RESEARCH UPDATE

Fall 2021

BANCO DE ESPAÑA

Eurosistema

Welcome to the Banco de España Research Update

The Banco de España is pleased to announce the release of the Fall 2021 issue of its Research Update. The Update aims to inform both academic and policy-oriented economists and financial specialists about publications, conferences, and other research activities at the Banco de España.

One year after its approval in 2020, the Banco de España has confirmed the validity of the strategic framework for its medium-term analysis and research priorities. This Update presents a summary of the current research priorities that may be grouped in five main headings: central bank policies and their interactions; the main long-term trends in the Spanish economy; risks and opportunities arising from the international environment; the aggregate consequences of household and firm heterogeneity; the challenges of new technologies.

As usual, this Update includes five feature articles summarizing policy-relevant findings from recent Banco de España projects in diverse areas of research. First, A. Bald, E. Chyn, J. Hastings and M. Machelett measure the impact on test scores and grade repetition of removing children from families investigated for abuse or neglect. S. Albrizio, I. Kataryniuk, L. Molina, and J. Schäfer use a diff-in-diff strategy to study whether ECB euro liquidity lines decrease euro funding costs in the targeted economies, and if there are spill-overs for Euro-Area economies. J. Quintana analyses, mapping firm/level data to a structural model, the contribution of import competition to the regional divergence among US metropolitan areas over recent decades. A. Fernandez Cerezo, B. Gonzalez, M. Izquierdo and E. Moral Benito explore the heterogeneity across firms in the impact of and response to the COVID-19 shock, using a survey conducted in November 2020 matched to balance-sheet information on firm characteristics. Finally, K. Istrefi, F. Odendahl and G. Sestieri analyse the public speeches of Fed officials, during the period 1997 to 2013, in order to understand whether a higher speaking time or a more negative tone on financial stability issues, correlate with the overall tone of monetary policy.

This Update also reports on other research news, such as recent publications in peer-reviewed journals as well as current or forthcoming conferences. The latter, such as the third conference on Financial Stability jointly organized by the Banco de España and the CEMFI, are starting to be held on a hybrid virtual-in person format. Last, but certainly not least, this issue presents the profiles of two newly hired researchers who are joining the Banco de España during fall 2021.

We highlight these and other research developments at the Banco de España in hopes that they will interest the broader research community in Spain and internationally, and thereby contribute to an improved understanding of economic policy.

Óscar Arce
Olympia Bover
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Eva Ortega
Carlos Thomas

Research Committee,
Banco de España

Analysis and research priorities for the Banco de España: 2020-2024. 2021 update

One year after its approval in 2020, the Banco de España has confirmed the validity of the strategic framework for its medium-term analysis and research priorities. The framework has five main headings: central bank policies and their interact ions; the main long-term trends in the Spanish economy; risks and opportunities arising from the international environment; the aggregate consequences of household and firm heterogeneity; the challenges of new technologies.

In the short term, efforts will continue be concentrated on the same lines of work, although the focus will be changed to give greater importance to the following issues:

— The medium and long-term implications of the COVID-19 crisis.

— The economic and financial consequences of climate change.

— The impact of the Next Generation EU programme.

— The uneven effects of the pandemic across households and firms and the role of economic policies.

— The digital euro.

As part of the internal transformation exercise that was launched in January 2020 with the approval of the Strategic Plan 2024, the Banco de España is seeking to strengthen its analytical work. The aim is to address the challenges posed by the various changes in the economic and social environment for the performance of its functions as a national central bank and member of the European System of Central Banks.

To this end, the Banco de España, having identified the most relevant issues that may affect the economic welfare of Spanish society at different time horizons, published in 2020 the selection of analysis and research themes that are to be focused on during the period 2020-2024. The five priority analysis and investigation themes identified, and presented by the Governor in this video, are:

1. Central bank policies (monetary, microprudential and macroprudential) and their interactions.

2. The main long-term trends (climate change, digitalisation, ageing, etc.) and their implications for the Spanish economy.

3. Risks and opportunities arising from the international environment.

4. The aggregate consequences of household and firm heterogeneity and the role of economic policies.

5. New technologies and information sources: Challenges for a central bank.

One year on, after reviewing the considerable amount of work carried out last year and at the beginning of this year on these five priority themes and establishing that they continue to be relevant, the Banco de España has confirmed the validity of the strategic framework defined for its analysis and research function in 2020.

Thus, the main lines of work defined in 2020 are to be continued during the rest of 2021 and in 2022. Some of these lines have been refocused to give more importance to the areas of analysis and research highlighted below.

As regards **central bank policies (monetary, microprudential and macroprudential) and their interactions,** the emphasis will again be placed on the analysis of:

- the determinants of the **recent rise in inflation,** possible amplifying factors and the medium-term inflation outlook;
- the challenges of the current **low interest rate** environment for banking profitability, prudential supervision and financial stability, as well as its impact on resource allocation across firms, productivity, growth and inequality in Spain and Europe;
- the **interconnections** between the main components of the financial system and the impact the COVID-19 crisis has had on them;
- the costs and benefits of the application of **macroprudential tools** to the banking sector and their effectiveness in mitigating **systemic risk.**

In relation to the **long-term trends** of the Spanish economy, priority will be given to the study of:

- the **medium and long-term impact of the health crisis,** with special emphasis on its effects on the Spanish economy's growth capacity and sectoral structure, after the uneven impact of the crisis across the various productive sectors, and on the analysis of fiscal policy, including the study of agents' responses to the stimulus measures introduced during the health crisis and medium and long-term gover nment debt dynamics;
- the **implications of climate change for monetary policy and central bank activity,** following inclusion in the ECB's new monetary policy strategy of a commitment to incorporate climate factors in the assessment of monetary policy and to adapt its operational framework. This includes renewed emphasis on the assessment of the effects of climate change on the **long-term growth** of the Spanish economy, by region and sector of activity, and its implications for **financial stability** through estimation of the sector level credit risks associated with climate change;
- In the area of **sustainable finances,** the information on sustainability and the degree of **compliance with climate risk recommendations** included in corporate annual reports, and the incorporation of **sustainability factors** in government debt markets, portfolio management and monetary policy conduct;
- the boost during the pandemic to **automation and digitalisation** of the Spanish economy in areas such as teleworking, e-commerce, education, etc. and their effects on patterns of household and firm behaviour.

In the area of **risks and opportunities arising from the international environment,** greater priority will be given to analysis of the following issues:

- measures and institutional changes activated in the European Union in response to the current crisis, in particular, the **NGEU recovery plan** and the role of **fiscal rules in the euro area;**
- the strengthening of the role of multilateral institutions, and the **global coordination of economic policies** following the health crisis;
- the impact of the crisis on the **Latin**

American economies and their interaction with the Spanish economy;

— **inflationary risks** in the advanced economies, medium-term trends in **commodity markets,** the effects of the **"normalisation" of demand and activity** and the implications of the measures to contain **climate change** on inflation.

