers to acquire additional human capital with their downtime. Agnès Benassy-Quere later reaffirmed this opinion, stating that governments

should have made a greater push for retraining. In Debora Revoltella's closing remarks, she emphasized how important much more targeted policy support is for the transformation of firms. Turning to finance, **Reint Gropp** illustrated that, contrary to expectations, insolvencies and non-performing loans decreased during the pandemic. He remarked that this observation suggests that financial markets do not pose a problem. However, he cautioned against markets becoming problematic later on via zombie firms, inflation, and delayed insolvencies. In his closing statement, he emphasized the importance of treating optimistic financial markets with circumspection. **Rolf Strauch** began his contribution on the same subject by remarking that the banking sector, although it could have targeted its lending better, was extremely successful in meeting liquidity needs. He further emphasized that policymakers, when faced with a global pandemic, should not be excessively worried about broad brushed economic relief, too much support being better than too little. However, Rolf Strauch stressed that the capital market union initiative should be brought forward, since it could improve both financing and the culture of risk-taking. Additionally, it could lend opportunities to the SME sector that will eventually lead to greater productivity. Turning finally to monetary policy implications, **Isabel Vansteenkiste** addressed the inflation concerns, noting that it surprised on the downside before the pandemic. Insolvencies, too, have surprised on the downside. Yet, she emphasized, we are still not out of the woods. The policy measures leading the way out of the crisis need to be withdrawn responsibly. We need to balance the need of keeping employment and allow firms to survive with the need to avoid creating zombie firms. Regarding monetary policy, she identified large variation in its effects on large and small firms. Large firms hold cash, but also took on further debt because of favorable lending conditions. Isabel Vansteenkiste closed her remarks with a quote from Warren Buffet: "Only when the tide goes out you do discover who's been swimming naked."

Day 2

Session 3, chaired by Javier Miranda (IWH), focused on COVID, productivity, and the role they have in creative destruction.

Gregory Thwaites (Nottingham Univ.) presented insights from the Decision Maker Panel on the reaction of British firms to the COVID shock. Firms reported that both hours worked and investment dropped substantially, whereas employment responded less and prices generally did not change yet. TFP per hour worked decreased by about 1%. Inter-sector churn will be important, necessitating policies to train workers. The panel proved to be timelier and more accurate than official ONS data.

Dan Andrews (OECD) analysed accounting data provided by a cloud company and found that the pandemic disrupted the regular movements of workers between companies. Firms went into hibernation, rather than becoming zombies. Job losses in Australia were concentrated in the 25% least productive firms. After the Jobkeeper scheme ended, productivity-enhancing reallocation surged and more productive firms grew much more strongly than less productive ones.

In his discussion, **Javier Miranda** emphasized the role of new data sources, as used in these papers, and cautioned against their sample characteristics because they may have unforeseen survivor bias. Additionally, the magnitude of employment losses in some sectors far exceeds beneficial cleansing effects, resulting in destruction rather than improved allocation. The use of business registrations comes with caveats, as many firms registered during a crisis are not sustainable or permanent. Responding to Matthias Meier, Dan Andrews stated that benchmarking the data against other data

sources did not show unexpected characteristics. Productivity analysis, however, is limited by the measures that can be reliably derived from the data; e.g., while TFPR can be calculated, TFPQ is not.

Session 4, chaired by Eric Bartelsman (Tinbergen Institute), dealt with the topics of tracking the Covid impact in real-time and the use of innovative data.

Sophie Piton (Bank of England) presented a study of business creation rates in the UK. It uses online job postings, Google mobility data, OpenTable restaurant bookings, and the UK business registry. New or young firms significantly contribute to job vacancy recovery and post vacancies more quickly. The authors find firm entry driven by the intensive margin, as existing groups open new locations.

Using machine learning methods, **Temel Taskin** (World Bank) analysed earnings call transcripts as a timely source of information for economic activity. The pandemic was found to impact both supply and demand far more strongly than the Global Financial Crisis, whereas the previous crisis primarily affected demand. Detailed sectoral variation extracted from the data indicates that support policies should be sector-specifically designed.

Eric Bartelsman commended the use of novel data sources that are much more up-to-date than the usual sources with lags of multiple years, and used an analysis of bank transactions to emphasize both the need for and the potential of machine learning analysis. At the same time, he warned about limitations of new datasets, including oftentimes undefined or ambiguous regulatory aspects.

In the Q&A, **Javier Miranda** stressed that business registrations may not measure exactly what they suggest, because existing firms can easily register new subsidiaries for unconventional purposes. This issue extends to the definition of a start-up, as a new firm of a large group likely would not qualify as such. Answering to a question from **Matthias Meier**, Temel Taskin explained that machine learning allows to avoid imposing structural restrictions on the data and can exploit far larger sample sizes.

