SPRING 2015
RESEARCH UPDATE

BANCO DE ESPAÑA Eurosistema

Welcome to the Banco de España RESEARCH UPDATE

The Banco de España is pleased to release the third issue of its *Research Update,* the first of two issues that will appear in 2015.

Three featured articles appear in this issue. Pablo Hernández de Cos, Gerrit Koester, Enrique Moral-Benito, and Christiane Nickel discuss the importance of country heterogeneity in thresholds for signalling fiscal stress. Laura Hospido and Eva Moreno-Galbis analyze the recent spurt in Spanish labor productivity, presenting evidence that large, low productivity firms have exited during the financial crisis, while large surviving firms and large entrants display high productivity. Patricia Gómez discusses how tranching of sovereign debt can provide liquidity and thus promote investment in an open economy.

In addition to these featured articles, this issue includes an interview with Javier Pérez, head of the Fiscal Policy Unit, who discusses short-term forecasting tools for monitoring compliance with fiscal rules and other current topics in European fiscal policy. The *Research Update* also lists recent working papers and scholarly publications of Banco de España staff, and provides information on recent and upcoming events.

We highlight these and other Banco de España research activities 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
Juan Ayuso
Ángel Estrada
Juan Francisco Jimeno
Jesús Saurina

Committee on Research Activities
Banco de España

FEATURES

SIGNALLING FISCAL STRESS IN THE EURO AREA: A COUNTRY-SPECIFIC EARLY WARNING SYSTEM

P. HERNANDEZ DE COS (BDE), G. KOESTER (ECB),
E. MORAL-BENITO (BDE), C. NICKEL (ECB).

The sovereign debt crisis in the euro area has raised interest in early warning indicators, aimed at signalling the build-up of fiscal stress in advance and helping prevent crises by means of a timely counteraction of fiscal and macroeconomic policies. This paper presents possible improvements to enhance existing early warning indicators for fiscal stress, especially for the euro area. We show that a country-specific approach could strongly increase the signalling power of early warning systems. Finally, we draw policy conclusions for the setting-up and application of a system of early warning indicators for fiscal stress.

1   Introduction

The sovereign debt crisis in some euro area countries increased the interest in early warning mechanisms that could indicate the buildup of fiscal stress early on, facilitating a timely counteraction by fiscal and macroeconomic policies.

The literature on early warning indicators is dominated by the so-called signalling approach, which derives critical thresholds for fiscal and financial variables indicating fiscal stress.[1] This approach was pioneered by Kaminsky, Lizondo and Reinhart (1998) and Kaminsky and Reinhart (1999), and was first applied to currency crises. Currently the signalling approach has become prominent with respect to early warning indicators for fiscal stress (e.g. Baldacci et al., 2011, or European Commission, 2011).

This paper aims to further develop the existing signalling approach, especially for the euro area.[2] We first briefly review previous studies in the literature, and then propose an extension of the approach aiming to improve its forecasting performance by estimating country-specific thresholds.

2. The signalling approach

The signalling approach to identifying fiscal stress basically consists of four steps. First, fiscal stress needs to be defined. In a second step, a set of "leading indicators" for fiscal stress is selected. In a third step, thresholds for each variable (maximising signalling power for a given signalling window)[3] are calculated. In the fourth step, the variables are then aggregated into composite indices for signalling fiscal stress.

The analytical core of the approach is the way the thresholds for the different variables are calculated. Most common here is minimisation of the total misspecification error (TME), that is, maximisation of the signalling power. The total misspecification error (TME) is the sum of the Type I error (the fraction of noncrisis situations in which a crisis is signalled) and the Type II error (the fraction of crises in which no crisis is signalled); see Table 1. The signalling power is defined as one minus Type I error minus Type II error. In the final step, to calculate the composite indices for fiscal stress, the influence of the different variables is weighted with the signalling power.

---

[1]   Some authors prefer the term "fiscal crisis" but we generally use "fiscal stress".

[2]   An alternative approach to the early warning mechanisms pursued here is the estimation of critical debt limits (based on countries' fiscal reaction to debt increases in the past) and the remaining "fiscal space". See, for example, Ostry et al. (2010).

