

RESEARCH UPDATE

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Welcome to the Banco de España RESEARCH UPDATE

The Banco de España is pleased to announce the release of the Spring 2019 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.

As usual, this issue includes several feature articles summarizing policy-relevant findings from recent Banco de España projects in diverse areas of research. First, O. Arce, M. García-Posada, S. Mayordomo and S. Ongena show that both in Europe and in Spain negative interest rates alter banks' risk taking, particularly for lowly capitalized banks, but most importantly, do not affect credit supply. Second, M. Correa-López and B. de Blas argue that large US firms, by diffusing embodied technology through trade in intermediates, appear to drive Europe's output over the medium term. Third, H. Basso and O. Rachedi show that fiscal multipliers depend on the age structure of the economy. They argue that stimulus through government consumption spending could become a relatively less effective tool to spur economy activity due to ageing. Next, M. Almunia, P. Antràs, D. López-Rodríguez and E. Morales present evidence that falling domestic demand has led to an improvement in the foreign competitiveness of a subset of firms, rationalizing the export boom observed in Spain during the period 2010-13. Fifth, M. Bedayo, A. Estrada and J. Saurina take a long history look at credit cycles in Spain. Using data for nearly 150 years, they show that credit growth is more severely affected by recessions when bank capital levels are low. Finally, C. Barceló and E. Villanueva uncover evidence that a higher risk of job losses may prevent young individuals in Spain from forming a new household, since it not only delays the decision to buy a house, but also discourages the commitment to sign fixed-term rental contracts.

Moreover, this *Update* reports on other Banco de España research news, such as recent publications and forthcoming conferences. This issue also includes the research profile of Olympia Bover, the Director of the Department of Structural Analysis and Microeconomic Studies. The profile covers her main academic achievements, her current projects and the future challenges and opportunities of research in her field.

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
Ángel Estrada
Eva Ortega

Research Committee,
Banco de España

FEATURES

ADAPTING LENDING POLICIES WHEN NEGATIVE INTEREST RATES HIT BANKS' PROFITS

SUMMARY OF BANCO DE ESPAÑA WORKING PAPER N° 1832

ÓSCAR ARCE, MIGUEL GARCÍA-POSADA, SERGIO MAYORDOMO AND STEVEN ONGENA

We study the impact of negative interest rates on banks' lending and risk-taking using a large sample of euro banks and their individual answers to the Bank Lending Survey (BLS). We find that banks whose net interest income is adversely affected by negative rates are concurrently lowly capitalized, take less risk and adjust loan terms and conditions to shore up their risk weighted assets and capital ratios. These banks also increase non-interest charges more. But, importantly, we find no differences in banks' credit supply neither in the Euro area nor in Spain. These findings suggest that negative interest rates, while they may erode banks' unit lending margins, do not necessarily lead to lower volume of supplied credit.

Introduction

Following the meeting of the Governing Council on June 5, 2014, the ECB announced the reduction of the deposit facility rate (DFR) to -0.10%. This rate cut, together with other measures, aimed to stimulate the sustained recovery of the euro area inflation rate towards levels compatible with the mandate of price stability of this institution, which corresponds to a medium-term inflation rate close to but below 2%. Since then the DFR has experienced further reductions until -0.4% in March 2016, the level at which it currently stays. The reduction in the DFR has transmitted to other reference rates for bank lending such as Eonia and Euribor, (see Chart 1) and, consequently, it has been argued that low interest rates maintained for an extended period may reduce banks' unit lending margins.

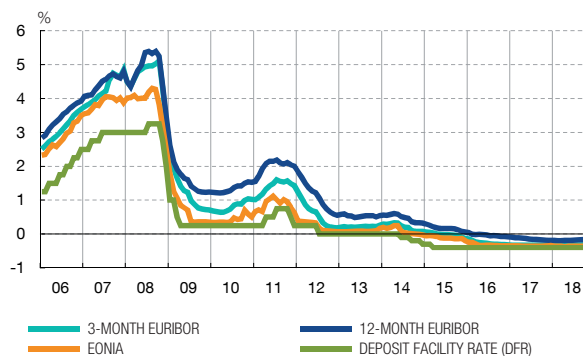
The recent empirical literature has explored a wide array of channels through which negative rates may harm banks' lending margins. A first channel relates to the degree of the banks' reliance on retail deposit funding, on which they typically find difficult to charge negative interest rates (Heider *et al.*, 2017; Schelling and Towbin, 2018). Secondly, banks maintaining excess liquidity may face a negative return on reserves (Demiralp *et al.*,

EVOLUTION OF INTEREST RATES

CHART 1

The chart shows the evolution of the deposit facility rate (DFR), EONIA and 3-month and 9-month Euribor for the period between the 1st of January 2006 and mid-September 2018.

OFFICIAL INTEREST RATES AND REFERENCE INTEREST RATES



SOURCE: European Central Bank.

2017; Basten and Mariathan, 2018). Finally, a low net worth may lead to binding capital constraints and limit banks' risk taking ability, hence restraining their capacity to raise lending margins by charging higher spreads to riskier borrowers (Brunnermeier and Koby, 2017).

In this paper we first offer new empirical evidence on the relevance of the various channels through which negative interest rates affect banks' net lending margins in the context of the recent experience of the Euro area. Then, we study the effect of the negative interest rates on banks' credit supply, loan terms and conditions and ultimately, on banks' risk-taking. To this aim, we exploit the non-anonymised answers to the Bank Lending Survey (iBLS) and the individual balance-sheet data (IBSI database) of a sample of 122 Euro area banks from 13 countries during the period between 2014Q2 and 2017Q3. This survey contains a question that deals explicitly with this issue. More specifically, banks are asked whether the ECB's negative deposit facility rate (DFR) contributed to a decrease or an increase in their net interest income. It allows to disentangle the effects of the negative DFR from other simultaneous monetary policy measures.

CHARACTERISTICS OF AFFECTED AND NON-AFFECTED BANKS (a)

TABLE 1

Affected banks are those that report, in their answers to the BLS, an adverse effect of the negative deposit facility rate on their net interest income. Non-affected banks report a neutral or positive effect. The sample comprises 122 banks from 13 euro area countries between 2014Q2-2017Q3.

Variable	Average of affected	Average of non-affected	Difference between averages	Significance (b)
Size (c)	10.69	10.67	0.02	
Capital ratio (d)	10.34	11.51	-1.17	***
Liquidity ratio (e)	8.75	6.92	1.83	***
Loan-to-deposit ratio (f)	0.27	0.69	-0.42	***
Deposit ratio (g)	42.67	37.05	5.62	***
Borrowing from the Eurosystem (h)	1.16	0.66	0.50	***
Excess liquidity (i)	2.63	1.68	0.96	***
Market share (j)	6.52	4.64	1.87	***

SOURCE: European Central Bank and Banco de España.

a Based on "Adapting lending policies when negative interest rates hit banks' profits" (O. Arce, M. García-Posada, S. Mayordomo and S. Ongena), Banco de España Working Paper 1832.

b *** significant at 1%, ** significant at 5%, * significant at 10%.

c Logarithm of total assets.

d Capital and reserves over total assets, in %.

e Cash, sovereign debt and deposits with the Eurosystem over total assets, in %.

f Loans to households and non-financial corporations over deposits by households and non-financial corporations, in logs.

g Deposits by households and non-financial corporations over total assets, in %.

h Total borrowing from the Eurosystem over total assets, in %.

i Excess liquidity (deposit facility + current account - minimum reserve requirements) over total assets, in %.

j Ratio between a bank's total assets and the total assets of the country's banking sector, in %.

Thus, we separate banks in two groups according to their responses: those that report a negative effect of the negative interest rates on their net interest income (henceforth, *affected banks*) and those that report a neutral or positive effect (henceforth, *non-affected banks*).

Relationship between negative interest rates and bank capital

Table 1 shows the average characteristics of *affected* and *non-affected* banks, as well as the difference between the averages of the two groups. Affected banks have lower capital ratios than non-affected ones (10.3% and 11.5%, respectively). A possible explanation is that, following a drop in the interest rate, the negative effect of lower unit lending margins on a bank's profit could be partially offset by raising the supply of loans or by adapting loan terms and conditions to take more risks. However, low bank capital may hinder the expansion of credit supply or greater risk taking because of its loss-absorbing capacity (Brunnermeier and Koby, 2017). Moreover, during the post crisis period low net worth banks were under particularly intense regulatory scrutiny about their lending policies and risk-taking behaviour. In addition, affected banks also have a higher share of deposits than non-affected ones (42.7% vs.

37.1%), and hold a higher fraction of excess liquidity (2.6% of total assets) than non-affected ones (1.7%).

Negative interest rates and credit supply

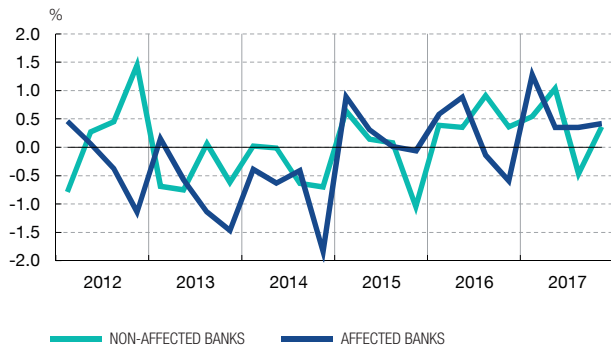
The next question to address is whether negative interest rates have a significant impact on banks' credit supply. In view of Chart 2, which shows the average growth rates of loans to non-financial corporations in these two groups of banks, one might conclude that there are not significant differences in terms of the total amount of credit supplied by affected banks and non-affected ones. In fact, several analyses based on multiple regressions corroborate the previous statement, independently on whether we measure credit supply by means of credit growth or credit standards.

Moreover, we also merge the answers to the BLS by the 10 Spanish banks participating in the survey with loan-level data from the Spanish credit register and banks' balance sheets collected for supervisory purposes. Consistently with the previous finding for the whole Euro area sample, the analysis based on detailed information at the loan level for Spain reveals that there are no significant differences in the variation of lending by those banks whose net interest income was affected by negative interest rates as compared to those that

EVOLUTION OF CREDIT TO NFCs IN AFFECTED AND NON-AFFECTED BANKS CHART 2

The chart shows the evolution of the deposit facility rate (DFR), EONIA and 3-month and 9-month Euribor for the period between the 1st of January 2006 and mid-September 2018.

QUARTERLY GROWTH RATE OF CREDIT TO NON-FINANCIAL CORPORATIONS



SOURCE: European Central Bank and Banco de España.

were not affected. Interestingly, following the inception of a negative DFR in June 2014 affected banks cut their supply of credit to riskier firms by more than unaffected banks.

Negative interest rates, bank capital and risk taking

In line with the previous evidence, it is worth analysing whether those banks affected by negative interest rates adjust their credit portfolio by granting safer loans, i.e., loans with shorter maturity and higher collateral requirements, in order to improve their risk-weighted assets and, in turn, their regulatory capital. The results based on the European sample reveal that affected banks tighten the terms and conditions of their loans by reducing their average maturity and increasing commissions and fees more than non-affected banks. In addition, affected banks exhibit a lower risk tolerance, as reported to the BLS. The results obtained with the subsample of Spanish banks are consistent with those obtained with the European sample, and they also provide evidence on higher collateral requirements by affected banks.

Intuitively, negative interest rates may limit the accumulation of capital organically, through retained earnings, by some banks. This implies that negative interest rates have an adverse effect on the net worth of those banks. Thus, a reduction of banks' net worth that places some banks close to the regulatory requirements will limit their capacity to take new risks in order to make higher profits. This will normally lead to a lower level of risk-weighted assets. Given that, as explained before, the optimisation of regulatory

capital ratios is not carried out through a reduction in credit supply, the adjustment of loan terms and conditions is the main channel through which risk-weighted assets are optimised. A regression analysis for the period 2012-2017 for the same sample of European banks corroborates this hypothesis and shows that, following the introduction of negative interest rates, the average ratio of risk-weighted assets to total assets of affected banks fell by 2.7 pp more than that of non-affected banks. This is a sizeable effect, as this reduction accounts for a 5.2% of the average ratio of risk-weighted assets over total assets in that period.

Conclusion

This paper offers new empirical evidence on the impact of negative interest rates on banks' credit policies and risk taking in the context of the recent experience of the Euro area. We find that banks whose net interest income is adversely affected by negative rates are concurrently lowly capitalized, take less risk and adjust loan terms and conditions to shore up their risk weighted assets and capital ratios. Importantly, there are no significant differences in terms of the supply of credit by those banks whose net lending margins are affected by negative interest rates and those that are not, which can be interpreted in favour of the hypothesis that the policy rates in the Euro area are above the so-called reversal rate, below which a further reduction of the rate may trigger a contraction of the total supply of loans (see Brunnermeier and Koby, 2017).

The Capital Requirements Directive (CRD IV) and the Capital Requirements Regulation (CRR), in place since January 2014, envisage several capital-based measures to enhance the resilience of the European financial system and limit the build-up of vulnerabilities. Besides macroprudential capital buffers that should be fully implemented as of January 2022, regulators might also require additional buffers to individual financial institutions under Pillar 2 based on either a macro- or micro-prudential perspective.¹ Thus, the results of this paper should not be interpreted based solely on the risk-taking channel of monetary policy but on the interaction of monetary and prudential policies.

¹ In addition to those capital requirements, banks could opt to have capital ratios well above the required ones either for signaling purposes, shock absorption, or their proper functioning in periods of stress.

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FARAWAY, SO CLOSE! TECHNOLOGY DIFFUSION AND FIRM HETEROGENEITY IN THE MEDIUM TERM CYCLE OF ADVANCED ECONOMIES

SUMMARY OF BANCO DE ESPAÑA WORKING PAPER N° 1835

MÓNICA CORREA-LÓPEZ AND BEATRIZ DE BLAS

Large US firms, by diffusing embodied technology through trade in intermediates, appear to drive Europe's output over the medium term. We develop a two-country model of endogenous growth in varieties, cross-country firm heterogeneity and trade to match this evidence. A US TFP slowdown generates a pronounced recession in Europe, while a negative investment-specific shock also imparts a protracted recession in the US since GDP and firm productivity stay below trend beyond a decade. Heterogeneous firms, with endogenously changing productivity cut-offs, and the responses of innovators and adopters determine medium-term adjustment, as import switching processes unfold.

Since the end of World War II, advanced economies have experienced long-lasting swings in economic activity (e.g., Crafts and Toniolo, 1996, Temin, 2002). These prolonged swings give rise to business cycles of stronger volatility and persistence than conventionally analyzed. In a seminal contribution, Comin and Gertler (2006) characterize them for the US economy and term them “medium term cycles”. In Correa-López and de Blas (2018), we take a closer look at the historical data, uncovering that, over the medium term, output and investment fluctuations among European countries have been even more volatile and persistent than in the US. In addition, US output, investment and embodied productivity¹ show a lead and a strong correlation with, respectively, European output, investment and embodied productivity at medium frequencies, as Figure 1 illustrates. To understand what drives such comovements, we present evidence of international diffusion of US technologies via trade. Furthermore, we show that larger US firms may play a significant role in explaining the observed cross-country aggregate patterns through their relevance in trade. Building on Comin and Gertler (2006), we develop a quantitative macroeconomic model of two advanced economies in an attempt to match the stylized facts found in the data.