As regards the aggregate consequences of **household and firm heterogeneity and the role of economic policies,** greater priority will be given to the study of:

— the impact of the pandemic on the **liquidity, indebtedness and solvency** of Spanish firms and the role of mitigating economic policy measures (public guarantees, moratoria, direct grants, recapitalisations, etc.);

— the development of methods to **identify the most vulnerable groups in a crisis situation,** with special emphasis on the measurement of the financial position of households and the role of financial competences;

— the **heterogeneous transmission of monetary and fiscal policy** between households, firms and financial intermediaries according to their individual characteristics;

— the **geographical distribution** of access to cash and the risk of financial exclusion.

Finally, in the area of **the challenges for a central bank of new technologies and information sources,** greater priority will be given to the study of:

— the **digital euro:** implications of the introduction of a central bank digital currency for the financial system and the economy as a whole, and the determinants of crypto-asset price formation;

— The identification of **risks and good practice** in the use of new technologies by **financial institutions;**

— the widespread application of **advanced data analysis techniques (artificial intelligence, machine learning, big data)** to economic forecasting, early-warning indicators, the measurement of diverse kinds of risk, analyses of possible sources of complexity in the formulation of financial regulation, banknote quality control, etc.

By publishing this updated focus of its analysis and research priorities, the Banco de España underlines its commitment to transparency in its research activity, while aspiring to foster collaboration in these areas with the academic community and economic analysts in general.

The causal impact of removing children from abusive and neglectful homes

ANTHONY BALD, ERIC CHYN, JUSTINE S. HASTINGS AND MARGARITA MACHELETT

Summary of Banco de España Working Paper no. 2126

Every year, more than four million children are in contact with the child welfare system due to an investigation of parental abuse or neglect (U.S. HHS, 2016). In addition, authorities annually remove nearly 200,000 children from their homes, with half of them under the age of six (U.S. HHS, 2016; 2018). Despite this, little is known about the impacts of early childhood out-of-home placements.

Providing causal evidence has proven challenging for two reasons: Data availability is problematic, and removal is not random. First, researchers and state agencies often lack the resources to follow children over time. In addition, it is often difficult to match reports on child protective services and education outcomes. Second, it is misleading to compare removed and non-removed children. Removed children typically belong to more disadvantaged environments and are expected to have worse outcomes. The studies by Doyle (2007, 2008) are a major exception in the literature, they use an instrumental variable to study later life outcomes of older children.

NEW EVIDENCE ON HOME REMOVAL IMPACTS

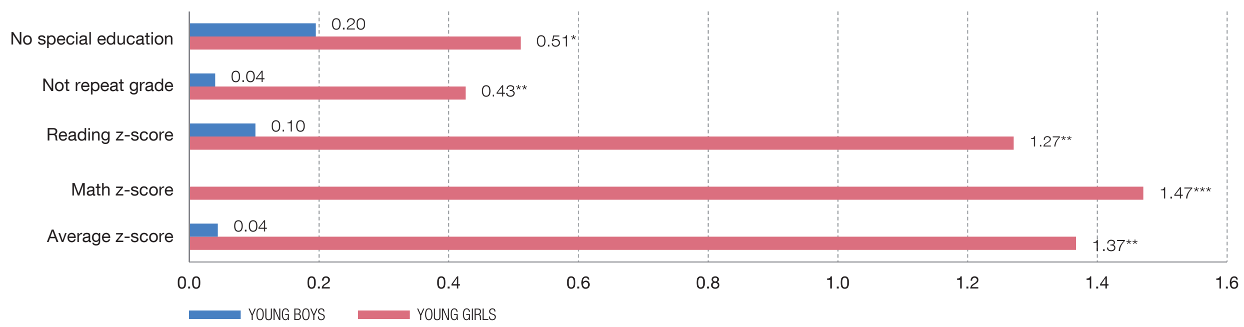
Our paper provides the first estimates on the impact of home removals during early childhood (before the age of six) on school performance. We use unique anonymized administrative records from Rhode Island that contain almost two decades of child protective service reports. The data allow us to join records associated with each child across social programs and government agencies (Hastings, 2019; Hastings *et al.* 2019).

Following Doyle (2007,2008), we address threats to identification of causal effects by using investigators removal tendencies as an instrument for removal. This research design is based on two features of Rhode Island's abuse and neglect investigation process. First investigators vary in their strictness (their likelihood to recommend out-of-home placements). Second, investigators are matched to cases using a system that effectively randomizes assignments. With this approach, we compare outcomes for children on the margin of removal (those whose placement could have been different if assigned to another investigator).

HOME REMOVAL BOOSTS PERFORMANCE FOR GIRLS BUT DOES NOT AFFECT BOYS

Our main finding is that removal benefits young girls but does not detactable impact boys (see Figure 1). Removal significantly improves girls´ performance on standardized test

Chart 1
IMPACT OF REMOVAL ON STANDARDIZED TEST SCORES AND OTHER SCHOOLING OUTCOMES



NOTE: This figure shows point estimate impacts of removal for young girls and young boys. The results include impacts on standardized test scores, normal grade progression, and non-participation in special education services. Significance estimates reported as ***<0.01, **<0.05, *<0.10. Larger (more positive) values indicate improvements for a given outcome. Note that the point estimate for the effects on standardized math on young boys is not reported as it is negative and not statistically significant (-0.003) scores (grades 3-8). This effect is considerably large, equivalent to a 1.3 standard deviation increase. It is comparable in magnitude to the impacts of a high-quality early education program targeting disadvantaged children-Perry Preschool program. This program increased girls test scores by 0.8 of a standard deviation (Heckman et al. 2013).

In addition, we find that removal significantly improves other schooling outcomes for girls. For instance, removal significantly increases the likelihood of normal grade progression (no grade repetition) and non-special education services participation. These patterns are statistically consistent with test score results, suggesting that girls benefit from home removals after an investigation of abuse and neglect.

In contrast, we do not find detectable impacts on young boys. While the impacts on test scores for boys are smaller in magnitude and very imprecise, they are significantly different from the impacts observed for girls. In line with these findings, there is no evidence of significant impacts for boys in other schooling outcomes.

This relative gain for girls but not for boys is consistent with studies that find larger positive impacts for girls from schooling and social program interventions (Hastings *et al.* 2006, Kling 2006, Angrist et al. 2009, Heckman *et al.* 2013, Deming *et al.* 2014, Hoynes *et al.* 2016).

EXPLAINING HETEROGENEOUS IMPACTS BY GENDER

As the paper shows, removed young girls and boys are are not detectably less likely to be enrolled in schools as their non-removed counterparts. Perhaps surprisingly, the experiences after an intervention are similar. There are no differential pathways in terms of the types and lengths of foster care placements experienced. There are also no differences in types of schools attended, as measured by their value-added, share of black students, or share of students' special education services. We also reject gender differences in the pre-investigation characteristics of compliers. That is, there are no considerable differences in characteristics of those whose removal decision would have been different if they had been assigned to a different investigator (see Abadie, 2003, Dahl *et al.,* 2014, and Dobbie *et. al.,* 2018).

Our analysis suggests that there might be gender differences in responses to removal. In the paper, we restrict the sample to siblings from the same households, since they share the same background characteristics. This analysis provides suggestive evidence that girls and boys might respond differently to the same treatment. While these results are imprecisely estimated, the point estimates for young girls are nearly identical to those from the main analysis. The point estimates for young boy siblings become consistently negative. This suggestive evidence provides support to the hypothesis that there exist differential responses by gender.