Guest Intervention and Q&A

Next, **Filippo di Mauro** welcomed **Paloma Lopez-Garcia (ECB)**. She presented the new ECB publication "Key factors behind productivity trends in EU countries", which focuses on five key aspects. For example, intra-sector reallocation following structural change causes most productivity changes, especially in manufacturing. At the same time, the rate of firms entering financial distress has declined in the past decade. Fewer firms are now considered zombies, and more than half of those recovered again. Touching on monetary policy, Paloma Lopez-Garcia noted that the findings of the team do not support negative impacts of monetary policy on productivity growth. Nonetheless, the ECB will continue to monitor monetary policy for effects on productivity.

Matthias Mertens asked whether any country-specific results have stood out in the analysis. Paloma Lopez-Garcia noted that the presentation could only provide a summary, and that cross-country analysis is challenging. However, the report does leverage CompNet data, e.g., for within-sector dispersion and skewness of productivity; In this context Filippo di Mauro proposed to cross check the results obtained in the report on a small microdata sample of some 6-7 EU countries using ORBIS, vis a vis the 18 EU countries available in the just released CompNet dataset. **Matthias Meier** proposed using the PRISMA database for further controls. Paloma Lopez-Garcia welcomed the suggestion and plans to use it in further work. **Andrea Colciago** asked if market concentration might contribute to the dynamics of productivity found in the report. Paloma Lopez-Garcia stated that it affects technology diffusion. From a central bank's perspective, concentration may also affect monetary policy transmission by influencing whether companies access funding via banks for the financial markets.

Keynote: Laura Alfaro (Harvard Business School)

Based on a representative, randomized information treatment online survey, Laura Alfaro detailed the effect of information consumed online on individuals' attitudes towards globalization and trade. Individuals were more receptive to anti-globalization information than to information supporting globalization, even after controlling for a wide range of political and social attributes and other possible error sources. The effects are driven by "trade hurts" information reinforcing respondents' prior beliefs on the left/right spectrum, and asymmetric treatment effects given peoples' priors.

The debate started with two questions on the role of uncertainty. First, whether the same difficulty informing people of benefits, compared to losses, can be observed in climate policy. Second, **Antoine Berthou** mentioned that the impact of trade on labor wages has a more tangible effect than the gains from more indirect mechanisms, such as the reallocation of people across firms, sectors, and states. He asked whether participants do not primarily perceive possible (abstract) gains, but rather threats and uncertainties related to these reallocation processes. **Laura Alfaro** stated that they tested participants' loss aversion, but did not receive satisfactory survey responses, and found that it did not affect the findings. Climate change is a scenario that still needs to be explored. She remarked that studies on tax policy are equally challenging due to respondents' perception of uncertainty. Moreover, Laura Alfaro confirmed that it is difficult to convince people that indirect gains from trade are as important as the direct losses. She added that the survey made sure to use factual statements, instead of hypothetical, abstract ones, to present information in an accessible manner.

Session 5, chaired by Chad Syverson (Univ. of Chicago), concentrated on the management practices and automation: individual country evidence.

Simon Bunel (Banque de France, PSE) and coauthors determined that the productivity effect of automation outweighs displacement of workers, even though it displaces workers at task-level. Because marginal cost and prices decline, demand increases, and employment rises. The study utilized a broad definition of automation capital and achieved identification with pre-existing variation in both the cost of imported machines and supplier relationships in a Shift-share IV design. Automating firms were found to take market shares from their competitors and expand employment. The competitors, in turn, reduce employment.

Andrea Linarello (Bank of Italy) used firm survey results, including items predating the COVID pandemic, to demonstrate the effect of structured management processes. During the response period, expected sales growth collapsed together with stricter measures to control the COVID pandemic. Firms using structured management processes benefitted from much smaller declines in sales growth than those who do not. They more often put in place strategies to adapt to shocks in multiple dimensions, and adopted remote work more quickly and permanently.

In his discussion **Chad Syverson** noted that the well thought out shift-share design allows us to further investigate how automation capital differs from other capital, and that the level of aggregation may affect the findings. Regarding management practices, he argued that good management adds value in the same sense as an insurance policy does. Resources spent on good management may even reduce observed productivity, because while they are recorded as costs, their protective benefits are not measured. **Eric Bartelsman** encouraged analyzing the duration of labor reallocation that follows automation.

In his closing words, **Filippo di Mauro** thanked **Banque de France** and **Bruno Cabrillac** for hosting the Conference, as well as the team that prepared the event, selected the papers, and made the conference possible. He stated his hope that the next Annual Conference will again be a completely in-person event to facilitate interaction and conversation. He mentioned that the EIB had expressed

interest in hosting such event in a date to be established in 2022. Lastly, he invited feedback on the new 8th Vintage of the CompNet dataset, including suggestions to further improve the coming vintages.