¹ The relative price of capital captures embodied technical change (or productivity) in that a decline in the relative price of capital reflects positive technological progress (Comin and Gertler, 2006). It is measured as the investment deflator over the GDP deflator.

Stylized features of international medium term comovement

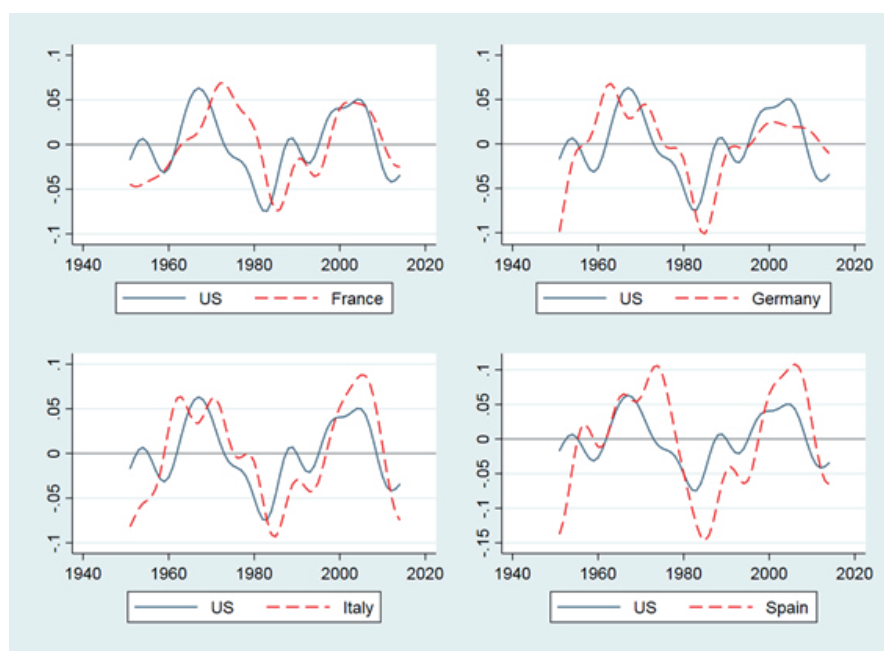
The international medium-term comovement pattern identified is suggestive of an important role for persistent US shocks in generating medium term fluctuations across the advanced world. In particular, at the medium frequency, US R&D spending and patents lead and strongly correlate with the output and investment cycles of Europe. Furthermore, there are strong medium frequency comovements between, on the one hand, the volume of bilateral exports and the number of intermediate varieties exported from the US and, on the other, the output and investment cycles of its main European trading partners, as illustrated in Table 1. The medium frequency fluctuations in US bilateral trade variables display a small lead over Europe's medium term cycle, suggesting that, once exported, these technologies diffuse rapidly in advanced economies.

Importantly, it appears that large firms affect the transmission of US technology cycles. The evidence presented in Table 2 shows that fluctuations in size of medium and large firms are significantly more correlated with the European output and investment cycles than fluctuations in size of smaller firms over the medium term. In addition, medium-sized and, especially, large manufacturing firms in the US drive the medium term cycle of US bilateral exports, placing them at the forefront of international technology diffusion.

Taken together, the evidence suggests that larger US firms, by diffusing embodied technology through trade in manufacturing intermediates, may determine Europe's output at relatively low frequencies. These stylized features reinforce the importance to explore the role of firm heterogeneity in the international transmission of shocks via traded intermediates in the capital goods sector, a key driver of embodied growth.

The model

To account for this evidence, Correa-López and de Blas (2018) propose a two-country, asymmetric macroeconomic model with three distinctive elements. First, endogenous growth is driven by embodied technical change in new intermediate varieties for the capital goods sector (e.g., Romer, 1990, Comin and



NOTE: Using the band-pass filter to extract the medium frequency component, the vertical axis measures the percent deviation, in unitary terms, of output per capita from trend.

Gertler, 2006); second, there is cross-country firm heterogeneity in the production of such intermediates (e.g., Melitz, 2003, Ghironi and Melitz, 2005,); and third, countries trade in varieties (e.g., Comin et al., 2014, Santacreu, 2015). Newly developed intermediates in the capital goods sector are the result of innovation and adoption investments that both countries may undertake. Disembodied technical change in the production of final output is the second source of growth that, for simplicity, is exogenous.

The model introduces firm heterogeneity in the production of specialized intermediates adapting the framework pioneered in Melitz (2003), where firms differ in their productivity level and use labor in production. Productivity cut-offs respond to demand (negatively) and costs (positively) variables, and select firms into producing either for the domestic market or for both the domestic and the exporting markets. In turn, the domestic and the exporting productivity cut-offs determine the probability of exporting. Holding the other productivity cut-off constant, an increase in the domestic (exporting) one, increases (reduces) the probability of exporting. The number of varieties produced domestically together with the probability of exporting determine the number of traded intermediates. In a model of endogenous growth in varieties such as this, productivity cut-offs exhibit long-term dynamics associated to the steady-state growth rate of the

economy and short- to medium-term dynamics of adjustment after exogenous disturbances. The latter turns out to be critical for the international transmission of shocks.

Calibration and balanced growth

The model is calibrated for two advanced economies, where the US features as the leader, and its dynamic response assessed after embodied and disembodied technological disturbances, often considered the main drivers of short-term fluctuations (e.g., Backus et al., 1992, Fisher, 2006). The benchmark calibration implies that 59% of growth in output per working age person in the long-run is explained by embodied technical change and 41% by disembodied technical change, consistent with the quantitative evidence from steady-state US growth decompositions (Greenwood et al., 1997, Cummins and Violante, 2002).

Macroeconomic adjustment over the medium term

The model produces productivity cut-offs that vary noticeably across the ten-year horizon, countries and shocks. Consider a negative TFP shock in the US. As the US real wage falls, the number of US varieties (or innovations) exported initially rises since some

NUMBER OF VARIETIES TRADED AND THE EUROPEAN MEDIUM TERM CYCLE
TABLE 1

US varieties exported

	France	Germany	Italy	Spain
GDP per working age population				
Lag 0	0.6035*	0.8419*	0.6189*	0.7242*
Lag 1	0.6189*	0.8255*	0.6193*	0.6564*
Lag 2	0.5461*	0.7416*	0.5604*	0.6091*
Lag 3	0.2579	0.4662*	0.4204*	0.5768*
Investment per working age population				
Lag 0	0.7107*	0.7696*	0.5598*	0.7092*
Lag 1	0.6903*	0.7647*	0.5631*	0.6167*
Lag 2	0.5966*	0.6778*	0.5023*	0.5463*
Lag 3	0.3474*	0.4244*	0.3626*	0.4983*
Relative price of capital				
Lag 0	-0.4485*	-0.3533*	-0.7024*	-0.4738*
Lag 1	-0.4055*	-0.3044	-0.6203*	-0.4433*
Lag 2	-0.4018*	-0.3067	-0.5712*	-0.4482*
Lag 3	-0.4052*	-0.292	-0.5680*	-0.4702*

NOTE: Correlation coefficients in the medium-frequency component. Varieties are measured as the non filtered number of SITC rev. 2 categories up to the 5- digit disaggregation in manufacturing (excl. consumption goods) with a traded value greater than \$1 mn as reported by the importer. Correlations are computed for 1980-2014 and their significance is reported at the 5 percent level.

US MANUFACTURING FIRM SIZE AND THE EUROPEAN MEDIUM TERM CYCLE
TABLE 2

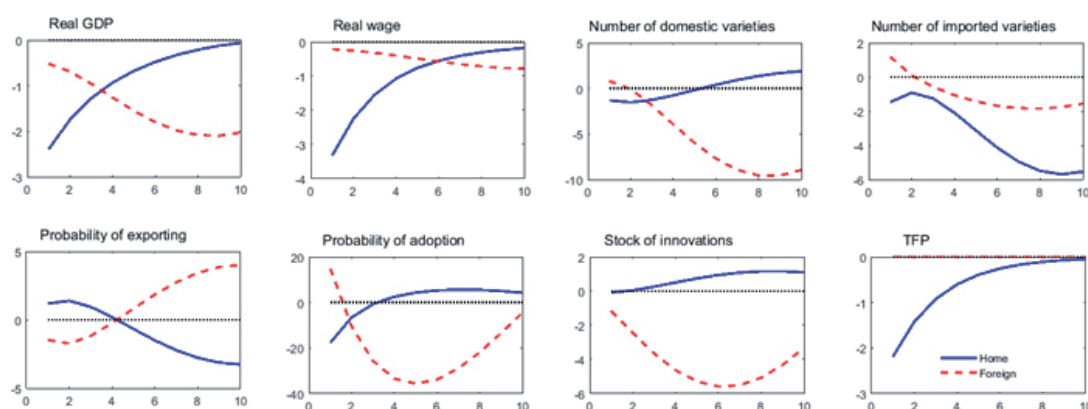
US firm size distribution

	France	Germany	Italy	Spain
GDP per working age population				
Micro (1-9)	-0.1523*	0.1157*	0.0867	0.0287
Small (10-49)	0.0128	0.1134*	0.1777*	0.0710
Medium (50-249)	0.1510*	0.2793*	0.3033*	0.2135*
Large (>250)	0.4192*	0.3664*	0.4390*	0.3343*
Investment per working age population				
Lag 0	-0.1177*	0.3523*	-0.1060	0.1246*
Lag 1	-0.0793	0.3270*	-0.0369	0.1442*
Lag 2	0.0877	0.4664*	0.0962	0.2880*
Lag 3	0.1990*	0.4822*	0.2121*	0.3160*
Bilateral exports from the US to				
Lag 0	0.2967*	0.3176*	0.3759*	0.1787*
Lag 1	0.4861*	0.4333*	0.5039*	0.2030*
Lag 2	0.5427*	0.5208*	0.5791*	0.3674*
Lag 3	0.7941*	0.7116*	0.7615*	0.4495*

NOTE: Size is proxied by the number of employees (i.e. micro firms are those with 1 to 9 employees and so on). Period 1977-2014. Contemporaneous correlation coefficients in the medium-frequency component, where significance is reported at the 5% level.

intermediate manufacturers, facing a domestic recession, become exporters. That is, the probability of exporting and the number of exported varieties by US firms increase. This adjustment turns out to be critical for the follower country. Newly imported varieties from the leader produce efficiency gains in the production of investment in the follower, which staves off the recession

in the intermediate goods sector and redirects resources to domestic adoption. The latter, however, makes the recession in the follower economy very pronounced and, especially, persistent: the follower reduces investment on innovation substantially, prompting a large fall in the number of new domestic varieties that are, after all, the engine of recovery and future growth.



NOTE: The solid (blue) line depicts the adjustment of the Home country (US) while the dashed (red) line depicts the adjustment of the Foreign country (Europe) to a negative TFP shock in the US. The magnitude of the responses is reported in percentage point deviations from the balanced growth path over a ten year horizon.

As shown in Figure 2, over time, the US recession turns into a protracted foreign downturn, caused mostly by the long-lasting effects of lower embodied technology in the production of intermediates for the capital goods sector. All in all, the model predicts that trade, in quantities and varieties, stays below trend over a significantly long horizon.

On the other hand, our framework produces a distinct US adjustment after an embodied technological disturbance. In particular, the model predicts that a negative investment-specific shock can impart a very prolonged recession in the US since the productivity cut-offs may fall below trend beyond the ten year horizon. On this occasion, the domestic productivity slowdown is highly protracted due to the gradual adjustments of both the relative price of capital (persistently above baseline) and, especially, the real wage (persistently below baseline). The former supports investment activity in real terms, while the latter keeps exerting a downward pressure on costs, both allowing low productivity firms in manufacturing. This is suggestive of a protracted procyclical shift in the US firm productivity distribution occurring after a shock that directly impacts the investment sector, which may provide an additional explanation to the sustained productivity slowdown recorded in the US during the recent financial crisis (Reifschneider et al., 2015, Anzoategui et al., 2017).

Does the model fit the evidence?

The proposed model economy is simulated taking into account both types of technological shocks. Quantitatively, the framework outperforms standard international business cycle models in reproducing

data-like cross-country correlations in most macroeconomic aggregates. Among the novelties, the simulations show that large US exporters contribute strongly to the dynamics of the follower's GDP and investment over the medium term. These findings are consistent with the empirical evidence. Given our modelization of trade in new intermediate varieties produced by heterogeneous firms as the link across countries, a policy lesson calls for reconsidering the medium-term effects of an excessive reduction in innovation spending after a slowdown.

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THE YOUNG, THE OLD, AND THE GOVERNMENT: DEMOGRAPHICS AND FISCAL MULTIPLIERS

SUMMARY OF BANCO DE ESPAÑA WORKING PAPER N° 1837

HENRIQUE S. BASSO AND OMAR RACHEDI

Both advanced and developing economies are experiencing a rapid process of population aging that will shape macroeconomic dynamics over the next decades. Indeed, demographic changes affect not only long-run trends (Krueger and Ludwig, 2007; Aksoy et al., 2019; Carvalho et al., 2016), but also short-term fluctuations (Jaimovich and Siu, 2009; Wong, 2016). We argue that population aging can also influence the effectiveness of fiscal policy. This effectiveness is often summarized by the size of the fiscal multipliers. In this feature, we highlight a novel determinant of the size of the government consumption spending fiscal multipliers: the age structure of an economy.

Fiscal multipliers, which measure the dollar change in output following an exogenous increase in government consumption spending, are not constant structural parameters, but rather they depend on the characteristics of the economy. In Basso and Rachedi (2018), we study a panel of output, military spending, and demographic characteristics across U.S. states and document that federally-financed local fiscal multipliers rise with the share of young people in total population. We show that a parsimonious life-cycle open economy New Keynesian with credit market imperfections and age-specific labor supply elasticities can explain 87% of the link between local fiscal multipliers and demographics. Then, we use the model to study the implications of population aging and find that nowadays U.S. national government consumption spending multipliers are 38% lower than in 1980.

We focus on the differences across U.S. states to uncover the causal effect of demographics on fiscal multipliers. The identification comes from the cross-state variation in the share of young people in total population. As states' age structure can respond to government spending shocks through migration flows, we exploit the heterogeneity in fertility across U.S. states and instrument the share of young people with lagged birth rates. Then, we identify the government spending shocks by leveraging the heterogeneity in the geographical distribution of military spending, as in Nakamura and Steinsson (2014).

In our benchmark regression, whose results are reported in the first column of Table 1, the size of the local fiscal multiplier depends positively on the share of young people (aged 20-29) in total population: increasing the

share of young people by 1% above the average share across U.S. states raises the local output fiscal multiplier by 3.1%, from 1.51 up to 1.56. We run a comprehensive battery of robustness checks and find that the age sensitivity of local fiscal multipliers is always highly economically and statistically significant.