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ECB Euro Liquidity Lines

SILVIA ALBRIZIO, IVÁN KATARYNIUK, LUIS MOLINA AND JAN SCHÄFER

Summary of Banco de España Working Paper no. 2125

Central bank liquidity lines have been used extensively in the last decade to provide liquidity in foreign exchange markets during periods of distress. When a line is active between a source central bank and a recipient one, the latter can access the source central bank's currency in exchange for its domestic currency at the spot exchange rate and at a fixed interest rate, which is below the market rate. At maturity, the same amount of money is exchanged among the two counterparties at the same fixed spot exchange rate. In this way, the recipient central bank can inject liquidity in the domestic market, preventing market pressure on its own currency or avoiding to exhaust its own reserves.

After some early precedents in the context of the Bretton-Woods era, a global network of swap lines gained increasing relevance as a cooperation tool across central banks following the September 11th terrorist attack and more extensively during the Global Financial Crisis of 2007/2008. Also, during the recent Covid-19 pandemic, numerous swap lines were activated. In this context, central banks' liquidity agreements transformed the Fed into the global lender of last resort, limiting fire sales and helping contain the risk of market contagions. Empirical evidence shows that the Fed swap lines have been effective in lowering dollar borrowing costs and generating positive spillback effects for the US economy (see e.g. Bahaj and Reis, 2021). Aizenman et. al. (2021) provide evidence for a signalling effect, i.e. that the announcement of the line gives confidence to markets without the need of activating it: Liquidity facility announcements during 2020 have led to lower CDS spreads and long-term interest rates in the targeted economies, together with an appreciation of the currency with respect to the USD.

Turning to the ECB, not only does it participate in such network, but between October 2008 and August 2020 it established and/or extended a total of 28 swap and repo lines with 16 counterparts to provide euro liquidity. Counterparts were mostly outside the EA (Bulgaria, Croatia, Czech Republic, Denmark, Hungary, Poland, Romania, and

Figure 1
TIMELINE

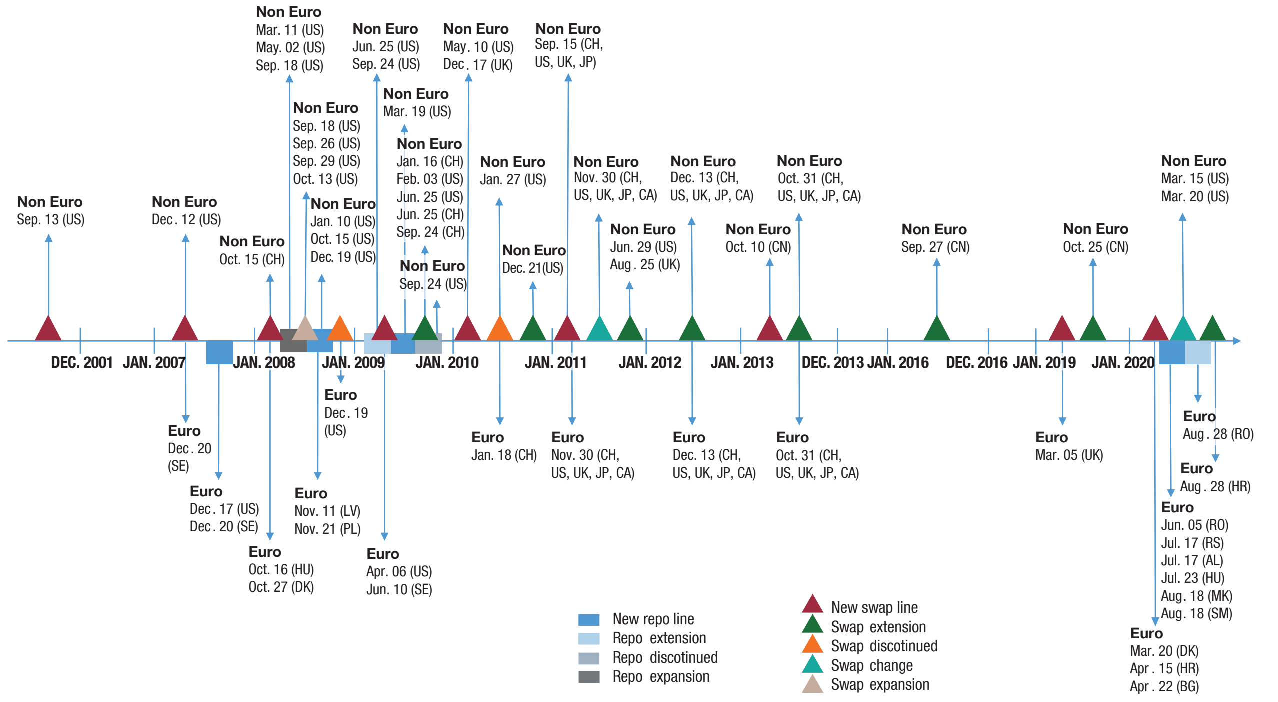
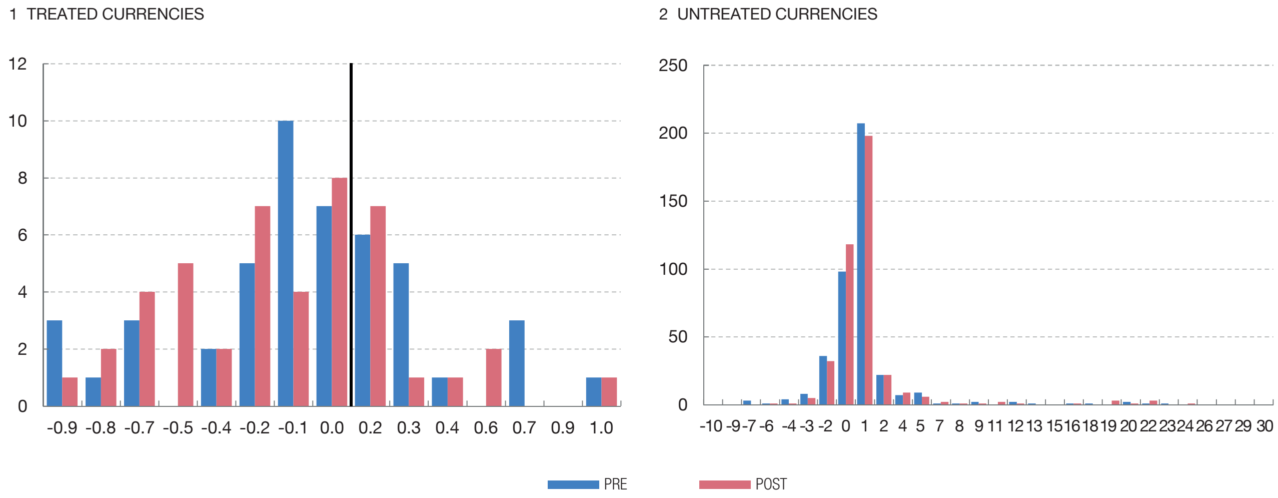


Chart 1
BASIS DENSITY BEFORE AND AFTER ANNOUNCEMENT



NOTE: Frequency distribution in a 4-day window around the announcement. For any announcement, the targeted currency/ies is/are going to be the one/s targeted by the announcement, while the non-targeted currencies in the sample are untreated. Post-treatment is defined as the day of treatment and the day after, while pre-treatment is the two days prior to treatment.