[3]   Here the signalling window is generally set to one year, meaning that the signalling power of a variable in t-1 for a crisis in t is evaluated.

TABLE 1

	Crisis episode	Non-crisis episode
Crisis signal	True Positive signal	False Positive signal (Type I error)
Non-crisis signal	False Negative signal (Type II error)	True Negative signal

Previous research on early warning indicators for fiscal stress is generally based on this signalling approach, considering common thresholds for all the countries in the sample. For instance, the European Commission (2011) applied the general signalling approach to a large dataset (covering 27 fiscal and financial variables in a panel of 33 developed countries from 1970-2010),[4] adopting the fiscal stress definition of Baldacci et al. (2011). Under this definition, fiscal stress is indicated if any of the following four criteria are satisfied: i) inflation rate above 35%, ii) significant sovereign bond yield spreads (2 standard deviations above their country-specific mean), iii) public debt default/restructuring/rescheduling and/or iv) a large-scale IMF-supported programme.

We argue that two caveats are relevant within this common-threshold approach. On the one hand, country-specific factors are fully ignored, even though they are likely to be important in defining and anticipating fiscal stress situations. On the other hand, the resultant common thresholds might become very sensitive to outliers.

Moreover it is usual in the literature to evaluate the signalling power of the methodology only "in-sample". However, we argue that for an early warning system the forward-looking "out-of-sample" forecast performance is important.

3 Country-specific thresholds and out-of-sample evaluation

In this paper, we begin by building on the same dataset and crisis definition considered in previous studies (e.g. Baldacci et al., 2011, or European Commission, 2011). However, we propose to estimate country-specific thresholds for the indicator variables, which take the (potentially large) differences between the countries in the sample into account.[5]

Estimation results in Table 2 indicate that country-specific thresholds vary strongly over our sample.

---

[4] The countries covered are the EU (without Cyprus, Luxembourg and Malta) and Australia, Canada, Iceland, Israel, Japan, New Zealand, Norway, Switzerland and the US.

[5] One precondition for this country-specific analysis is that the countries concerned need to have at least one crisis episode in the sample in order for country-specific thresholds to be determined. For countries without a crisis, we set the maximum or minimum value observed for the variable as the threshold for fiscal stress.

COUNTRY-SPECIFIC THRESHOLDS FOR SELECTED VARIABLES (a)

TABLE 2

	Gross debt, % GDP (+)	Change in gross debt, % GDP (+)	Change in public expenditure, % GDP (+)	Primary balance, % GDP (–)	Overall index (+)
AUT	72.26	6.02	4.36	-1.99	0.21
BEL	134.24	12.44	6.66	-7.39	0.42
DEU	17.69	-0.43	0.59	2.23	0.99
ESP	53.26	13.41	4.51	-8.34	0.99
FIN	14.49	6.41	8.92	0.91	0.57
FRA	81.70	10.60	-0.06	-4.80	0.55
GRC	78.37	-0.69	1.49	-0.65	0.89
IRL	25.01	-2.85	-0.14	1.12	0.85
ITA	50.26	-3.03	-1.19	-4.06	0.80
NLD	78.48	12.92	5.31	-3.58	0.15
PRT	68.27	3.51	5.13	-0.21	0.58
Common	103.62	6.59	-2.39	-0.65	0.37

a Variables labelled with (+) are those that indicate an early warning when they exceed the value of the estimated threshold (e.g. gross debt as a share of GDP). Analogously, those variables with a (-) generate an early warning when taking a value below the estimated threshold (e.g. primary balance as a share of GDP).

TABLE 3

			Overall index	Fiscal index	Financial index
In-sample	Common	Sig. Power	0.56	0.22	0.50
		Type I	0.24	0.15	0.26
		Type II	0.20	0.64	0.24
	Country-specific	Sig. Power	0.95	0.88	0.87
		Type I	0.05	0.09	0.06
		Type II	0.00	0.04	0.07
Out-of-sample	Common	Sig. Power	0.42	0.13	0.47
		Type I	0.40	0.05	0.36
		Type II	0.18	0.82	0.18
	Country-specific	Sig. Power	0.77	0.58	0.79
		Type I	0.18	0.24	0.16
		Type II	0.06	0.18	0.06

NOTES: Type I error is the ratio of false positives to the number of no-crisis observations. Type II error is the ratio of false negatives to the number of crisis observations. Signalling power is defined as 1 – Type I – Type II. The percentage of true positives equals 1 – Type II; the percentage of true negatives is 1 – Type I.