To rationalize the link between demographics and government spending multipliers, we build a life-cycle open-economy New Keynesian model with credit market imperfections and age-specific differences in labor supply and labor demand. We consider a staggered price setting model with two countries that belong to a monetary union. The household sector has a life-cycle structure, whereby individuals face three stages of life: young, mature, and old. This feature allows us to emphasize the heterogeneity across age groups and incorporate nominal rigidities and open economy interactions into a tractable environment. In this way, our model extends a standard two-country New Keynesian economy with a rich life-cycle structure.

The model features credit market imperfections. Households can trade capital and bonds but cannot perfectly smooth consumption because markets are incomplete. In the baseline model, we restrict further households' borrowing capacity with an ad-hoc constraint that does not allow any borrowing at all. Then, we consider age-specific differences in both labor supply and demand. In the empirically relevant case, young and old workers have a higher elasticity of labor supply than mature workers, and young labor is relatively less complementary to capital, which makes its labor demand to be more volatile. Age-specific differences in labor allow the model to be consistent with the high volatility of hours worked and hourly wages of young workers observed in the data.

How can demographics alter fiscal multipliers? The link is twofold. First, age-specific differences in labor supply and demand makes young employment much more responsive to government spending shocks than the employment of mature workers. Second, an economy with relatively more young households features a stronger demand channel. Since young households face a hump-shaped labor income over the life-cycle, they want to borrow and smooth lifetime consumption. Yet, this mechanism is limited by the presence of credit market imperfections, which boost the marginal propensity to consume of young households well above

LOCAL OUTPUT FISCAL MULTIPLIER – DATA VS. MODEL

TABLE 1

	Data	Model
Avg. Local Output Fiscal Multiplier	1.511	1.463
Sensitivity of Local Output Fiscal. Multiplier with States' Age Structure	0.047	0.039
Δ Local Output Fiscal Multiplier of 1%. Increase in Share Young People	3.1%	2.7%

AGE SENSITIVITY OF LOCAL OUTPUT FISCAL MULTIPLIER - CHANNELS

TABLE 2

	Data	Baseline Model	Constant Labor Supply Elasticity	No Capital Experience Complementarity	No Borrowing Constraint
Δ Local Output Fiscal Multiplier of 1% Increase in Share Young People	3.1%	2.7%	2.5%	1.6%	0.8%

the one of mature households, as it is in the data. Consequently, as the proportion of young workers increases, both labor and output react more sharply to a fiscal shock.

Although in the model also old individuals have a high marginal propensity to consume, the fiscal multiplier is small when the age structure tilts towards older ages. This result is due to the fact that the response of consumption can be decomposed into the product of the marginal propensity to consume and the response of income. Since old individuals contribute very little to the labor force, they experience a dampened rise in labor earnings following a government spending shock. As a result, the consumption of old individuals does not increase substantially notwithstanding their high marginal propensity to consume.

Column 2 of Table 1 reports the results of the quantitative analysis, and shows the model matches almost entirely the size of the local fiscal multiplier and explains 87% of the link between fiscal multipliers and demographics: increasing the share of young people by 1% above the average share across U.S. states raises the local output fiscal multiplier by 2.7%, from 1.463 up to 1.502.

The age sensitivity of local multipliers depends mostly on credit market imperfections. Indeed, Table 2 shows that when we eliminate the differences in the Frisch elasticity, the age sensitivity drops just by 10%, from 2% to 1.8%. Instead, when we also remove the ad-hoc borrowing constraint and let young households to borrow, the age sensitivity equals 0.9%. Hence, even in absence of the ad-hoc borrowing constraint, the lack of complete markets in a life-cycle setting can generate the age sensitivity of local multipliers.

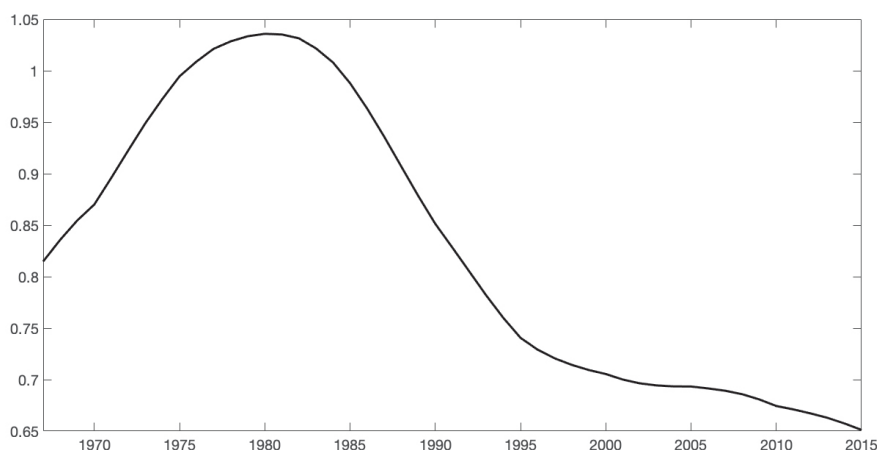
Focusing on regional data allows us to leverage local heterogeneity to identify fiscal multipliers and their sensitivity to demographics. Yet, the effectiveness of fiscal policy should also be evaluated at the national level, taking account of all general equilibrium mechanisms. Since our theoretical model is consistent with the empirical evidence on local multipliers, it represents an ideal laboratory to study whether the link between demographics and fiscal multipliers exist also at the national level. We evaluate in the model the effects of government spending on national output and find that demographics still matter: Table 3 shows that increasing the share of young people by 1% raises the national output fiscal multiplier by 1.1%.

AGE SENSITIVITY OF NATIONAL FISCAL MULTIPLIERS

TABLE 3

	Output	Consumption	Investment	Employment
Avg. National Fiscal Multiplier	0.82	0.61	-0.79	1.34
Δ National Fiscal Multiplier of 1% Increase in Share Young People	1.1%	1.5%	0.2%	1.0%

Since the model predicts that also national fiscal multipliers depend on the age structure of the population, we can now evaluate how the effectiveness of government spending has been shaped by the dramatic changes in the demographic structure of the U.S. population over the recent decades: the share of young people in total population plummeted by 30% from 1980 to 2015. We feed this shift in population shares into our model, and find substantial low-frequency variation in the size of the national fiscal multiplier over the recent decades, as reported in Figure 1. In particular, we find that nowadays the



national output fiscal multiplier is 38% lower than forty years ago. Since most advanced economies are experiencing a gradual population aging, the model suggests that over time fiscal stimulus through government consumption spending could become a relatively less effective tool to spur economy activity. This result has to be interpreted with two caveats. First, our analysis refers to the effectiveness of fiscal policy in normal times, abstracting from cases in which there is slack in the economy (e.g., Auerbach and Gorodnichenko, 2012; Rendahl, 2016) or the stance of monetary policy changes (Christiano et al., 2011; Woodford, 2011). Second, although fiscal policy – intended in the classical form of purchasing goods from the private sector – becomes less effective in spurring economic activity due to population aging, fiscal interventions targeted to specific age groups could be still highly expansionary.

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VENTING OUT: EXPORTS DURING A DOMESTIC SLUMP

SUMMARY OF BANCO DE ESPAÑA WORKING PAPER N° 1844

MIGUEL ALMUNIA, POL ANTRÀS, DAVID LÓPEZ-RODRÍGUEZ
AND EDUARDO MORALES

The recession of the late 2000s and early 2010s greatly impacted the southern economies of the euro area such as Portugal, Greece and Spain. The recommendation that firms in those economies should reduce unit labour costs to gain international competitiveness in response to domestic economic crises was based on the assumption that domestic and foreign supply decisions are not linked at the firm level. This paper examines whether exports can have a significant impact in mitigating domestic slumps through an alternative channel: the venting-out mechanism. The paradigmatic case of Spain shows that firms with a falling domestic demand that had the ability to reduce their usage of flexible inputs relative to fixed achieved a short-term decrease in marginal costs gaining competitiveness abroad. The results in the paper help rationalize the coexistence of export booms during economic crises in economies in which internal devaluations had limited effectiveness in the short-run.

Introduction

The recession of the late 2000s and early 2010s impacted the core of many advanced economies. Few countries experienced the consequences of the crisis as intensively as Spain (Santos, 2017). From its peak in 2008, Spain's real GDP fell by an accumulated 8.9% in the following five years, until bottoming out in 2013. During the same period, private final consumption contracted by 14.0%, and the unemployment rate shot up from 9.6% to 26.9%. Despite this severe domestic slump, Spanish exports of goods quickly grew after the trade collapse of 2009. Indeed, after falling by 11.5% in 2008-2009, merchandise exports grew by 30.7% between 2009 and 2013 (in real terms), compared to a real growth of 6.8% in the rest of the euro area for the period 2008-2013.

The resilience of merchandise exports during the recession was also remarkable in other Southern economies of the European Monetary Union (EMU), such as Greece and Portugal. As a further illustration of the contribution of exports to alleviate the domestic slump in these economies, the share of euro area merchandise exports to non-euro area countries accounted for by these economies increased markedly during this period, despite the contemporaneous decline in the relative weight of these economies' GDP in the euro area's GDP (see Figure 1 for Spain, Portugal and Greece).

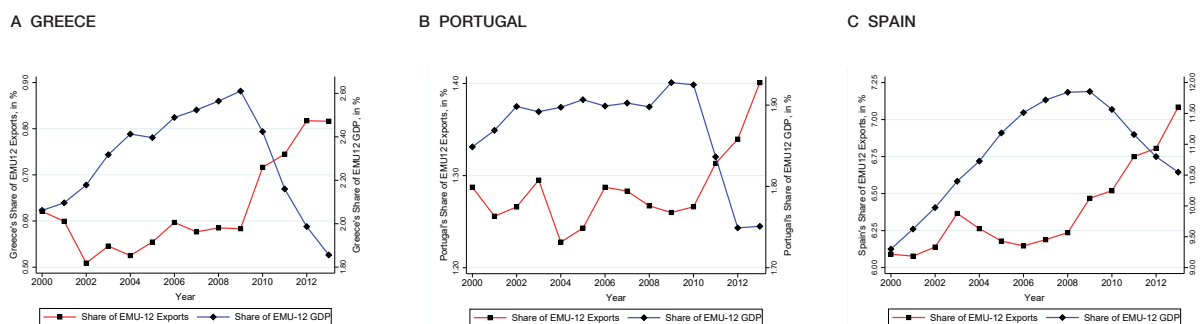
At first sight, this outstanding export performance appears to be consistent with the “internal devaluation” process advocated during the first-stage of the crisis by international organizations (see, for instance, European Commission 2010). In sluggish economies that were policy-constrained by sharing a common currency, the combination of wage moderation with a set of structural reforms in labor and product markets would result in increasing competitiveness for manufacturing firms. Indeed, this “internal devaluation” process would reduce unit labor costs, allowing Southern European firms to lower their relative export prices and increase their market shares abroad. However, the adjustment in labor costs achieved via these policies in the manufacturing sector was modest up to 2013 (OECD 2018) and the internal devaluation channel had a limited contribution to export growth over the period 2010-2013 (see, for instance, IMF 2015, 2018; Salas 2018). What explains then the remarkable export growth in Southern European economies over the period 2010-2013?

In a recent paper, we examine an alternative mechanism that relates the growth in exports directly to the collapse in domestic demand for manufacturing exporters using the salient case of Spain (Almunia, Antràs, Lopez-Rodriguez and Morales 2018). In particular, the so-called “venting-out” mechanism arises when firms that face an unexpected demand-driven reduction in domestic sales have the ability to reduce their usage of flexible inputs (e.g., temporary workers and materials) relative to their usage of fixed inputs (e.g., physical capital and permanent workers). By freeing up capacity associated to irreversible investment inputs, firms achieve a short-run reduction in marginal costs that translates into a gain in competitiveness in foreign markets and, consequently, into an increase in firms' exports.

The venting-out mechanism and the Spanish export miracle

This alternative explanation resonates with the vent-for-surplus theory of the benefits of international trade, which has a long tradition in economics dating back to Adam Smith (1776).¹ However, the link between a domestic slump and export growth is hard to reconcile

¹ The term “vent-for-surplus” was introduced by John Stuart Mill in his *Principles of Political Economy* (1848) and popularized by Williams (1929) and Myint (1958).



with modern workhorse models of international trade. The canonical model of firm-level trade à la Melitz (2003) predicts that firms’ domestic and export sales decisions can be studied independently from each other. Indeed, assuming that firms face constant marginal costs results in a zero effect of demand-driven changes in domestic sales in exports. In recent years, there has been an active literature showing that, in the presence of increasing marginal costs, there is a natural substitutability between domestic sales and exports (some supportive evidence is provided by Vannoorenberghe, 2012; Blum et al. 2013; Soderbery 2014; and Ahn and McQuoid 2017). Our paper goes a step forward by attempting to identify and structurally interpret the causal effect of a domestic slump on exports, exploiting plausibly exogenous variation in domestic sales during a particularly salient event—the Great Recession in Spain.

In the paper, we leverage Spanish firm-level data from 2002-2013 and geographic variation across Spanish regions in the reduction of domestic demand caused by the financial crisis to study the empirical relevance of the vent-for-surplus mechanism. To do so, we divide our sample into a “boom” period (2002-2008) and a “bust” period (2009-2013), and measure the extent to which, at the firm level, a decline in the domestic sales in the bust period relative to the boom period is associated with an increase in export sales over the two periods. When measuring this association, we control for “boom-to-bust” changes in observed marginal cost shifters (i.e. measures of factor prices and productivity) to account for potential internal devaluation effects.

We address the challenge of establishing a causal link between demand-driven changes in domestic sales and exports by exploiting rich geographic variation in the incidence of the Great Recession in Spain. This identification strategy is inspired by the influential work of Mian and Sufi (2013) on the causes and consequences of the Great Recession in the United States. In particular, we use the change in the municipality-level stock of

vehicles per capita between 2002-2008 and 2009-2013 as a proxy for the extent to which the Great Recession affected demand across municipalities. We use a battery of empirical tests to show that local per capita changes in this major household durable consumption item is a valid instrument for the reduction in the domestic sales of firms located in different parts of Spain.

The baseline results show that Spanish manufacturing exporters that faced a local demand-driven drop of domestic sales by 10% increased their exports by about 16%. This intensive-margin elasticity of exports with respect to domestic sales is consistent and robust even after controlling for sector and location fixed effects and for firm proxies of productivity and average labor costs. Note that this estimated elasticity does not imply a more-than-complete substitution of exports for domestic sales in monetary values. The median firm in the sample of continuing exporters has an export share of 16.5%, so revenue from domestic sales is around four times than revenue from exports. In that case, for every €100 of lost domestic sales, a firm with the median export share would be able to recoup €20 via exports.