Sweden), but since 20th March 2020 other non-EU countries joined the network (Serbia, San Marino, Albania and North Macedonia). A timeline of these agreements is depicted in Figure 1. In this sense, the role of the ECB can be described as a regional lender of last resort.

Do ECB euro liquidity lines decrease Euro funding costs in the targeted economies? We compare changes in the deviations from CIP for targeted currencies with those of currencies of similar non-targeted countries. Absent frictions, covered interest parity (CIP) holds and the implied euro interest rate in the FX market equals the euro money market interest rate. If the CIP does not hold, the FX swap basis spread provides a measure of the premium paid by foreign agents to borrow euros in the FX market compared to the euro money market.

We consider a short window around the public announcement of the liquidity line. In Chart 1 we observe that the histogram for targeted countries shifts to the left, towards lower CIP deviations, contrary to the non-targeted group. This suggests that ECB liquidity line announcements indeed were effective in decreasing Euro funding costs in targeted economies. In a more formal assessment, relying on a difference-in-differences framework as in Cetorelli et al. (2020), we estimate that the announcement of a swap line reduces the euro funding cost in foreign exchange swap markets by between 51 and 76 basis points as measured by the CIP deviations. The effect is absent if we move the announcement dates 3 days before the actual one, validating the difference-in-differences approach and indicating that there is no anticipation.

About spillbacks, central bank liquidity line announcements may instill confidence in recipient economies and reduce the risk that financial distress spreads into the source country. To test for such effects, we exploit the fact that some euro area (EA) countries have stronger trade and banking ties with some of the targeted countries.

Comparing the change in average stock prices of banks in EA countries highly exposed to the targeted economies via banking linkages with those EA countries that are less exposed allows us to quantify the benefit of the announcement for EA banks. Our estimates suggest that domestic bank profitability, proxied by equity prices, increases by 6.7% in EA countries highly exposed upon announcement of the liquidity line.

To conclude, our findings suggest that liquidity line announcements had positive effects for both targeted economies and the EA, making them a valuable policy tool.

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Import competition, regional divergence, and the rise of the skilled city

JAVIER QUINTANA

Summary of Banco de España Working Paper no. 2115

Over recent decades, cities in the US have been growing apart. While some metropolitan areas thrived, others have experienced a secular decline. Contemporaneously, the American economy experienced a significant structural change: the period was a major loss of manufacturing jobs, while some skill-intensive services expanded rapidly. In this paper, I show that the capacity to accomplish the transition between those sectors is key to the economic success of local labor markets. Among areas with high human capital, the decline of local manufacturing industries fueled the transition to fast-growing skill-intensive service sectors, resulting in real wage gains and attraction of college-educated workers to the area. On the other hand, local labor markets with lower human capital could not make up for the losses stemming from manufacturing contraction.

THE GREAT DIVERGENCE AND THE CHINA SHOCK

The first decades of the postwar period saw a process of convergence between the metropolitan areas of the United States. The gaps in wages and the shares of college-graduate population were progressively closing, with lagging metropolitan areas catching up with the leading ones. However, this process came to a halt in the late 1980s. From that moment on, areas with a higher density of college-educated workers have displayed a superior performance over a whole range of urban and economic growth measures.

Two of the most salient features of the so-called Great Divergence are the spatial skill polarization and the divergence of the college wage premium across local labor markets (Moretti, 2012). Most educated metropolitan areas have increased their skill advantage over the last decades. Workers with a college degree are more likely to move to cities with a high density of college-educated population today than they used to be. At the same time, real wages for workers with a college degree have stopped converging across local labor markets, as opposed to the convergence of real wages for workers without a college education. College-educated workers in skill-abundant cities have experienced a more rapid wage growth than their peers in less educated areas. The sorting of educated and high-earning workers into few metropolitan areas has deepened inequalities within and between locations.

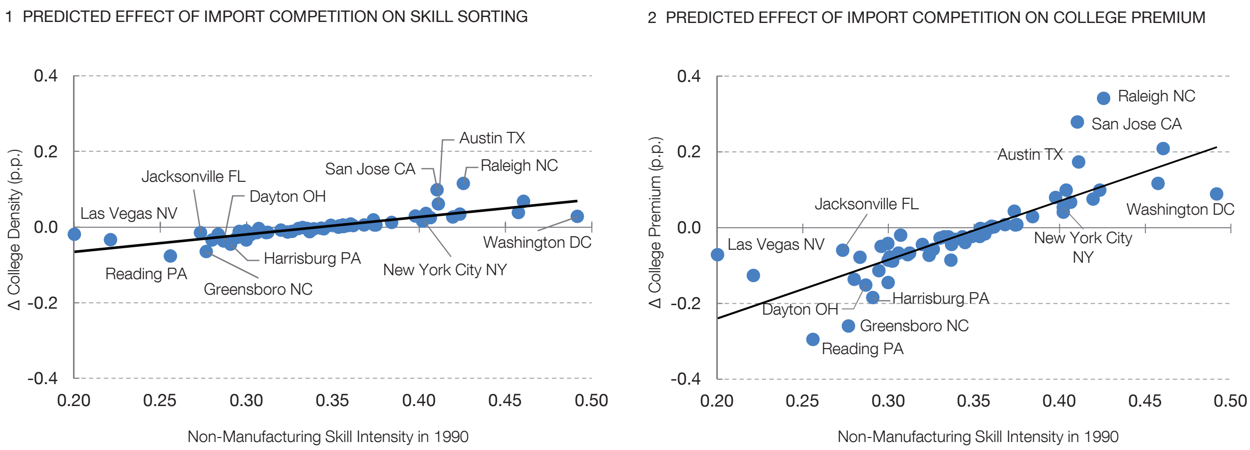
At the same time, the United States experienced an unprecedented increase in imports of manufacturing goods following China's access to the world market economy. An extensive literature documents that the increase of Chinese imports had a significantly negative impact on manufacturing employment (Autor et al., 2013, Pierce and Schott, 2016). The drop in manufacturing employment was not geographically even. Labor markets specialized in industries most exposed to Chinese competition experienced a more severe employment contraction.

However, I show that losses in manufacturing employment is not sufficient to capture the effect of import competition on local labor markets. Instead, local outcomes will be the result of their ability to reallocate those workers and the type of industries that will replace the waning manufacturing sector. If skill-intensive services can absorb former manufacturing employees, the initial negative shock to manufacturing industry will turn into a push for fast-growing skill-biased industries. Instead, if those industries are missing, the local labor market will not be able to recover from the negative shock.

Namely, metropolitan areas such as San Jose, Raleigh or Austin (with large and highly exposed manufacturing sectors, and skill-intensive non-manufacturing industries by 1990) performed better than cities in the Rust Belt (with similarly large and exposed manufacturing sectors but with a low density of college-educated workers). Moreover, these skilled-and-exposed metropolitan areas will also display a superior performance than areas like Washington or New York (with a similar density of college-educated workers but negligible exposure to manufacturing import competition).

Figure 1

PREDICTED EFFECT OF IMPORT COMPETITION FOR 60 LARGEST METROPOLITAN AREAS



HETEROGENEOUS EFFECTS OF MANUFACTURING IMPORT COMPETITION

Empirically, I develop my analysis in two steps. First, I test the heterogeneous effects of import competition. I analyze its impact on skill sorting and skill premium in urban areas between 1990 and 2007. The main dependent variables are decade changes in working-age population and changes in real wages by educational level. I extend the baseline regressions in Acemoglu et al., 2016 including the interaction between the exposure to import competition and the initial share of college-educated workforce in the non-manufacturing sector. This will be my variable of interest, capturing the heterogeneity of effects of the trade shock according to the skill intensity of local services[1].

The contribution of the China shock to regional divergence is significant and economically sizable. I find that the heterogeneous effects of import competition explains above than one third and one fourth of the variation of the spatial skill polarization and the divergence of skill premium, respectively. Comparing cities with the median level of exposure to import competition, an area at the 75th percentile of skill-intensity will have a 13% faster growth of college-educated workforce and a 4.5% faster growth of real wages of college-educated workers per decade than one at the 25th percentile of skill-intensity. Moreover, comparing cities at the 75th percentile of skill-intensity, a city at the 75th percentile of exposure to the China shock will have a 12.6% faster growth of college-educated workforce and a 3.3% faster growth of real wages of college-educated workers per decade than one at the 25th percentile of exposure to import competition. Conversely, among cities at the 25th percentile of skill intensity, a city at the 75th percentile of exposure to the China shock will have a 5.6% relative drop of college-educated workforce and a 2.9% relative drop of real wages of college-educated workers per decade than one at the 25th percentile of exposure to import competition. Figure 1 shows graphically the predicted effect of import competition on the growth of college-educated workers (panel 1) and college wage premium (panel 2) for the 60 largest metropolitan areas.

1 The main threat to the identification of the heterogeneous effects will be the potential correlation of skill intensity in local services with other local characteristics. By construction, the interaction of those covariates and the change in import penetration will also correlate with my variable of interest. I address the issue by including a large set of controls interacting the China shock with local manufacturing characteristics, demographic variables, and the export potential of the local labor markets. These controls account for confounding sources of heterogeneity as well as unobserved differences in exposure to trade competition.

CROSS-SECTOR LABOR REALLOCATION

Second, I carry out the analysis of labor reallocation across sectors as the mechanism for trade-induced regional divergence. I introduce a novel measure of 'labor market exposure' to the China shock for service industries. This measure exploits occupational similarities between sectors, the geographical distribution of directly exposed industries, and the uneven geographical co-location of different manufacturing and non-manufacturing industries. It captures the changes in the local labor supply that a service industry faces following the contraction of employment demand of directly exposed manufacturing industries.

Armed with my measure of 'labor market exposure' to the China shock I quantify the cross-sector labor reallocation and I analyze whether local service industries benefit from the negative shock to the rest of local industries. Empirically, I regress growth rates of employment and wages of industry-city pairs on my measure of 'labor market exposure' to the China shock. This setting compares the growth rate of employment and wages of the same industry across locations with distinct levels of exposure to the China shock.

I find that skill-intensive industries leverage out the flow of workers leaving the local manufacturing sector. Skilled services in highly exposed locations have access to a larger pool of resources, they benefit from agglomeration externalities, offer higher wages, and they attract skilled workers from other regions. Empirically, I find that cities with higher a skill density undergo a faster transition from manufacturing to service industries.

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Firm-level heterogeneity in the impact of the COVID-19 pandemic

ALEJANDRO FERNÁNDEZ CEREZO, BEATRIZ GONZÁLEZ, MARIO IZQUIERDO AND ENRIQUE MORAL-BENITO

Summary of Banco de España Working Paper no. 2120

We explore the heterogeneity across firms in the impact of and response to the COVID-19 shock using a survey conducted in November 2020 matched to balance-sheet information on firm characteristics. According to our results, the impact of the COVID-19 shock was larger in the case of small, young and less productive firms located in urban areas. Moreover, these firms resorted relatively more to public-guaranteed loans, tax deferrals, and furlough schemes (ERTEs). More indebted companies, which were not hit relatively harder by the shock, also perceived public-guaranteed loans as very useful. Firms consider that uncertainty represents a key hindrance to the recovery while the announcement of the effectiveness of the Pfizer vaccine on November 9th 2020 increased significantly firms' subjective recovery expectations.

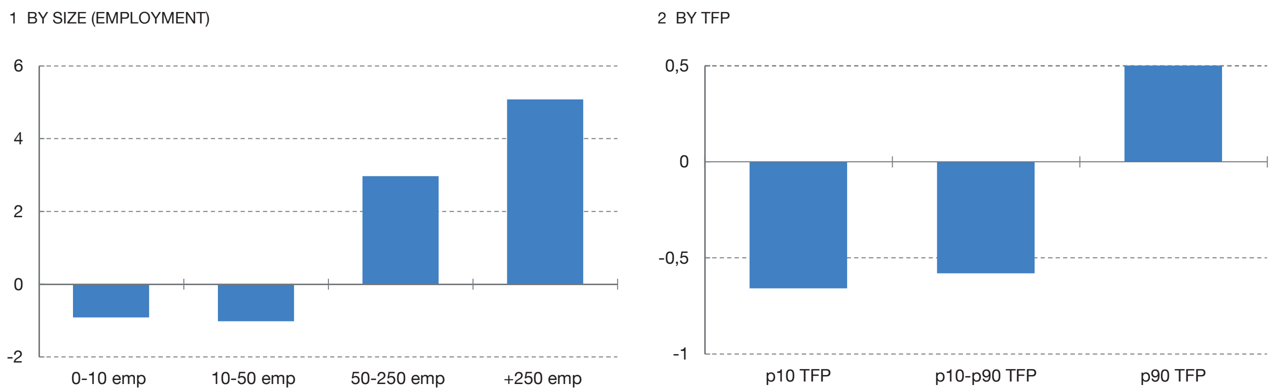
The COVID-19 crisis represents a shock of unprecedented magnitude, with two additional features that are worth highlighting. First, this crisis has had a very asymmetric impact across sectors, regions, workers and firms (Puy and Rawdanowicz, 2021; Bloom et al. 2021; Crossley et al., 2021). Second, the economic policy response has generally been swift and resolute, which has contributed to mitigating its adverse economic effects (Thygesen, 2021), and firms adopted measures to mitigate the disruptive effects on their activity (IFC, 2021).

We present new evidence from Spain on the asymmetric impact of the COVID-19 crisis across different dimensions and the responses of firms to the shock. Our paper exploits the information provided by the new Banco de España Business Activity Survey (EBAE in Spanish) in order to shed light on these issues. The EBAE survey was launched in November 2020 and 4,004 valid responses were received. A unique feature of this survey is that it can be matched to Balance Sheet Data allowing to investigate the impact of the shock depending on firms' ex-ante characteristics, such as productivity, size or age.