In the paper, we provide an exhaustive set of robustness tests to examine the credibility of the identification strategy and the estimated causal effects. These include excluding firms associated with the auto industry, heterogeneous effects, alternative instruments, controls for confounding factors, placebo tests and also alternative measures of productivity. We also explore whether the venting-out mechanism operates on the extensive margin, but we don’t find evidence for that. This is consistent with the fact that more than 90% of the growth in Spanish exports in 2008-2013 is due to continuing exporters (De Lucio et al. 2017).

We finally use a structurally estimated version of the model with non-constant marginal cost of production to quantify the importance of the venting-out mechanism in explaining the 2009-2013 export miracle in Spain.

Using our causal estimates as inputs for the structural model, we implement a variance decomposition exercise to determine the extent to which the domestic slump in Spain was driven by demand versus supply shocks. This decomposition allows us to calculate a counterfactual to predict the “boom-bust” growth of exports that would have been observed if there had been no change in demand. The quantitative exercise detailed in the paper shows that approximately half of the growth in Spanish exports in the period 2009-2013 can be attributed to the venting-out mechanism created by firm-level responses to the slump in domestic demand.

Conclusions

Taken together, the results in the paper help rationalize the coexistence of export booms during economic crises in economies in which internal devaluations had limited effectiveness in the short-run. These limitations can emerge in practice because of the short-run stickiness of wages, the medium-term returns on productivity associated to structural reforms or the needed synchronization with expansionary monetary policy during deep recessions. In this context, exports can still have a broad scope to mitigate domestic slumps due to the relevant interdependencies between domestic and external market conditions for manufacturers. The paradigmatic case of Spain shows that firms that had the ability to reduce their usage of flexible inputs relative to their usage of fixed inputs freed up their fixed capacity, allowing exporters with a falling domestic demand to gain external competitiveness.

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BANK CAPITAL, LENDING BOOMS, AND BUSTS. EVIDENCE FROM SPAIN IN THE LAST 150 YEARS

SUMMARY OF BANCO DE ESPAÑA WORKING PAPER N° 1847

MIKEL BEDAYO, ÁNGEL ESTRADA AND JESÚS SAURINA

We analyze the effect of bank capital on credit cycles for nearly 150 years in Spain. We first build up a thorough measure of bank leverage (i.e. the capital to assets ratio) for the Spanish banking sector starting in the year 1880. Then, we analyze the impact that bank capital levels have on lending cycles, controlling for other determinants of credit growth. We find robust empirical evidence of an asymmetric relationship between bank capital and credit cycles. In particular, an increase in bank capital before expansions reduces credit growth, while it increases credit growth when the recession arrives. Conversely, a too depleted level of bank capital when entering in a recession has a severe impact on lending (i.e. may bring about quite negative and lasting effects in the economy and the wellbeing of the society as a whole). These findings support macroprudential policies (dynamic provisions and the countercyclical capital buffer) that have been very recently put in place, as they will help smooth the credit cycle.

Introduction

The last financial crisis has shown the impact that bank failures and/or bank recapitalizations may have on the economy and the society as a whole. The international banking crisis that hit the United States, the United Kingdom, Spain and many other developed countries has had a long and lasting impact on the economy, the level of employment and the distribution of income (see Estrada and Saurina, 2016), with some ripples reaching also the political arena.

Policy makers and regulators opened soon after the crisis's most acute phase a soul search process trying to understand and amend what went wrong at banks before the crisis. As a result, the G-20 mandated the newly renamed Financial Stability Board (FSB) to look into the causes and remedies of the financial crisis. The FSB in the subsequent years pushed for reforms in banking regulation and beyond.¹ One of the main empirical conclusions of bank regulators and supervisors

¹ See, among others, FSF (2009) as well as G-20 press releases to see the sense of urgency and the direction of the reforms. In particular, the one after the meeting in London in April 2009 (see G-20 press release, 2009) asked for a significant increase in bank capital, as well as for countercyclical capital buffers and better provisioning requirements.

together with policy makers was that banks entered into the crisis with a too low level of capital. Moreover, the financial crisis underlined the need to move from a pure microprudential view of capital requirements (i.e. focused only on the level of capital at each individual bank) to a more comprehensive or so-called holistic view of capital, where the macroprudential approach is also a key ingredient.² That is, policy makers need to pay attention to how aggregate bank capital ratios evolve along the financial cycle. Therefore, capital requirements need to have a countercyclical component, so that when the lending cycle is in full swing, banks need to reinforce the level of capital in order to help authorities to rein on the lending growth and the risk expansion, and even more importantly, build up a buffer to protect against future losses that may appear when the economy changes trend. This need crystalized in the Basel 3 agreement (BCBS, 2011).

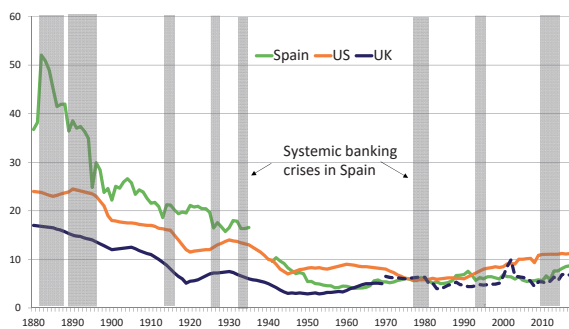
There is a solid and robust empirical evidence of both the need for countercyclical tools (Jiménez and Saurina, 2006) and its usefulness to reduce credit crunches during recessions (Jiménez et al., 2017) during the last lending boom and bust in Spain. What we do in this paper is to expand quite significantly the perspective, so that we can learn from quite a long list of previous ones. In fact, we start our analysis in 1880, almost a century and a half ago, in order to find even more robust empirical evidence, now from an aggregate point of view, to support macroprudential policies in very different economic development stages and banking structures (with or without foreign banks, with more or less stringent regulation, with more or less oligopolistic structures, etc.)

In order to do that we had constructed a long series of a bank capital ratio for the Spanish banking system. This allows us to compare the historical levels of capital ratios of the Spanish banking sector with, for instance, the ones for the US (Berger et al. (1995)) or the UK (Alessandri and Haldane (2009)), available for long time periods. The comparison is quite telling. As Martín-Aceña (2013) and others have convincingly insisted over time, the Spanish banking developments and crises, as well as many other developments in the economy and the political arena, are a reflection of international developments happening around the same

² See, among others, Crocket (2000), Borio (2003), and more recently IMF (2014) and Mencía and Saurina (2016).

time. Similarly, the level of bank capital along the last century and a half behaves quite in parallel with developments in the US and the UK. As it can be seen in Figure 1, we find for Spain a much higher level of bank capital in the late 19th century than in current times. In fact, until the Spanish Civil War, this ratio was also higher in Spain than in the US and the UK, but in all these three countries a steady decline was observed until the early sixties, resulting in a marked convergence.

EQUITY OVER TOTAL ASSETS. 1880-2017 FIGURE 1

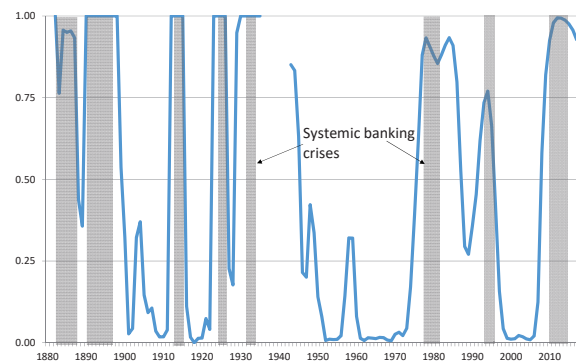


NOTES: Commercial US banks and UK banks operating in the UK are considered. Sources: BdE, own calculations, Berger et al. (1995), Sheppard (1971), Federal Reserve Economic Data and World Bank's World Development Indicators. The UK's dotted line includes banks' reserves and not only capital, given that after 1970 published accounts do not separate both entries.

Bank capital and credit cycles in Spain over the last 150 years

In order to analyze the role played by bank capital in the credit cycles, we model aggregated credit growth, following Bernanke and Lown (1991) and Peek and Rosengren (1995), as a function of macroeconomic determinants, including the level and evolution of bank capital, using a non-linear model (a Markov-switching regime model) to endogenously distinguish between periods of high and low credit growth. During the years analyzed, there are a number of lending cycles, as well as banking crises, that allow us to estimate the elasticity of credit to bank capital. In fact, as it can be seen in Figure 2, the probability of being in a period of negative credit growth estimated with a very simple version of this non-linear model (only considering an autoregressive term) concur quite well with the systemic banking crises identified with narrative techniques in Martín-Aceña (2013). Notice how in all the identified crises that probability is almost 100%; however, the duration of the episodes is not always matched (especially in that of the mid-seventies) and there is one period right after the Civil War where the results of the model are compatible with a stress episode which has not been identified as a systemic banking crisis with the narrative approach.

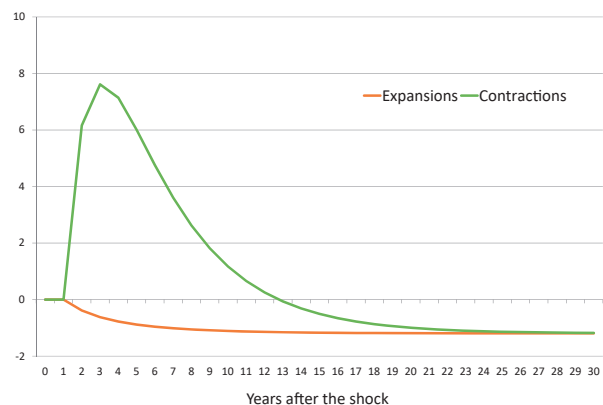
SYSTEMIC BANKING CRISIS AND PROBABILITY OF BEING IN THE NEGATIVE CREDIT GROWTH STATE. 1880-2017 FIGURE 2



SOURCE: Own calculations.

Once we include in the non-linear model the traditional explanatory variables of credit growth (GDP, real interest rates and housing prices) jointly with the capital ratio, and allow for different elasticities of the capital ratio in credit booms and busts, we obtain highly asymmetric effects in the credit cycle. In fact, what we find is that increasing the capital ratio in advance of a credit boom reduces credit growth; on the contrary, if that is done in advance of a credit bust, it increases the average credit growth or cater for a lower contraction in credit (see figure 3). These results are quite relevant from a policy point of view. They could be interpreted as if a countercyclical capital buffer would reduce the size of the credit expansion, as well as the magnitude of the subsequent credit crunch. In other words, banks need to deleverage less (i.e. to cut lending to the private sector) if they have accumulated a larger amount of capital during expansions. Conversely, a depletion of capital during the expansionary phase leaves not only banks but also the economy to their own fate, as the recession hits borrowers and lenders and the latter do

CREDIT GROWTH DYNAMIC MULTIPLIERS OF THE CAPITAL RATIO. 1880-2017 FIGURE 3



SOURCE: Own calculations.

not have room of manoeuvre to react, amplifying the impact of credit on the real economy. We interpret these results as a support for the use of the new macroprudential tools and, specially, the countercyclical capital buffer to smooth the financial cycle.

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THE RISK OF JOB LOSS, HOUSEHOLD FORMATION AND HOUSING DEMAND: EVIDENCE FROM DIFFERENCES IN SEVERANCE PAYMENTS

SUMMARY OF BANCO DE ESPAÑA WORKING PAPER N° 1849

CRISTINA BARCELÓ AND ERNESTO VILLANUEVA

We examine the link between exogenous changes in the risk of job loss and the timing of different forms of the demand for housing. We exploit large differences in firing costs across contract types in the Spanish labour market due to regional incentives to firms for the promotion of open-ended contracts. Using data from the 2002-2014 waves of the Spanish Survey of Household Finances, we document that an increase of 1% in the stock of permanent contracts increases the probability of household formation by a similar magnitude (especially through rental).

The demand for housing and the risk of job loss

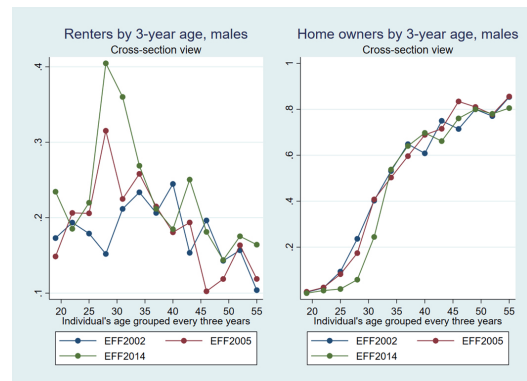
Housing decisions are important for various reasons. Housing is a prominent component of household portfolios, and its size and the way it is financed determine the propagation of macroeconomic shocks (see Cloyne et al, 2018). Secondly, housing prices comove with first-time buyers' decisions, which are in turn very sensitive to changes in income and credit conditions (Ortalo-Magné and Rady, 2006). Finally, the housing decisions of youths in a number of advanced countries have experienced changes during the last decade, with a delay in household formation among recent cohorts, see Dettling and Hsu (2018) for the US and Kaplan (2012), and Blundell et al (2017) for the UK. This study analyzes if changes in job security affect the demand for housing in Spain, taking into account that in this country, like in many others, youths stay with their parents well into their twenties and thirties.

Figure 1 shows the share of males who are renters or homeowners in Spain as a fraction of all male individuals (including those who are living with another person and who neither own nor rent). Three features arise. First, the home ownership profile is rather steep, reaching 80% by the age of 45. Second, a substantial fraction of young population is still living with their parents at age 35 (around 20%) –and it is 70% at age 25. Third, across years, the share of young homeowners (below 35) has been declining since 2002.

We study how the risk of job loss alters individuals' lifetime decisions, such as forming a new household and the way of consuming housing services, either by rental or home ownership. Exposure to job loss likely

EVOLUTION OF LIVING ARRANGEMENTS OF INDIVIDUALS AGED 20-55 IN SPAIN IN PERIOD 2002-2014

FIGURE 1



SOURCE: Spanish Survey of Household Finances, EFF2002-EFF2014. The left panel contains the fraction of males renting their own accommodation over the total number of male individuals at that age. The right panel displays the corresponding fraction of homeowners.

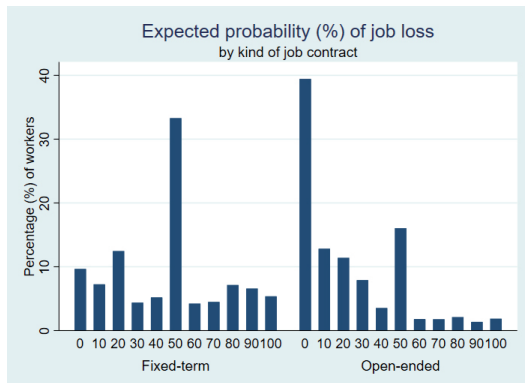
affects housing demand, as risk averse individuals may postpone the purchase of big-ticket items, like a house, or refuse to commit to a set of fixed expenses –renting.