THE IMPACT OF THE COVID-19 SHOCK ACROSS FIRMS

To analyze the type of firms most impacted by the COVID-19 shock, we investigate which firm characteristics correlate with the fall in activity at the firm level, once we control for sectoral differences. First, firm size is a key variable to explain the severity of the effects of the pandemic in firms´ turnover. Chart 1, Panel A shows the changes in turnover for different size brackets in deviations from the average

Chart 1
HETEROGENEITY OF THE IMPACT OF THE COVID-19 ON TURNOVER



NOTE: Average year on year percentage change in turnover, by firm size (employees - Panel A) and productivity (TFP – Panel B), as deviations from the industry mean.

change in the sector. Smaller firms suffered a steeper decline in their activity in 2020 than larger firms. In particular, turnover fell by 1.3 pp more than the sector mean at firms with fewer than ten employees, while at larger firms it was 4.4 pp higher. The likeliest explanation for these differences is the greater vulnerability of small firms to shocks. Chart 1, Panel B shows that less productive firms suffered a larger decrease in turnover. This result may be suggestive evidence of cleansing effects, typically associated to crisis episodes, so this crisis may potentially trigger a productivity-enhancing process of resource reallocation within firms.

FIRM-LEVEL RESPONSES AND POLICY MEASURES IN THE WAKE OF THE COVID-19 SHOCK

Firm-level heterogeneity in the way companies responded to the COVID-19 shock was also remarkable. Our results show that firms were able to absorb part of the shock and they did not fully translate the decrease in turnover to employment[1], although employment fell more in those firms with a higher share of temporary workers. Once we control for the size of the shock and other firm-level characteristics, higher TFP firms showed a larger absorption capacity showing a lower pass-through of the turnover fall to employment.

Regarding the degree of uptake of the main policy measures, Public guaranteed loans (ICO loans) were the policy measure deemed as more useful, with nearly 43% of respondents stating it was very helpful to deal with the COVID-19 shock, followed by furlough schemes (ERTEs- 29%), tax deferrals (24%) and renegotiation of rental payments (21%). Those firms more severely hit by the COVID shock, measured by their decrease in turnover, used all these policy tools more intensively, especially ERTEs.

But there is also high degree of heterogeneity in the usefulness of policy measures declared by the firms across different dimensions. After controlling for firm characteristics, ERTEs were deemed as especially useful for medium-sized firms (10-250 employees), less productive and urban firms. It is notable that we do not find that firms with a higher share of temporary workers perceived ERTEs as more useful for them. Loans with public guarantees were perceived as more useful for less productive, younger, lower cash buffers and more indebted companies. Overall, we find that the policies implemented in order to mitigate the impact of the shock have been more widely used by smaller and less productive firms, with a larger share of temporary workers, high debts levels and low cash buffers, although we find substantial heterogeneity depending on the measure.

Finally, we can use the unexpected announcement of the effectiveness of the Pfizer vaccine on November 9th as a natural experiment to compare the recovery expectations of firms that filled the survey before and after that date. We observe that the share of firms expecting full recovery by the end of 2021 increased by nearly 25% after the vaccine announcement. These differences are significant when accounting for firm's characteristics within the same sector-region pair and remain robust when only considering responses the three days immediately before and after the announcement. This finding points to the importance of forward guidance by public policies, to the extent possible, offering a predictable environment to economic agents allowing them to long-term planning.

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1 In particular, 38 % and 63 % of firms declared a decrease in employment and turnover respectively.

Fed's financial stability concerns and monetary policy[1]

KLODIANA ISTREFI, FLORENS ODENDAHL AND GIULIA SESTIERI

Summary of Banco de España Working Paper no. 2110

Even though the Fed does not have an explicit financial stability objective extending beyond its supervisory responsibilities, the public speeches of Fed officials, during the period 1997 to 2013, reveal that a higher speaking time or a higher negative tone on Financial Stability topics correlate with a more accommodative monetary policy stance. In contrast, communication on Housing topics correlates with a tighter policy stance. These results are mainly driven by the information in speeches of regional Fed presidents.

The Federal Reserve does not have an explicit financial stability objective that extends beyond its supervisory responsibilities. Nonetheless, a narrow interpretation of the dual mandate, i.e. ignoring any interactions between monetary policy and financial stability risks does not seem credible (see Kashyap and Siegert, 2020). Indeed, even in the absence of an institutionalised communication strategy, Federal Open Market Committee (FOMC) members do express their views on financial stability risks and policy consequences through informal public remarks.

Therefore, we assess what Fed speeches reveal about financial stability concerns and whether there is a systematic relationship between higher proportion of time devoted to this topic and the Fed's monetary policy decisions (Istrefi, Odendahl and Sestieri, 2021). We focused on speeches because they give the speaker discretion over the content, and, to some extent, reflect debates and opinions expressed in FOMC meetings that have guided policy (Bernanke, 2015).

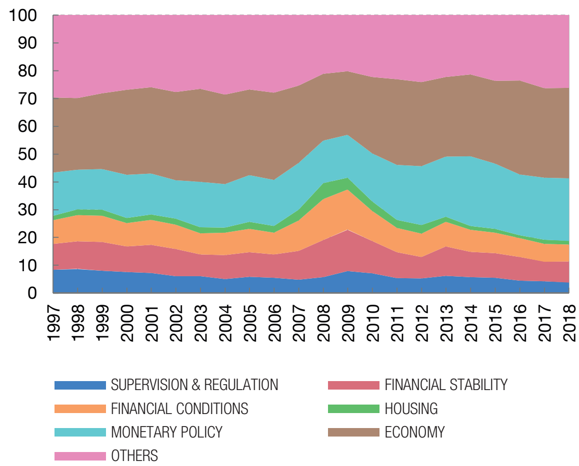
1 A similar version of this article was first published in Banque de France's Eco Notepad as blog post n°193 and as a SUERF Policy Note No. 80.

SPEECH-BASED FINANCIAL STABILITY INDICATOR

We computed speeches' topic proportions, using both a latent Dirichlet allocation (LDA) and a human refinement of the extracted LDA topics. Our dataset comprises around 3,850 public speeches given during the period 1997-2018 by Fed officials, i.e. the Chair of the Federal Reserve, the other members of the Board of Governors and the presidents of the 12 Federal Reserve Banks (FRB).