We identify the risk of job loss using large differences in employment protection across contract types. In Spain, there are mainly two types of job contracts: open-ended contracts and fixed-term contracts. Open-ended contracts are costly to terminate (in our sample period, the wage of 33 to 45 days per year worked). On the contrary, fixed-term contracts entail very small severance payments (8 days per year worked), and possibly zero if the firms wait for the expiration date of the job contract. Therefore, these types of job contracts entail very strong differences in the workers' perceived probability of job loss. Figure 2, drawn from the 2011 wave of the Spanish Survey of Household Finances (EFF), shows that more than 50% of workers holding an open-ended contract assign a probability of job loss over the next 12 months lower than 10%. Meanwhile, 50% of temporary workers expect a probability of 50% of job loss over the following 12 months.

Of course, employees with an open-ended and fixed-term contract vary in many important dimensions, other than exposure to job loss –something we discuss below. Our paper estimates the causal impact of exogenous changes in employment protection on housing decisions.

SUBJECTIVE PROBABILITY OF JOB LOSS OVER THE NEXT 12 MONTHS BY KIND OF JOB CONTRACT

FIGURE 2



SOURCE: The 2011 wave of the Survey of Household Finances (EFF). Sample formed by employees that are asked for to put on a scale from 0 to 100 the chances of losing the job, where 0 is not possible at all and 100 most certain.

Empirical strategy for identifying the risk of job loss

To obtain exogenous variation in the degree of employment protection, we use regional differences in employers' incentives to convert fixed-term contracts into open-ended ones. Between 1997 and 2009, several Spanish regions introduced subsidies to firms in order to encourage the conversion of fixed-term contracts. The amount of the subsidy varied with the worker's age and gender, being usually higher for women, young and old workers (under the age of 35 or over 45). Furthermore, the introduction of subsidies was staggered, so the amount differed across regions and within a region over time. The estimates suggest that the mean subsidy (around 4,000€) amounted to 16% of the firms' yearly labour cost, once one takes into account the increase of severance payments in case of dismissal after the conversion of the job contract. Around 23% of all contract conversions were subsidized in the regions implementing the subsidies, which represents around 5%-7% of all hires in Spain.

The data used in the study come from the 2002-2014 waves of the Spanish Survey of Household Finances (EFF). This is a household wealth survey conducted by the Banco de España. We focus on individuals aged between 25 and 64 to study their housing demand.

Does the risk of job loss affect household formation and housing tenure?

We answer two questions:

1. Do workers in regions with more generous subsidies to contract conversion have a higher

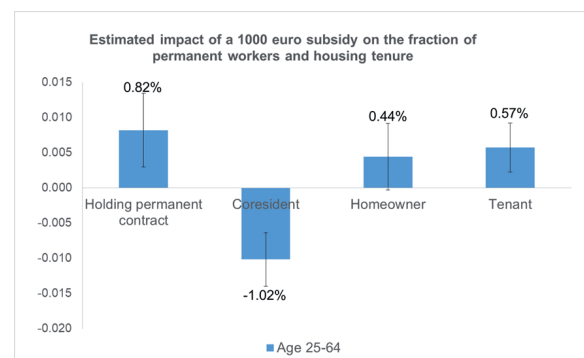
probability of holding a permanent contract three years after having been hired?

2. Do workers in regions with more generous subsidies to contract conversion differ in their decision to own or rent their dwelling (taking into account that living with other relatives is a very common outcome in Spain)?

We answer both questions by estimating models using instrumental variables (IV) and comparing workers who share similar characteristics, but who differ in the amount of subsidies (our exogenous measure of risk of job loss) their firms were eligible to benefit from for the conversion of fixed-term contracts into open-ended ones.

ESTIMATES OF THE IMPACT OF REGIONAL SUBSIDIES FOR THE CONVERSION OF FIXED-TERM CONTRACTS INTO OPEN-ENDED ONE ON THE PROBABILITY OF HOLDING A PERMANENT CONTRACT AND HOUSING DECISIONS

FIGURE 3



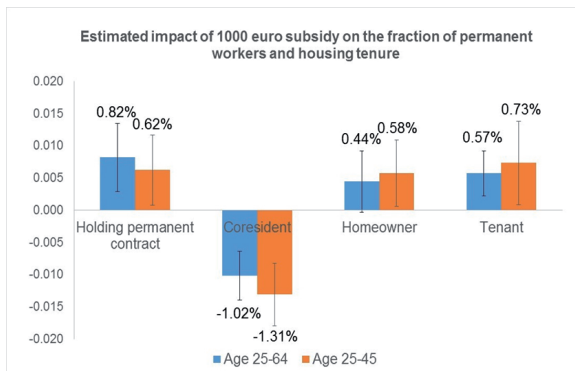
SOURCE: Own estimates using data from the 2002-2011 waves of the Spanish Survey of Household Finances.

Figure 3 shows that subsidies explain both the stock of workers with an open-ended contract three years after the beginning of the job spell as well as the decision of household formation and housing tenure. A subsidy of 1,000€ increased the fraction of workers holding an open-ended contract in 0.8% and diminished the probability of living with parents (coresidence) after that period by 1%. The increase of 1% in the probability of individuals living emancipated from their parents is due to a rise of 0.6% and 0.4%, respectively, in the probabilities of renting their own accommodation and owning their main residence.

Figure 4 displays the estimated impact of job security (holding an open-ended contract) on the decisions of household formation (coresidence) and housing tenure, by taking into account the confounding factors also affecting housing decisions due to reasons not related with the risk of job loss (IV estimates in orange-colour bars) or by ignoring them (OLS, blue-colour

ESTIMATES OF THE IMPACT OF EMPLOYMENT PROTECTION ON HOUSEHOLD FORMATION AND DECISIONS OF LIVING ARRANGEMENTS

FIGURE 4

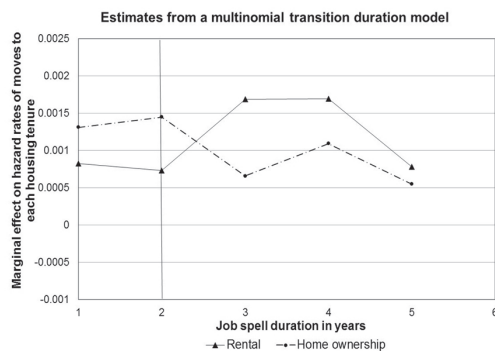


SOURCE: Own estimates using data from the 2002-2011 waves of the Spanish Survey of Household Finances.

bars). The naïve OLS estimates that compare housing decisions of employees with open-ended contracts to those with fixed-term ones, ignoring confounding factors, indicate that increased exposure to job loss mildly increase the propensity to own a house, while it diminishes the probability of renting. Several factors may account for the difference, like thriving local labor markets (in tighter labor markets it is easier to find an open-ended contract and accumulate funds for a downpayment) or differences in previous labor market histories (workers with fixed term contracts are more likely to have experienced past unemployment spells and thus are less likely to have saved for a downpayment). However, once we take into account the presence of confounding factors (IV estimates), we find that decreases in the risk of job loss by holding an open-ended contract increase the probability of living emancipated from parents, not only by owning their accommodation, but also by renting it.

DYNAMIC RESPONSE OF HOME OWNERSHIP AND RENTAL TO AN EXOGENOUS INCREASE IN JOB SECURITY ALONG THE YEARS OF INDIVIDUALS' JOB TENURE

FIGURE 5



SOURCE: Own estimates using data from the 2002-2011 waves of the Spanish Survey of Household Finances.

Figure 5 studies the dynamic response of housing tenure along the employees' job spell. The decision of renting seems to lag between one or two years the date in which most conversions of job contracts happen (conversions mostly occur in the first two years of job tenure). Meanwhile, home ownership seems to display a flat pattern along the job spell.

What model can explain why a fall in the risk of job loss increases more the probability of renting than the one of owning? A first finding documented in the paper is that individuals whose housing decisions respond to subsidies by leaving their parental home have accumulated few savings for a downpayment. Moreover, we do not find that obtaining an open-ended contract lifts borrowing constraints, even by taking into account the housing tenure chosen by emancipated individuals (rental or home ownership). Thus, we discard that the observed delay in renting is associated with rejected mortgage applications. However, one potential factor explaining the response of renting is the wish to get married or cohabit with a partner. One explanation of those results is that youths react to a higher risk of job loss by postponing housing consumption (renting), as predicted by a model with precautionary savings.

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PUBLICATIONS

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[WOMEN'S REPRESENTATION IN POLITICS: VOTER BIAS, PARTY BIAS, AND ELECTORAL SYSTEMS](#)

MARTÍN GONZALEZ-EIRAS AND CARLOS SANZ

WORKING PAPER N° 1834

We study how electoral systems affect the presence of women in politics using a model in which both voters and parties might have a gender bias. We apply the model to Spanish municipal elections, in which national law mandates that municipalities follow one of two different electoral systems: a closed-list system in which voters pick one party-list, or an open-list system, in which voters pick individual candidates. Using a regression discontinuity design, we find that the closed-list system increases the share of women among candidates and councilors by 2.5 percentage points, and the share of women among mayors by 4.3 percentage points. Our model explains these results as mostly driven by voter bias against women. We provide evidence that supports the mechanism of the model. In particular, we show that, when two councilors almost tied in general-election votes, the one with “one more vote” is substantially more likely to be appointed mayor, but this does not happen when the most voted was female and the second was male, suggesting the presence of some voter bias. We also show that, in a subsample of municipalities with low bias — proxied by having had a female mayor in the past — the difference between the two electoral systems disappears.

[FARAWAY, SO CLOSE! TECHNOLOGY DIFFUSION AND FIRM HETEROGENEITY IN THE MEDIUM TERM CYCLE OF ADVANCED ECONOMIES](#)

MÓNICA CORREA-LÓPEZ AND BEATRIZ DE BLAS

WORKING PAPER N° 1835

Large US firms, by diffusing embodied technology through trade in intermediates, appear to drive Europe's output over the medium term. We develop a two-country model of endogenous growth in varieties, cross-country firm heterogeneity and trade to match this evidence. A US TFP slowdown generates a pronounced recession in Europe, while a negative investment-specific shock also imparts a protracted

recession in the US, since GDP and firm productivity stay below trend beyond a decade. Heterogeneous firms, with endogenously changing productivity cut-offs, and the responses of innovators and adopters determine medium-term adjustment, as import switching processes unfold.

[THE MARGINS OF TRADE: MARKET ENTRY AND SECTOR SPILLOVERS, THE CASE OF ITALY \(1862-1913\)](#)

JACOPO TIMINI

WORKING PAPER N° 1836

Between its Unification and WWI, Italy faced a period of increasing participation in the international economy. The growth of Italian exports was gradual, and alternately promoted by its intensive and extensive margins. In this paper, using a disaggregated database at country-product level, I first construct the intensive (average export per product) and extensive (number of products) margins of trade (for Italian imports and exports) and, second, within a quasi-gravity model framework, I estimate the drivers of market entry for Italian exports (1862-1913), with particular attention to the presence of eventual sector spillover effects. I find that the presence of “similar” exported products increased the probability of entry in the destination market (export spillovers), even if with diminishing marginal effects, potentially linked to a “saturation” /“congestion” of the market. Equally, I find that the higher the imports' growth rate for a specific product, the more likely it was to be internationalised by Italian exporters (import spillovers).

[THE YOUNG, THE OLD, AND THE GOVERNMENT: DEMOGRAPHICS AND FISCAL MULTIPLIERS](#)

HENRIQUE S. BASSO AND OMAR RACHEDI

WORKING PAPER N° 1837

We document that fiscal multipliers depend on the age structure of the population. Using the variation in military spending and birth rates across U.S. states, we show that local fiscal multipliers increase with the share of young people in total population. We rationalize

this fact with a parsimonious life-cycle open-economy New Keynesian model with credit market imperfections. The model explains 65% of the relationship between local fiscal multipliers and demographics. We use the model to study the implications of population aging, and find that nowadays U.S. national fiscal multipliers are 36% lower than in 1980.

FIRM DYNAMICS AND PRICING UNDER CUSTOMER CAPITAL ACCUMULATION

PAU ROLDÁN AND SONIA GILBUKH

WORKING PAPER N° 1838

This paper analyzes the macroeconomic implications of customer capital accumulation at the firm level. We build an analytically tractable search model of firm dynamics in which firms compete for customers by posting pricing contracts in the product market. Cross-sectional price dispersion emerges in equilibrium because firms of different sizes and productivities use different pricing strategies to strike a balance between attracting new customers and exploiting incumbent ones. Using micro-pricing data from the U.S. retail sector, we calibrate the model to match moments from the cross-sectional distribution of sales and prices, and use our estimated model to explain sluggish aggregate dynamics and cross-sectional heterogeneity in the response of markups to aggregate shocks. We find that there is incomplete price pass-through leading to procyclicality in the average markup, with smaller firms being more responsive to shocks than larger firms.

SHOULD I STAY OR SHOULD I GO? AUSTERITY, UNEMPLOYMENT AND MIGRATION

GUILHERME BANDEIRA, JORDI CABALLÉ AND EUGENIA VELLA

WORKING PAPER N° 1839

High unemployment and fiscal austerity during the Great Recession have led to significant migration outflows in those European countries that suffered a deep deterioration of their economy, Greece being the most obvious case. This paper introduces endogenous migration in a small open economy DSGE model to analyze the business cycle effects from the interaction of fiscal consolidation instruments with migration. A tax-based consolidation induces the strongest increase in emigration, leading to the highest costs in terms of aggregate GDP and unemployment in the medium run. As a result, the unemployment gains from migration are only temporary. However, in terms of per capita GDP, cuts in the components of public spending that are either productive or utility-enhancing can lead to a deeper contraction than tax hikes or wasteful spending

cuts. The introduction of potential migration by the employed implies even higher unemployment costs, a deeper demand contraction, and an increase in both the tax hike and the time required to achieve the same size of fiscal consolidation.

THE CHANGING STRUCTURE OF GOVERNMENT CONSUMPTION SPENDING

ALESSIO MORO AND OMAR RACHEDI

WORKING PAPER N° 1840

We document a secular increase in the share of purchases from the private sector in government consumption spending: over time the government purchases relatively more private-sector goods, and relies less on its own production of value added. We build a general equilibrium model in which investment-specific technological change accounts for the changing structure of government spending. The model predicts that this secular process alters the transmission of government spending shocks by raising the response of private value added, while dampening the response of hours. We validate these results with novel empirical evidence on the effects of government spending across countries.

CONFIDENCE INTERVALS FOR BIAS AND SIZE DISTORTION IN IV AND LOCAL PROJECTIONS – IV MODELS

GERGELY GANICS, ATSUSHI INOUE AND BARBARA ROSSI

WORKING PAPER N° 1841

In this paper we propose methods to construct confidence intervals for the bias of the two-stage least squares estimator, and the size distortion of the associated Wald test in instrumental variables models. Importantly our framework covers the local projections – instrumental variable model as well. Unlike tests for weak instruments, whose distributions are non-standard and depend on nuisance parameters that cannot be estimated consistently, the confidence intervals for the strength of identification are straightforward and computationally easy to calculate, as they are obtained from inverting a chi-squared distribution. Furthermore, they provide more information to researchers on instrument strength than the binary decision offered by tests. Monte Carlo simulations show that the confidence intervals have good small sample coverage. We illustrate the usefulness of the proposed methods to measure the strength of identification in two empirical situations: the estimation of the intertemporal elasticity of substitution in a linearized Euler equation, and government spending multipliers.

NOWCASTING PRIVATE CONSUMPTION: TRADITIONAL INDICATORS, UNCERTAINTY MEASURES, CREDIT CARDS AND SOME INTERNET DATA

MARÍA GIL, JAVIER J. PÉREZ, A. JESÚS SÁNCHEZ AND ALBERTO URTASUN

WORKING PAPER N° 1842

The focus of this paper is on nowcasting and forecasting quarterly private consumption. The selection of real-time, monthly indicators focuses on standard (“hard” / “soft” indicators) and less-standard variables. Among the latter group we analyze: i) proxy indicators of economic and policy uncertainty; ii) payment cards’ transactions, as measured at “Point-of-sale” (POS) and ATM withdrawals; iii) indicators based on consumption-related search queries retrieved by means of the Google Trends application. We estimate a suite of mixed-frequency, time series models at the monthly frequency, on a real-time database with Spanish data, and conduct out-of-sample forecasting exercises to assess the relevant merits of the different groups of indicators. Some results stand out: i) “hard” and payments cards indicators are the best performers when taken individually, and more so when combined; ii) nonetheless, “soft” indicators are helpful to detect qualitative signals in the nowcasting horizon; iii) Google-based and uncertainty indicators add value when combined with traditional indicators, most notably at estimation horizons beyond the nowcasting one, what would be consistent with capturing information about future consumption decisions; iv) the combinations of models that include the best performing indicators tend to beat broader-based combinations.

WHAT DRIVES SOVEREIGN DEBT PORTFOLIOS OF BANKS IN A CRISIS CONTEXT?

MATÍAS LAMAS AND JAVIER MENCÍA

WORKING PAPER N° 1843

We study determinants of sovereign portfolios of Spanish banks over a long time-span, starting in 2008. Our findings challenge the view that banks engaged in moral hazard strategies to exploit the regulatory treatment of sovereign exposures. In particular, we show that being a weakly capitalized bank is not related to higher holdings of domestic sovereign debt. While a strong link is present between central bank liquidity support and sovereign holdings, opportunistic strategies or reach-for-yield behavior appear to be limited to the non-domestic sovereign portfolio of well-capitalized banks, which might have taken advantage of their higher risk-bearing capacity to gain exposure

(via central bank liquidity) to the set of riskier sovereign bonds. Furthermore, we document that financial fragmentation in EMU markets has played a key role in reshaping sovereign portfolios of banks. Overall, our results have important implications for the ongoing discussion on the optimal design of the risk-weighted capital framework of banks.

VENTING OUT: EXPORTS DURING A DOMESTIC SLUMP

MIGUEL ALMUNIA, POL ANTRÀS, DAVID LÓPEZ-RODRÍGUEZ AND EDUARDO MORALES

WORKING PAPER N° 1844

We exploit plausibly exogenous geographical variation in the reduction in domestic demand caused by the Great Recession in Spain to document the existence of a robust, within-firm negative causal relationship between demand-driven changes in domestic sales and export flows. Spanish manufacturing firms whose domestic sales were reduced by more during the crisis observed a larger increase in their export flows, even after controlling for firms’ supply determinants (such as labor costs). This negative relationship between demand-driven changes in domestic sales and changes in export flows illustrates the capacity of export markets to counteract the negative impact of local demand shocks. We rationalize our findings through a standard heterogeneous-firm model of exporting expanded to allow for non-constant marginal costs of production. Using a structurally estimated version of this model, we conclude that the firm-level responses to the slump in domestic demand in Spain could well have accounted for around one-half of the spectacular increase in Spanish goods exports (the so-called “Spanish export miracle”) over the period 2009-13.

THE PARADOX OF GLOBAL THRIFT

LUCA FORNARO AND FEDERICA ROMEO

WORKING PAPER N° 1845

This paper describes a paradox of global thrift. Consider a world in which interest rates are low and monetary policy is constrained by the zero lower bound. Now imagine that governments implement prudential financial and fiscal policies to stabilize the economy. We show that these policies, while effective from the perspective of individual countries, might backfire if applied on a global scale. In fact, prudential policies generate a rise in the global supply of savings and a drop in global aggregate demand. Weaker global aggregate demand depresses output in countries at the zero lower bound. Due to this effect, non-cooperative financial and fiscal policies might lead to a fall in global output and welfare.

AN ECONOMIC ANALYSIS OF COURT FEES: EVIDENCE FROM THE SPANISH CIVIL JURISDICTION

JUAN S. MORA-SANGUINETTI AND MARTA MARTÍNEZ-MATUTE

WORKING PAPER N° 1846

The adoption of court fees has been traditionally justified as a means to improve the performance of enforcement institutions as they may have an effect of deterrence of the dispute. Judicial congestion has clear negative impacts on economic performance. Spain, which has one of the highest rates of litigation of the OECD, has traditionally lacked a general system of court fees. In 2002, the Congress passed a system of court fees to be paid by legal entities and enterprises. In 2012, the fees were extended to individuals and abrogated in 2015. This bounded period of enforcement allows us to empirically test the impacts of court fees on congestion. In order to do this, we collected a comprehensive database of quarterly data on the real workload of civil courts. This study concludes that the effects of court fees, although reduced courts' congestion, are far from homogeneous and depend on the type of procedure, the workload of the courts and the local macroeconomic conditions.

BANK CAPITAL, LENDING BOOMS, AND BUSTS. EVIDENCE FROM SPAIN IN THE LAST 150 YEARS

MIKEL BEDAYO, ÁNGEL ESTRADA AND JESÚS SAURINA

WORKING PAPER N° 1847

In this paper we analyze the effect of bank capital on lending expansion and contraction for nearly 150 years in Spain. We first build up thoroughly a measure of bank leverage (i.e. the capital to assets ratio) for the Spanish banking sector starting in year 1880. Then, we run a proper econometric test to analyze the impact that bank capital levels have on lending cycles, controlling for other determinants of credit growth. We do find robust empirical evidence of an asymmetric relationship between bank capital and credit cycle. In particular, an increase in the bank capital before expansions reduces credit growth while it increases credit growth when the recession arrives. Conversely, a too depleted level of bank capital when entering in a recession has a severe impact on lending (i.e. may bring about a deep credit crunch) with quite negative and lasting effects in the economy and the wellbeing of the society as a whole. The paper is particularly useful to support macroprudential policies (dynamic provisions and the countercyclical capital buffer) that have been very recently put in place as they will help to smooth the credit cycle. The experience of Spain over more than a century, with very marked lending cycles, provides a fertile ground for analyzing and supporting

them, not only based on the last lending cycle, but also on those occurred in the more distant past.

POLICY UNCERTAINTY AND INVESTMENT IN SPAIN

DANIEL DEJUÁN AND CORINNA GHIRELLI

WORKING PAPER N° 1848

The aim of this paper is to investigate the effect of policy uncertainty on firms' investment decisions. We focus on Spain for the period 1998-2014. To measure policy-related uncertainty, we use a new macroeconomic indicator constructed for this country. We find strong evidence that policy uncertainty reduces corporate investment. Furthermore, the heterogeneous results suggest that the adverse effect of policy uncertainty is particularly relevant for highly vulnerable firms. In particular, non-exporting firms, small and medium enterprises, as well as firms in poorer financial condition are shown to decrease investment significantly more than their counterparts. Overall, these results are consistent with the hypotheses that policy-related uncertainty reduces corporate investment through increases in precautionary savings or to worsening of credit conditions.

THE RISK OF JOB LOSS, HOUSEHOLD FORMATION AND HOUSING DEMAND: EVIDENCE FROM DIFFERENCES IN SEVERANCE PAYMENTS

CRISTINA BARCELÓ AND ERNESTO VILLANUEVA

WORKING PAPER N° 1849

Recent cohorts in various developed countries take a longer time to form their own household and display lower rates of home ownership than older cohorts. Previous literature has linked these developments to higher job instability, especially among youths. We exploit the large differences in firing costs across contract types in the Spanish labor market to identify the causal link between sharp changes in the risk of job loss and the timing of different forms of household formation among youths. Our identification strategy uses variation in regional incentives for firms to promote high firing cost contracts between 1997 and 2009. Using data from the 2002-2014 waves of the Spanish Survey of Household Finances, we document that an increase of 1% in the stock of workers with an open-ended contract increases the probability of forming a new household by a similar magnitude (especially through renting new accommodation). The results are consistent with the predictions of precautionary saving models, whereby individuals exposed to the risk of job loss postpone their consumption of housing services.

WELFARE EFFECTS OF AN IN-KIND TRANSFER PROGRAM: EVIDENCE FROM MEXICO

FEDERICO TAGLIATI

WORKING PAPER N° 1850

This paper shows how a theory-consistent demand system can be used to quantify recipient welfare under in-kind and cash transfers. Since welfare under an in-kind subsidy depends on the extent to which the transfer is extra-marginal, I compute the shadow prices at which a recipient would be as well off as with the in-kind transfer. Shadow prices are then used to compute the distribution of the willingness to pay for in-kind benefits among beneficiaries. As an application of this approach, I study the welfare effects of a governmental program which randomly transferred either a food basket or cash to poor households in rural Mexico. Results suggest that on average a recipient values the in-kind transfer at 80 percent of its face value. Despite the welfare loss, the in-kind transfer is more cost-efficient than cash. This is due to the fact that the food basket was significantly more expensive at the retail level than at the procurement level, which implies that a cash transfer of the same cost to the government could only buy a fraction of the food basket in recipient's local markets. Because the food basket is mainly formed of normal goods, I also find that the willingness to pay is larger among recipients at the top of the income distribution, suggesting a regressive effect of the in-kind transfer.

A LARGE CENTRAL BANK BALANCE SHEET? FLOOR VS CORRIDOR SYSTEMS IN A NEW KEYNESIAN ENVIRONMENT

ÓSCAR ARCE, GALO NUÑO, DOMINIK THALER AND CARLOS THOMAS

WORKING PAPER N° 1851

The quantitative easing (QE) policies implemented in recent years by central banks have had a profound impact on the working of money markets, giving rise to large excess reserves and pushing down key interbank rates against their floor – the interest rate on reserves. With macroeconomic fundamentals improving, central banks now face the dilemma as to whether to maintain this large balance sheet/floor system, or else to reduce their balance sheet size towards pre-crisis trends and operate traditional corridor systems. We address this issue using a New Keynesian model featuring heterogeneous banks that trade funds in an interbank market characterized by matching frictions. In this environment, balance sheet expansions push market rates towards their floor by slackening the interbank market. A large balance sheet regime is found to deliver ampler “policy space” by widening the steady-state distance between the

interest on reserves and its effective lower bound (ELB). Nonetheless, a lean-balance-sheet regime that resorts to temporary but prompt QE in response to recessions severe enough for the ELB to bind achieves similar stabilization and welfare outcomes as a large-balance-sheet regime in which interest-rate policy is the primary adjustment margin thanks to the larger policy space.

TRADE AND CREDIT: REVISITING THE EVIDENCE

EDUARDO GUTIÉRREZ AND ENRIQUE MORAL-BENITO

WORKING PAPER N° 1901

This paper explores the effects of bank lending shocks on export behavior of Spanish firms. For that purpose, we combine Balance of Payments data on exports at the firm-product-destination level with a matched bank-firm dataset incorporating information on the universe of corporate loans from 2002 to 2013. Armed with this dataset, we identify bank-year specific credit supply shocks following Amiti and Weinstein (2018) and estimate their impact on firms' exports at the product-destination level. According to our estimates, credit supply shocks have sizable effects on both the intensive margin (amount exported) and the extensive margin of trade (decision to export).

ADVERTISING, INNOVATION AND ECONOMIC GROWTH

LAURENT CAVENAILE AND PAU ROLDAN

WORKING PAPER N° 1902

This paper analyzes the implications of advertising for firm dynamics and economic growth through its interaction with R&D investment at the firm level. We develop a model of endogenous growth with firm heterogeneity that incorporates advertising decisions. We calibrate the model to match several empirical regularities across firm size using U.S. data. Through a novel interaction between R&D and advertising, our model provides microfoundations for the empirically observed negative relationship between both firm R&D intensity and growth, and firm size. Our model predicts substitutability between R&D and advertising at the firm level. Lower advertising costs are associated with lower R&D investment and slower economic growth. We provide empirical evidence supporting substitution between R&D and advertising using exogenous changes in the tax treatment of R&D expenditures across U.S. states. Finally, we find that R&D subsidies are more effective under an economy that includes advertising relative to one with no advertising.

[THE IMPACT OF THE ECB'S TARGETED LONG-TERM REFINANCING OPERATIONS ON BANKS' LENDING POLICIES: THE ROLE OF COMPETITION](#)

DESISLAVA C. ANDREEVA AND MIGUEL GARCÍA-POSADA

WORKING PAPER N° 1903

We assess the impact of the Eurosystem's Targeted Long-Term Refinancing Operations (TLTROs) on the lending policies of euro area banks. To guide our empirical research, we build a theoretical model in which banks compete à la Cournot in the credit and deposit markets. According to the model, we distinguish between direct and indirect effects. Direct effects take place because bidding banks expand their loan supply due to the lower marginal costs implied by the TLTROs. Indirect effects on non-bidders operate via changes in the competitive environment in banks' credit and deposit markets and are a priori ambiguous. We then test these theoretical predictions with a sample of 130 banks from 13 countries and the confidential answers to the ECB's Bank Lending Survey. Regarding direct effects on bidders, we find an easing impact on margins on loans to relatively safe borrowers, but no impact on credit standards. Regarding indirect effects, there is a positive impact on the loan supply on non-bidders but, contrary to the direct effects, the transmission of the TLTROs takes place through an easing of credit standards, and it is mainly concentrated in banks facing high competitive pressures. We also find evidence of positive funding externalities.

[TIMED TO SAY GOODBYE: DOES UNEMPLOYMENT BENEFIT ELIGIBILITY AFFECT WORKER LAYOFFS?](#)

ANDREA ALBANESE, CORINNA GHIRELLI AND MATTEO PICCHIO

WORKING PAPER N° 1904

We study how unemployment benefit eligibility affects the layoff exit rate by exploiting quasi-experimental variation in eligibility rules in Italy. By using a difference-in-differences estimator, we find an instantaneous increase of about 12% in the layoff probability when unemployment benefit eligibility is attained, which persists for about 16 weeks. These findings are robust to different identifying assumptions and are mostly driven by jobs started after the onset of the Great Recession, in the South and for small firms. We argue that the moral hazard from the employer's side is the main force driving these layoffs.