Chart 1

MAIN TOPICS COVERED IN FED SPEECHES

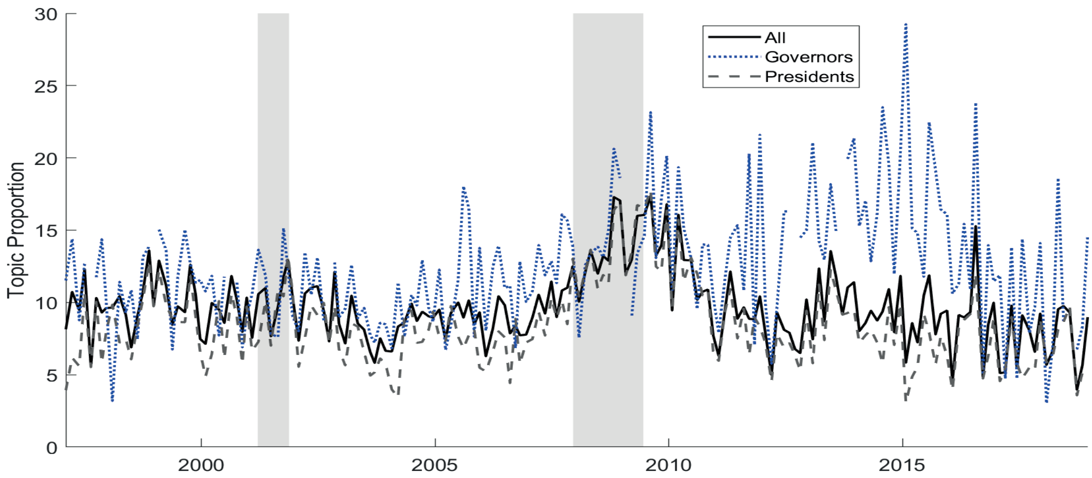


NOTE: The chart shows the proportion of six topics extracted from the Fed speeches for the period 1997 to 2018. The topic proportions displayed are annual averages.

Chart 1 shows the topic proportion of the six (of a total of 12) most important topics of Fed speeches at an annual frequency. We observe that, while Fed officials speak predominantly about issues related to the Economy and Monetary Policy (about 40-50%), in the period around the global financial crisis they dedicated a higher proportion of speaking time to Financial Stability and other financial-related topics.

Chart 2 zooms in on the financial stability topic, which relates mainly to communication about excessive behavior in financial markets or vulnerabilities in the financial system, showing the topic proportion at a FOMC meeting frequency. It becomes apparent that, for instance, members of the

Chart 2
FINANCIAL STABILITY TOPIC PROPORTION BY TYPE OF SPEAKER, 1997 TO 2018



NOTE: The chart shows the Financial Stability topic proportion at a FOMC meeting frequency by type of speaker: the Board members (Governors), the FRB presidents (Presidents) and both groups together (All). US recession periods are marked in grey.

Board of Governors devote, on average, a higher proportion of their speeches to Financial Stability than FRB presidents; especially after the global financial crisis (GFC). However, during the GFC, FRB presidents also significantly increased their speaking time on this topic.

DO SPEECHES CONTAIN A SIGNAL ABOUT MONETARY POLICY DECISIONS?

Next, we incorporate our speech-based indicator of financial stability into a Taylor-rule that contains a lag of the policy rate, the Fed's Greenbook forecasts of inflation and the output gap, and our financial stability speech-indicator. The policy rate is measured by the Federal Funds Rate (FFR) for the pre-Zero Lower Bound period (up to November 2008), and by the Shadow Rate (Wu and Xia, 2016) for the period after, to take into account the Fed's unconventional monetary policy. Results show that the proportion of financial stability communication prior to FOMC meetings is a relevant predictor for FFR changes, in particular for the period before the GFC. In other words, the intensity of speeches on financial stability provides additional information beyond what is captured by the Fed's internal forecasts of output and inflation. All other things being equal, an increase in the Financial Stability topic proportion is associated with a lower FFR, meaning an easing of monetary policy. This result is robust to different specifications of the Taylor rule and to the inclusion of standard financial indicators based on market data, such as the VIX.

These findings suggest that the Fed has rather acted to "clean" the damages than to "lean" against financial imbalances, internalising the negative impact of financial stability risks to the economy by setting a more accommodative monetary policy stance (see also Friedrich et al., 2019). Interestingly, we uncover a "leaning" stance when considering housing market concerns, i.e. when we include Housing topic in the Taylor-rule the coefficient is positive and significant.

DOES IT MATTER WHO THE SPEAKER IS?

The Taylor-rule coefficient associated with the financial stability speech-indicator have the same sign for speeches of the Fed Chair, the Governors and the FRB presidents.

However, we find that the FRB presidents' speeches contain a stronger signal for the likely direction of monetary policy (this result is not driven by speeches of New York Fed president). The fact that FRB presidents have less specialised positions than Governors, are more numerous and flexible in choosing the topics of their speeches, could rationalize this result.

Hence, even though FRB presidents are often criticised for cacophony by the financial press and market participants (e.g., see Olson and Wessels, 2016), our analysis suggests that their communication provides useful information for policy decisions according to a standard monetary policy reaction function.

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Journal of Financial and Quantitative Analysis
Related DT: 1908. Accepted: May 2021

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Environmental and Resource Economics
Accepted: 03 July 2021

EXTERNAL ADJUSTMENT WITH A COMMON CURRENCY: THE CASE OF THE EURO AREA

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Empirical Economics
Related DT: 1936. Accepted: 08 July 2021

THE CHILD PENALTY: EVIDENCE FROM SPAIN

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Accepted: 14 July 2021

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Related DT: 2038. Accepted: 30 Aug 2021

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Economics Letters
Volume 208, Nov 2021, Art 110080
Related DT: 2117. Accepted: 23 March 2021. Published online: 16 Sept 2021

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Related DT: 1635. Accepted: 6 Sept 2021

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Related DT: 1939. Accepted and published online: 15 Sept 2021

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Journal of International Money and Finance

Related DT: 1925. Accepted: 28 Sept 2021

THE DECLINE IN PUBLIC INVESTMENT: “SOCIAL DOMINANCE” OR TOO-RIGID FISCAL RULES?

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Related DT: 2025. Accepted: 5 Oct 2021

SHOULD THE ECB ADJUST ITS STRATEGY IN THE FACE OF A LOWER R★?

PHILIPPE ANDRADE, JORDI GALÍ, HERVÉ LE BIHAN AND JULIEN MATHERON

Journal of Economic Dynamics and Control

Volume 133, Dec 2021, Art 104207

Accepted and published online: 10 Sept 2021

Recent conferences

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FOURTH ANNUAL RESEARCH CONFERENCE

On-line, 28-29 September 2021

On 28-29 September 2021, the Banco de España hosted its Fourth Annual Research Conference. The conference was co-organized with Jan Eeckhout (Universitat Pompeu Fabra). This year's topic was "Market Power in the Digital Economy: Measurement, Causes, Consequences and Policies". The conference counted with the participation of leading scholars such as Ufuk Akcigit (University of Chicago), Mary Amiti (Federal Reserve Bank of New York), José Azar (IESE), David Baqaee (UCLA), Corina Boar (New York University), Chiara Criscuolo (OECD), Virgiliu Midrigan (NYU), Simon Mongey (University of Chicago), Michael Peters (Yale), Fiona Scott Morton (Yale), Chad Syverson (University of Chicago), and Tommaso Valleti (Imperial College London), among others.

Conference program

JOINT CEPR AND SEVENTH BANCO DE ESPAÑA ECONOMIC HISTORY SEMINAR

On-line, 8 October 2021

Banco de España organized jointly with CEPR the VII Seminar in Economic History, which was held on October 8th 2021. The Seminar discussed current academic research in Economic History.