[MEASURING ECONOMIC AND ECONOMIC POLICY UNCERTAINTY, AND THEIR MACROECONOMIC EFFECTS: THE CASE OF SPAIN](#)

CORINNA GHIRELLI, MARÍA GIL, JAVIER J. PÉREZ AND ALBERTO URTASUN

WORKING PAPER N° 1905

We provide additional evidence on the relationship between uncertainty and economic activity. For this

purpose, we gather and construct a wide range of proxy indicators of economic and economic policy uncertainty from Spain. We distinguish between the relative merits of different types of measures based on: (i) the volatility of financial markets; (ii) economic analysts' disagreement; (iii) economic policy uncertainty. We show that the first and the third block of measures are the most relevant to grasp the negative effects of unexpected changes in uncertainty on aggregate economic developments, as measured by real GDP. In addition, we find that economic policy uncertainty and financial uncertainty shocks produce visible negative effects on private consumption. The negative responses on capital goods investments are initially bigger in magnitude but vanish more quickly.

[A NEW ECONOMIC POLICY UNCERTAINTY INDEX FOR SPAIN](#)

CORINNA GHIRELLI, JAVIER J. PÉREZ AND ALBERTO URTASUN

WORKING PAPER N° 1906

We construct a new Economic Policy Uncertainty (EPU) index for Spain, building on the influential methodology of Baker, Bloom and Davis (2016), and compare it with the EPU for Spain that these authors provide. We refine the index in several dimensions: we expand the headline newspaper coverage from 2 to 7, including economic-financial ones, use a much richer set of keywords to form the search expressions, and cover a longer sample period. Two results stand out: (i) the new index presents a more consistent chronology of economic policy events; (ii) the macroeconomic effects of uncertainty shocks identified from the new index yield significant negative responses of GDP, private consumption and private investment, compared to mute responses obtained using the original one. Beyond the results for the Spanish case, our results suggest that, in addition to the richness of the keywords in the search expressions, widening the press and time coverage is key to improve the quality of the aggregate EPU index.

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[THE EVOLUTION OF SPANISH TOTAL FACTOR PRODUCTIVITY SINCE THE GLOBAL FINANCIAL CRISIS](#)

CHENXU FU AND ENRIQUE MORAL-BENITO

OCCASIONAL PAPER N° 1808

Total factor productivity (TFP) is considered the key determinant of long-term and sustainable economic

growth. The dismal evolution of TFP characterized the Spanish economy since the foundation of the Eurozone until the outbreak of the Global Financial Crisis [see García- Santana et al. (2016)]. This article provides an anatomy of the recent evolution of Spanish TFP using both aggregate- and micro-level data available until 2016. Three conclusions emerge from our findings: i) while TFP growth remained subdued during the crisis, a TFP revival is taking place over the last years; ii) this pattern is mostly driven by the rise and fall of the capital-to-labor ratio (capital deepening) while the role of labor productivity is more muted, and iii) an across-the-board increase in firms' capital-to-labor ratios accounts for most of the TFP decline during the first years of the crisis, while the subsequent TFP revival is explained by the reallocation of resources towards firms with low capital deepening.

MONITORING THE SPANISH ECONOMY FROM A REGIONAL PERSPECTIVE: MAIN ELEMENTS OF ANALYSIS

CONCHA ARTOLA, ALEJANDRO FIORITO, MARÍA GIL, JAVIER J. PÉREZ, ALBERTO URTASUN AND DIEGO VILA
OCCASIONAL PAPER N° 1809

In highly decentralized countries the subnational dimension of economic developments acquires particular relevance, given the existence of potential spillover effects across jurisdictions or the existence of asymmetric impacts of national-wide macroeconomic shocks. At the same time, though, the analysis of subnational macroeconomic and public finance short-term developments tend to be restricted in many countries due to data limitations. Against this backdrop, the aim of this paper is to provide an overview of the available data for monitoring macroeconomic and public finance developments at the regional level in Spain, and to present some examples of its practical use in real time. After a thoroughly review of the publicly available information, we identify two key informational gaps in this area of conjunctural analysis, namely: (i) the lack of homogeneous and official quarterly measures of aggregate regional economic activity (in particular, real GDP), and (ii) the limited sample size of time series pertaining to government budgetary developments at the regional level.

ESTRUCTURA IMPOSITIVA DE ESPAÑA EN EL CONTEXTO DE LA UNIÓN EUROPEA

DAVID LÓPEZ-RODRÍGUEZ Y CRISTINA GARCÍA CIRIA
OCCASIONAL PAPER N° 1810

This document describes the structure of the Spanish fiscal system in comparison with the economies

of the European Union. Spain stands out because of its persistently lower weight of tax revenue over GDP related with the EU28 average. This lower tax revenue over GDP is mainly due to indirect taxes (VAT, special and environmental taxes), having Spain systematically one of the lowest implicit tax rates over consumption in the EU28. Regarding labor taxation, its tax revenue over GDP is also lower to the EU28 average, although the weight of social security contributions over GDP is higher, in particular the contributions charged on employees. The later shows the lower fiscal pressure on labor income in personal taxes in Spain. Spain presents larger tax revenues over capital, in particular regarding wealth taxes.

PREVISIÓN DE LA CARGA DE INTERESES DE LAS ADMINISTRACIONES PÚBLICAS

JORGE MARTÍNEZ
OCCASIONAL PAPER N° 1811

This document presents a tool, available at the Banco de España, for forecasting General government interest payments in Spain. Contrary to some models, which are very detailed and take into account the specific characteristics and dates of every individual debt instrument issued by the government, the tool presented here aggregates as much as possible, for simplicity reasons, but without losing forecasting capacity, as it is shown in the document. Also, the explanatory variables and the accounting approach used are chosen to be consistent with the regular macroeconomic projection exercises of the Banco de España, of which they are part.

BITCOIN: ¿UNA SOLUCIÓN PARA LOS SISTEMAS DE PAGO O UNA SOLUCIÓN EN BUSCA DE PROBLEMA?

CARLOS CONESA
OCCASIONAL PAPER N° 1901

In October 2008 a mysterious article was published under the pseudonym Satoshi Nakamoto: "Bitcoin: a peer-to-peer electronic cash system". Bitcoin's entry into operation some months later in early 2009 barely caused a ripple. Since then, the scheme has accumulated more than half a million blocks in its blockchain and they include more than 300 million transactions. In view of the media impact of Bitcoin, it is worth explaining in some detail how Bitcoin works and what its limitations are. This article reviews the aims and basic functioning of Bitcoin, analyses its strengths and weaknesses, and discusses its usefulness as an exchange mechanism.

UN ANÁLISIS DEL IMPACTO DE LA SUBIDA DEL SALARIO MÍNIMO INTERPROFESIONAL EN 2017 SOBRE LA PROBABILIDAD DE PERDER EL EMPLEO

AITOR LACUESTA, MARIO IZQUIERDO AND SERGIO PUENTE

OCCASIONAL PAPER N° 1902

This article analyses the rise in the national minimum wage (NMW) in 2017 in Spain, drawing on information provided by the Social Security administrative labour records (MCVL). The results suggest this rise may have had an adverse effect on the probability of the group of workers with wages below the new minimum wage keeping their jobs. This effect would be of particular importance for older workers. The rise approved for the NMW in 2019 is far higher than those observed in the past, which considerably increases the number of workers affected and the uncertainty surrounding the adverse effects on the probability of them keeping their jobs. According to the estimates presented in this article, these negative effects could be significant.

EXPORTING SPANISH FIRMS. STYLIZED FACTS AND TRENDS

EDUARDO GUTIÉRREZ CHACÓN AND CÉSAR MARTÍN MACHUCA

OCCASIONAL PAPER N° 1903

During the last years, Spanish goods exports have increased significantly against a background of widening of the Spanish firms exporting base. This change has been led by SMEs, although there is still a high concentration of international sales in a small fraction of large and stable exporters. In any case, potential export growth has improved thanks to the widening of stable exporters base and to their geographical diversification towards emerging markets. Exporting firms are greater and have higher labour productivity than those focused only in domestic markets. Also within exporting firms, those with stable and diversified external flows are positively selected in terms of productivity and size. The potential widening of the stable exporting base would require an improvement of the efficiency of the segment of SMEs. Removing potential regulatory barriers that might restrict their growth and innovation ability is key to consolidate their presence in international markets in the long run.

AN APPLICATION OF DYNAMIC FACTOR MODELS TO NOWCAST REGIONAL ECONOMIC ACTIVITY IN SPAIN

MARÍA GIL, DANILO LEIVA-LEON, JAVIER J. PÉREZ AND ALBERTO URTASUN

OCCASIONAL PAPER N° 1904

The goal of this paper is to propose a model to produce nowcasts of GDP growth of Spanish regions, by means of dynamic factor models. This framework is capable to

incorporate in a parsimonious way the relevant information available at the time that each forecast is made. We employ a Bayesian perspective to provide robust estimation of all the ingredients involved in the model. Accordingly, we introduce the Bayesian Factor model for Regions (BayFaR), which allows for the inclusion of missing data and combines quarterly data on regional real output growth (taken from the database of the AIReF and from the individual regional statistics institutes, when available) and monthly information associated to indicators of regional real activity. We apply the BayFaR to nowcast the GDP growth of the four largest regions of Spain, and illustrate the real-time nowcasting performance of the proposed framework for each case. We also apply the model to nowcast Spanish GDP in order to be able to assess the relative growth of each region.

BREXIT: BALANCE DE SITUACIÓN Y PERSPECTIVAS

JUAN LUIS VEGA

OCCASIONAL PAPER N° 1905

Almost three years on since the Brexit referendum and two since the intense negotiations between the parties began, the failure by the British Parliament to ratify the November 2018 agreement between the UK Government and the other EU governments has led to a situation of great complexity. With only a few days remaining until 29 March 2019, when the Article 50 deadline for withdrawal expires, no consensus plan has emerged yet. Without an alternative plan, a no-deal exit is – excepting postponement – the current default option. This Occasional Paper takes stock of the current situation and outlook for Brexit (i.e. the process of UK withdrawal from the EU) by drawing together a number of studies produced at the Banco de España in connection with the regular monitoring of the process and its potential effects on the Spanish economy. After noting where the current negotiations stand, the paper reviews UK economic developments since the surprise result of the referendum was announced in June 2016. It further lays out the medium-term outlook for the British economy, which hinges crucially on both the type of future trade relationship to be agreed between both areas and the degree of disruption caused by the withdrawal process. As regards Spain, the paper analyses several issues related to its trade and financial exposures to the UK and also provides estimates of the potential effects of Brexit on the Spanish economy under various hypothetical scenarios using the MTBE (i.e. the quarterly macroeconomic model of the Spanish Economy regularly used at the Banco de España for forecasting and policy analysis). Finally, mention is made of the contingency measures adopted, within their respective

remits, by the European Commission and the Spanish Government, in the event of an abrupt no-deal exit.

FINANCIAL STABILITY REVIEW

The Financial Stability Review is a half-yearly journal published by the Banco de España that aims to act as a platform for communication and dialogue regarding issues related to financial stability, with a particular focus on prudential regulation and supervision. Its board of editors comprises internal and external professionals. All articles appearing in the journal, which may be authored by Banco de España staff or researchers from other institutions, are refereed by at least one member of the board of editors.

NON-PERFORMING LOANS AND EURO BANK LENDING BEHAVIOR AFTER THE CRISIS

JOHN FELL, MACIEJ GRODZICKI, JULIAN METZLER AND EDWARD O'BRIEN

FINANCIAL STABILITY REVIEW, 35, NOVEMBER 2018, 7-28

Non-performing loans (NPLs) remain high on the policy agenda in Europe. Their persistence at elevated levels after the financial crisis gave rise to financial stability concerns, including possible adverse impacts on financial intermediation. Using a novel bank-level data set for large euro area banks, the authors find evidence that the stock of NPLs relative to banks' shock-absorbing capacity, measured by bank capital, has been a significant factor in explaining bank-specific loan origination. The effect is found to be more significant for corporate than for household lending. The article concludes that dedicated policies aimed at reducing NPL stocks are required to avoid adverse impacts on the real economy, such as the guidance that the Single Supervisory Mechanism has given to banks on their NPL strategies. Finally, the authors underscore the need for complementary measures to address impediments to NPL resolution, such as the weaknesses in judicial frameworks and in insolvency regulations in the different countries.

MACROPRUDENTIAL POLICY IN PORTUGAL: EXPERIENCE WITH BORROWER-BASED INSTRUMENTS

ANA CRISTINA LEAL AND DIANA LIMA

FINANCIAL STABILITY REVIEW, 35, NOVEMBER 2018, 29-56

The article explains an innovative and complex macroprudential policy measure adopted in Portugal

in February 2018. What it involves is a series of recommendations on credit standards for new loans for households, including both mortgage and consumer credit. Specifically, the Portuguese central bank recommends limits to LTV ratios, DSTI ratios and maturities on new loans, along with avoiding grace periods in the repayment of principal and/or interest on the loans subject to the recommendations. The measure is aimed at preventing excessive risk-taking by banks and other financial intermediaries, promoting the resilience of the financial system and fomenting prudent standards for household access to loans for house purchase. The authors analyse the Portuguese measure in light of the risks identified, the goals of this measure and the timing of its implementation.

THE SECOND PAYMENT SERVICES DIRECTIVE

ALBERTO JAVIER TAPIA HERMIDA

FINANCIAL STABILITY REVIEW, 35, NOVEMBER 2018, 57-78

This article offers a succinct overview of Directive (EU) 2015/2366 on payment services (PSD2). First, it describes general aspects of PSD2 within its considerable geographical, transitional, regulatory framework of reference along with its legislative policy purpose and its regulatory background. Next, it sets out the regulatory structure of payment services in the EU and the different types of service providers and users these services involve. Further, it describes how payment services function in the EU under the PSD2, starting with the proper identification of the agreements arising from these services. Finally, the author sets out the rules on transparency and the legal status of the parties involved, comprising their rights and obligations when payment transactions are authorised and carried out.

A NEW REGIME FOR ACCESS TO PAYMENT ACCOUNTS: PSD2

CARLOS CONESA, SERGIO GORJÓN AND GREGORIO RUBIO

FINANCIAL STABILITY REVIEW, 35, NOVEMBER 2018, 79-98

This article presents Directive (EU) 2015/2366 on payment services (PSD2). The authors consider its possible consequences in the finance industry, since the Directive has added a further competitive challenge, on top of growing digitalisation. The article analyses the emergence of a new type of payment service provider, authorised under PSD2, that acts as an information "aggregator" or as a payment transaction initiator. These emerging entities are now able to establish a direct relationship with the customers of credit institutions, which enables

them to gain access to information of undoubted commercial value. These entities can conduct transactions on behalf of bank customers, without having to manage themselves a payment account. The authors conclude that this new landscape heralds a foreseeable change in banks' current statu quo and business models, which will boost the development of new value propositions benefiting both their customers and society as a whole.

VIRTUAL AND LOCAL CURRENCIES: ARE PARACURRENCIES THE NEW FORM OF MONEY?

MARÍA ÁNGELES NIETO GIMÉNEZ-MONTESINOS AND JOAQUÍN HERNÁNDEZ MOLERA

FINANCIAL STABILITY REVIEW, 35, NOVEMBER 2018, 99-117

The growing expansion at the global level of virtual and local currencies, called paracurrencies in the article, has prompted regulators and supervisors to begin to pay particular attention to them. The authors contend that, at present, they should not be considered as money and, despite their potential money substitution intentions, they will not foreseeably be so considered in the future. The article highlights the fact that paracurrencies entail far from negligible risks for consumers, even when they are used in a limited area, as is the case at present. However, the authors affirm that the risks identified in relation to the stability of the financial system are so far limited, although the growing popularity of paracurrencies might lead to an increase in such risks in the future. To date, supervisors' and regulators' efforts have focused on the assessment of the phenomenon, and the monitoring of the possible risks, with the purpose of evaluating whether to adopt measures to mitigate them and the advisability of developing a specific regulatory framework for paracurrencies.

THE IMPACT OF THE INTEREST RATE LEVEL ON BANK PROFITABILITY AND BALANCE SHEET STRUCTURE

CARLOS PÉREZ AND ALEJANDRO FERRER

FINANCIAL STABILITY REVIEW, 35, NOVEMBER 2018, 119-148

The authors study the sensitivity of bank profits and balance sheet structure to changes in the level of interest rates in Spain during the 2000-2016 period. To do so they estimate autoregressive distributed lag (ARDL) models which include the effect of the business cycle and of interest rate levels for the aggregate time series of the main asset and liability categories (credit, financial securities, time deposits, etc.) and profit components (returns on assets and

liabilities, provision charges, etc.). The authors find a non-linear relationship between interest rates and net interest income, which is positive at low interest rate levels. This relationship is driven by the effect of interest rates on asset and liability returns, on credit growth, and on the bank mix of credit, deposits and financial securities. Broader profit measures also present a non-linear relationship to interest rates, which may even be negative for low interest rate levels if provisioning charges are high enough.

SPANISH HOUSEHOLD DEBT DEFAULTS: RESULTS OF THE SPANISH SURVEY OF HOUSEHOLD FINANCES (2002-2014)

JOSÉ MARÍA CASADO AND ERNESTO VILLANUEVA

FINANCIAL STABILITY REVIEW, 35, NOVEMBER 2018, 149-168

The proportion of indebted households that had incurred a debt default over the 12 previous months increased by 7 pp from 2002 to 2014, according to the Spanish Survey of Household Finances. This article identifies the population groups among whom debt payment defaults have most increased. It also analyses the change in defaults over the economic cycle in the face of declines in the income and changes in the labour market status of household members. The results suggest that the declines in household income and job loss by the main household breadwinner are significant factors when seeking to understand the increase in debt defaults over the period considered. The authors conclude that the course of household debt payment defaults during the recession was closely linked to changes in their disposable income.

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CAPITAL MARKETS LAW JOURNAL (OXFORD UNIVERSITY PRESS)

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NEWS

"SECTIONS AWARD" OF THE MADRID BAR ASSOCIATION

The paper "Abogacía, Derecho bancario y banca: ¿Cómo ha influenciado la abogacía española el desarrollo del mercado bancario en los años más recientes?" by [Juan S. Mora-Sanguinetti](#), has been awarded the "Premio Secciones" of the Madrid Bar Association (Ilustre Colegio de Abogados de Madrid) to the best paper in Banking Law.

CARLO GIANNINI AWARD

The paper "[Household portfolio choices and non linear income risk](#)" by [Julio Gálvez](#), has been recognized with the Carlo Giannini Award for the best paper on Macroeconometrics and Econometrics by young researchers by the Italian Econometric Society (SIIE).

RECENT CONFERENCES

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BANCO DE ESPAÑA-SUERF CONFERENCE: FINANCIAL DISINTERMEDIATION AND THE FUTURE OF THE BANKING SECTOR

MADRID, 30 OCTOBER 2018

The Banco de España and SUERF have jointly organized a conference entitled "Financial disintermediation and the future of the banking sector", that has taken place in the Banco de España headquarters on 30 October 2018. The event brought together academics, practitioners and policymakers to discuss the process of financial disintermediation and the role of monetary policy and financial regulation, the future of the banking sector and the Capital Markets Union.

[Conference programme >](#)

CONFERENCE ON RISK, VOLATILITY AND CENTRAL BANKS' POLICIES

MADRID, 29-30 NOVEMBER 2018

The Banco de España held a joint conference with the Central Bank Research Association (CEBRA) on "risk,

volatility and central banks' policies", on 29-30 November in Madrid. The conference covered a broad range of topics related to risk and volatility. The Banco de España and CEBRA chose this topic, taking into account the growing awareness of the importance of risk and market volatility for both monetary policy and financial stability.

[Conference programme >](#)

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ISABELLE MEJEAN

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FEDERAL RESERVE BANK OF ST. LOUIS,

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JORGE PADILLA

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PEOPLE



OLYMPIA BOVER

Director, Structural Analysis and Microeconomic Studies Department
DG Economics, Statistics and Research

Olympia Bover has been an economist at Banco de España since 1991. Previously, she was a Research Fellow at Nuffield College, Oxford, and at the Centre for Economic Performance at the LSE. She is a graduate from the University of Barcelona and holds a Ph.D. from the London School of Economics. She is an International Research Associate at the Institute for Fiscal Studies, London, and a Research Fellow of CEPR. She is a Fellow of the European Economic Association and a former President of the Spanish Economic Association.

Earlier contributions

Following her PhD at LSE, Olympia's work focused on both econometric methods and empirical work on labor supply, consumption and housing. In her PhD thesis papers, Bover (Economic Journal, 1989) and Bover (Journal of Labor Economics, 1991), Olympia proposes new approaches to measure life cycle labor supply responses to permanent wage changes using US micro data. As part of her postdoctoral research, Bover, Muellbauer and Murphy (Oxford Bulletin of Economics and Statistics, 1989) analyse the interactions between housing and labor markets in the UK. The joint work with Manuel Arellano (Journal of Econometrics, 1995) is the key contribution of Olympia's work on econometric methods. This work is the first to propose panel data system estimators, which rely on the idea of using differences of predetermined variables as instruments for equations in levels.

In 1991 Olympia joined the Banco de España, where she has been steadily engaging and promoting research that uses micro data sets to learn about different aspects of the Spanish

economy. This type of research often requires the use of new data or new ways of looking at existing data and figuring out the precise questions of policy significance that can be answered. Using comparable micro data and information on labor market institutions, Olympia, jointly with Pilar García-Perea and Pedro Portugal (Economic Policy, 2000) found that the wage setting process was a key explanation of the stark difference in the unemployment rates of Portugal and Spain. In joint work with Manuel Arellano and Samuel Bentolila (Economic Journal, 2002), they relied on the duality between permanent and temporary workers and longitudinal labor force surveys to estimate the effect of unemployment benefits over the business cycle on individual unemployment durations. In another project, Olympia and Nadine Watson (Journal of Monetary Economics, 2005) use firm level panel data from Spain, the UK and the US to estimate scale elasticities in the demand for money by firms.

During the early 2000's Olympia spearheaded a project to conduct a new major survey on household finances in Spain. The Encuesta Financiera de las Familias (EFF) has been conducted since 2002, on a triennial basis, to obtain direct information about the wealth, debt, income and consumption of Spanish households. A significant part of Olympia's research since then was inspired by facts that emerged from the EFF. In Bover (2010), which was awarded the John W. Kendrick Prize for the best microeconomics article published in the Review of Income and Wealth in 2010 and 2011, Olympia compared the wealth distribution in the US and Spain and learned that for comparable households the left tail of the distribution in the two countries became more equal, but the right tail became even more unequal than in the unmatched raw data.

Current research

More recently, Olympia's work has focused on subjective probabilistic expectations, and on the differences across euro area countries in the distributions of household debt. Using new EFF data on subjective probabilistic expectations on house prices, Bover (SERIEs, 2015) highlights that housing investment and car purchases are negatively associated with pessimistic expectations about future house price changes and with uncertainty about those expectations. Furthermore, in collaboration with Ernesto Villanueva and other colleagues in the Household Finance and Consumption Eurosystem Network, they document for the first time the (very substantial) differences across euro area countries in the distributions of debt after controlling for household composition. They also point out that among the legal and economic institutions, the length of asset repossession periods best accounts for the variation found across countries in the distribution of secured debt.

Financial education has also become an important topic for Banco de España. Olympia has coordinated, together with Laura Hospido and Ernesto Villanueva, the new Spanish Survey of Financial Competences, conducted in partnership with the Comisión Nacional del Mercado de Valores (CNMV). Olympia, Laura and Ernesto are currently studying the impact of high school financial education on financial knowledge and choices using data from a randomized trial conducted in a sample of Spanish schools.

The future

Going forward, Olympia highlights that a central area of current policy-relevant research studies the macroeconomic consequences of microeconomic inequality. It is now well understood that not only different people respond differently to policy but also that these heterogeneous responses have aggregate consequences. As such, the availability of rich micro data has the potential to strengthen the empirical content of macro policy. Although she points out that the availability of interconnected comprehensive administrative micro databases opens new opportunities for research and will revolutionize the way policy analysis is done, she thinks that it is convenient to regard survey and administrative data as complements, and develop their complementarities for research. Among the aspects that are unlikely to be found in administrative data are time use (consumption, search, leisure, home production, child care), self-reported information (health, wealth, adult skills), and subjective expectations (income, mortality, economic environment).

Finally, Olympia emphasizes the importance of obtaining high frequency household survey data. Such datasets may aid in the understanding of the liquidity conditions faced by poor households and its implications for wealth accumulation. Another important question high frequency data should help answer is whether poor households mismanage their finances due to inadequate financial education, or suffer from liquidity problems and financial market failure.

ANNOUNCEMENTS

UPCOMING CONFERENCES

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SPECIAL ISSUE ON TAXES AND TRANSFERS OF THE JOURNAL OF THE SPANISH ECONOMIC ASSOCIATION-SERIES

MADRID, 26 APRIL 2019

A selection of papers from the special issue on taxes and transfers of the Journal of the Spanish Economic Association-SERIES will be presented at a conference hosted by the Banco de España on April 26, 2019. Editors for this special issue are [Juan Carlos Conesa](#) (Stony Brook University) and [Javier Pérez](#) (Banco de España).

ESSIM 2019 CONFERENCE

RODA DE BARÁ (TARRAGONA), 7-10 MAY 2019

From May 7th to 10th, the Banco de España will host the 27th CEPR European Summer Symposium in International Macroeconomics (ESSIM 2019) at its residence in Tarragona. The conference covers the following CEPR programme areas: International Macroeconomics and Finance (IMF), Monetary Economics and Fluctuations (MEF) and Macroeconomics and Growth (MG). [Charles Engel](#) (University of Wisconsin and CEPR), [Pete Klenow](#) (Stanford University and CEPR) and [Laura Veldkamp](#) (Columbia University and CEPR) will participate as guest speakers.

WAGE FLEXIBILITY AND ITS MACROECONOMIC IMPLICATIONS

MADRID, 22 MAY 2019

On May 22nd, Banco de España will host a workshop on "Wage flexibility and its macroeconomic implications". The aim of the workshop is to analyze the costs and benefits of having higher wage flexibility. To this end, different papers will address the welfare implications of having higher wage flexibility under different macroeconomic circumstances, the potential effects of minimum wage developments, and the effect of collective agreements on the response of wages and employment to negative shocks.

EABCN CONFERENCE: "ADVANCES IN BUSINESS CYCLE ANALYSIS"

MADRID, 30-31 MAY 2019

On May 30-31 2019, the Banco de España will host the EABCN Conference on Advances in Business Cycle Analysis at its headquarters in Madrid. The conference will cover a broad range of themes related to empirical aspects of business cycles - in particular novel methodologies for dating business cycles and their effects on the economy. [Marc Giannoni](#) (Federal Reserve Bank of Dallas and CEPR), and [Lucrezia Reichlin](#) (London Business School and CEPR) have kindly accepted the invitation to give a talk at the conference.

JOINT 7th CEPR ECONOMIC HISTORY SYMPOSIUM AND 5th BANCO DE ESPAÑA ECONOMIC HISTORY SEMINAR

RODA DE BARÁ (TARRAGONA), 30-31 MAY 2019

On 30-31 May 2019 the Joint Seventh CEPR Economic History Symposium and Fifth Banco de España Economic History Seminar will take place in Roda de Bará (Tarragona). The symposium aims to bring together leading researchers in fields including, but not necessarily limited to, (i) Macroeconomic and financial history, (ii) Economic growth in the very long run, (iii) Institutions and economic development and (iv) The history of the international economy.

SECOND CONFERENCE ON FINANCIAL STABILITY

MADRID, 3-4 JUNE 2019

Banco de España in cooperation with CEMFI organizes a series of biennial conferences to promote the research and discussion of topics related to financial stability and macroprudential policy among academics, practitioners, and policy-makers. The second conference will be held at Banco de España in Madrid on 3-4 June 2019. The program will contain both theoretical and empirical papers related to financial stability issues, with a special focus on the analytical frameworks and tools for macro-prudential policies to address systemic risk.

THIRD BANCO DE ESPAÑA ANNUAL RESEARCH CONFERENCE

MADRID, 16-17 SEPTEMBER 2019

On 16-17 September 2019, the Banco de España will host its Third Annual Research Conference at its Madrid headquarters. This year the theme of the conference will be “The EMU at 20: current status and the way forward”. Leading scholars such as [Giancarlo Corsetti](#) (University of Cambridge), [Emmanuel Farhi](#) (Harvard University), [Ramón Marimon](#) (European University Institute), [Thomas Philippon](#) (NYU Stern), [Rafael Repullo](#) (CEMFI), [Tano Santos](#) (Columbia Business School), [Carmen Reinhart](#) (Harvard Kennedy School), [Hélène Rey](#) (London Business School), and [Ivan Werning](#) (MIT), among others, have confirmed their participation.

THIRD ANNUAL WORKSHOP OF THE ESCB RESEARCH CLUSTER 3 ON “FINANCIAL STABILITY, MACROPRUDENTIAL REGULATION AND MICROPRUDENTIAL SUPERVISION”

MADRID, 10-11 OCTOBER 2019

On 10-11 October, the Banco de España will host the Third Annual Workshop of the ESCB Research Cluster 3 on “Financial Stability, Macroprudential Regulation and Microprudential Supervision”, jointly organized with the Bank of Greece. This is one of the three Research Clusters set up by the Heads of Research of the European System of Central Banks (ESCB), with the aim of fostering interaction and collaboration between ESCB researchers working on fields of common interest.

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EDITORS: Henrique Basso and Roberto Ramos

ADDRESS: Banco de España, Calle Alcalá 48. 28014 Madrid

PHONE: +34 91 338 50 00

EMAIL: investigacion@bde.es

MAIN WEBPAGE: <http://www.bde.es>

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