Conference program

THIRD CONFERENCE ON FINANCIAL STABILITY

Online, 18-19 October 2021

Banco de España in cooperation with CEMFI organizes a series of biennial conferences to promote the research and discussion of topics related to macroprudential policy and financial stability among academics, practitioners, and policy-makers. The third conference took place at the Banco de España's headquarters in Madrid in a hybrid format. The keynote speaker was Randal Quarles, Vice Chair for Supervision of the Federal Reserve Board and Chair of the Financial Stability Board. Pablo Hernández de Cos, Governor of the Banco de España, opened the conference. The program also included a panel session on "Central bank digital currencies and financial stability", chaired by Margarita Delgado, Deputy Governor of the Banco de España. The invited panelists were Markus Brunnermeier (Princeton University), Jean-Pierre Landau (Sciences Po) and Jon Cunliffe (Bank of England).

Conference program

Recent economic research seminars

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STOCK MARKET PARTICIPATION, INEQUALITY AND MONETARY POLICY (JOINT WITH DAVIDE MELCANGI)

VINCENT STERK (UCL)

10/05/2021

WHY DOES CAPITAL FLOW FROM EQUAL TO UNEQUAL COUNTRIES?

KURT MITMAN (IIES)

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DO BANKS MITIGATE CARBON RISK?

MARCIN KACPERCZYK (IMPERIAL COLLEGE LONDON)

19/05/2021

MACROECONOMIC IMPLICATIONS OF COVID-19: CAN NEGATIVE SUPPLY SHOCKS CAUSE DEMAND SHORTAGES?

VERONICA GUERRIERI (U. CHICAGO)

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GENDER PROMOTION GAPS: CAREER ASPIRATIONS AND WORKPLACE DISCRIMINATION

GHAZALA AZMAT (SCIENCES PO)

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EXORBITANT PRIVILEGE? THE BOND MARKET SUBSIDY OF PROSPECTIVE FALLEN ANGELS

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THE LEGAL SIDE OF SOVEREIGN DEFAULT

AITOR ERCE (U. NAVARRA)

23/06/2021

GENDER AND THE DYNAMICS OF ECONOMIC SEMINARS

ALICIA MODESTINO (NORTHEASTERN UNIVERSITY)

30/06/2021

SAVING BEHAVIOR ACROSS THE WEALTH DISTRIBUTION: THE IMPORTANCE OF CAPITAL GAINS

GISLE NATVIK (BI NORWEGIAN BUSINESS SCHOOL)

08/09/2021

CREDIT ALLOCATION AND MACROECONOMIC FLUCTUATIONS

EMIL VERNER (MIT)

15/09/2021

DEINDUSTRIALIZATION AND INDUSTRY POLARIZATION

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22/09/2021

A Q THEORY OF BANKS

JULIANE BEGENAU (STANFORD GSB)

13/10/2021

THE EFFECT OF MACROECONOMIC UNCERTAINTY ON HOUSEHOLD SPENDING

OLIVIER COIBION (UT AUSTIN AND NBER)

21/10/2021

Upcoming conferences

9TH RESEARCH WORKSHOP BANCO DE ESPAÑA – CEMFI

15 November 2021

Next November 15th 2021 will take place the Research Workshop Banco de España – CEMFI , and will be held online.

Conference program

Announcements

LAUNCHING OF THE NEW BANCO DE ESPAÑA'S WEBSITE WITH A FOCUS ON CLIMATE CHANGE

October-November 2021

During October-November 2021, Banco de España will be launching a new website specifically focused on climate change and the transition towards a more sustainable economy. This website will provide a wide variety of details on how these issues are treated within Banco de España, both from an institutional/organizational point of view and from the perspective of financial stability, monetary policy and economic research. The new webpage will also provide quick access to the different research publications and public interventions conducted by Banco de España's staff on these topics.

The climate-change focus of the new website complements the creation, in early 2021, of the Climate Change Analysis Group (Grupo de Análisis del Cambio Climático) within the Banco de España. The objective of this group is to carry out analysis and research on the likely impact of climate change on areas such as price stability, financial stability and growth prospects, and whether (and how) should Central Banks tackle these.

ANGELA DENIS

Microeconomic Studies Division

ANGELA DENIS joined the Microeconomic Analysis Division at the Banco de España in September 2021. She holds a Ph.D. in Economics from the University of Chicago (June 2021). She also holds a Master's in Applied Economics from Universidad de Chile, and an undergraduate degree in Mathematical Engineering from the same institution. During her studies at Chicago, Angela was a lecturer in econometrics at the undergraduate level and a teaching assistant in econometrics, at undergraduate and graduate levels.

Angela's primary research fields are labor and health, with a particular focus on topics of aging. In her paper "Heterogeneous and uncertain health dynamics and working decisions of older adults", she studies how labor-participation decisions of older individuals depend on their beliefs about their health dynamics with age. Using the Health and Retirement Study, the paper documents heterogeneity in health profiles with age. Leveraging data on survival expectations, she studies health beliefs within a Bayesian learning framework, and finds that individuals incorrectly believe their health will deteriorate too fast. She then studies the relationship between those beliefs and working decision of older adults using machine learning tools and finds that individuals expecting better health work more on average, and that eliminating initial bias in beliefs would increase labor-force participation by more than 2 percentage points.

Angela is also pursuing research in the dynamics of health of the older population, and in the effects of caregiving in the health of the care-recipient.

RICARDO BARAHONA

Financial Analysis División

RICARDO BARAHONA joined the Financial Analysis Division at the Banco de España in October 2021. He holds a Ph.D. in Finance from Tilburg University (October 2021). Prior to his doctoral studies, Ricardo obtained his MSc in Finance and BSc in Economics Nova School of Business and Economics in Lisbon. In the past two years, he was also a post-doctoral researcher at Erasmus University Rotterdam where he was the lecturer for the Stock Markets and Interest Rates, and Advanced Behavioral Finance courses. During his studies at Nova and Tilburg University he was also a teaching assistant for corporate finance, investments and econometrics courses.

Ricardo's research interests focus on how individual and institutional investor behavior shapes financial markets. In one of his papers (with Joost Driessen and Rik Frehen), he studies the link between risk exposure predictability and the price of risk. It explores how ambiguity aversion can affect the price of risk for hedging assets and how this is consistent with what is observed empirically in US stock markets. In a more recent paper (with Stefano Cassella and Kristy Jansen), he finds that professional mutual fund managers are prone to extrapolation bias and documents that having team managed funds reduce this behavioral bias. This result is robust to various alternative explanations and stems from teams inducing managers to reflect more on their decision making than if they would if they managed a fund alone.

Finally, in his job market paper, he investigates why mutual fund investors would buy financial products dominated by competing products. He finds that mutual fund intermediaries with misaligned incentives with their clients can guide clients to expensive index tracking mutual funds. This contrasts with index funds sold through more regulated channels, such as defined contribution pension plans, where the opposite happens; here intermediaries play a role in guiding investors to low fee index funds. Together, this evidence suggests potential policy implications in how to regulate the incentives of fund intermediaries such they are aligned with those of mutual fund investors.

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