While the threshold for the debt level is found to be 103.6% when common thresholds are estimated, the country-specific estimate is usually found to be much lower. For example, for the Netherlands, the estimate is 78.48% of GDP. However, the results also point at an important remaining weakness of the approach. For Germany the only crisis in the sample is recorded in 1974, when the debt level stood at 17.7% of GDP. This led then to the estimation of a very low country-specific debt threshold, which is economically not meaningful. However, this seems to be a problem resulting not so much from country-specific thresholds, but from the crisis definition and the number of crisis episodes.[6]

How does our country-specific approach affect signalling power? Detailed analyses reported in the paper lead to the conclusion that the country-specific approach strongly increases the signalling power of all variables and therefore of the overall fiscal stress indices too.

Table 3 demonstrates this improvement with respect to the composite indices. In addition to the overall index, encompassing 27 variables, the paper also constructs an index of 13 variables related to the country's fiscal stance, and an index of 14 financial and competitiveness variables (see the Working Paper for a detailed description of the variables, which are taken from European Commission, 2011). With respect to in-sample performance, three aspects should be noted:

[6] In any event, note that when computing the composite indices, the influence of the different variables is weighted with their signalling power.

— The signalling power of the overall index is strongly increased from 0.56 in the common threshold approach to 0.95 in the country-specific approach. In particular, the Type II error can be completely eliminated. This means that the overall index with the country-specific threshold does not miss any crisis event.

— The increase in signalling power of the fiscal index is even stronger than that of the overall index – suggesting a larger role of country heterogeneity with respect to the fiscal variables. Here the signalling power increases from 0.22 in the common threshold approach to 0.88 in the country-specific approach. The Type II error indicates that only 4% of crisis episodes are missed by the fiscal index.

— The signalling power of the financial-competitiveness index increases as well – but on a higher level: from 0.50 to 0.87. Thus, the financial-competitiveness index has slightly less predictive power for fiscal crises than the fiscal index.

Additionally, we argue in favour of the importance of out-of sample forecasts. Indeed, the improvement in terms of in-sample performance described above might result obvious ex-ante since it amounts to relaxing a homogeneity restriction on the thresholds, so the estimation criterion cannot worsen. In order to consider out-of-sample forecasts, we first estimated the thresholds based on the data from 1970-2000 and then analyzed the out-of-sample forecast performance

on the remaining data from 2000-2010. Here the following three results should be stressed:

— The signalling power decreases for all indices (common and country-specific thresholds). However, with respect to the overall index the reduction is fairly moderate.

— The fiscal index based on the common threshold is nearly rendered meaningless for the out-of sample forecast. Its signalling power decreases to 0.13 and it misses 82% of the crisis episodes.[7] One explanation for this result could be that country heterogeneity has strongly increased after 2000, further reducing the predictive power of the common threshold approach.

— With respect to the financial index based on the country-specific threshold the reduction is far less strong and the index misses only 6% of the crisis episodes. This suggests that country heterogeneity has not increased as much as in the fiscal sphere.

4   Concluding remarks

This paper introduces country-specific thresholds for fiscal stress, and analyzes both in-sample and out-of-sample forecast performance, following the signalling approach commonly used in the literature.

Our analyses show that country-specific thresholds vary strongly and substantially increase the signalling power of all variables and of the composite indices. Country-specific thresholds are especially important for the signalling power of fiscal variables – indicating that an early warning system should pay particular attention to differences across countries in the fiscal realm.

Our consideration of out-of sample performance further supports our country-specific approach. Country-specific thresholds perform much better for out-of-sample forecasts, whereas the common threshold fiscal index loses a lot of signalling power in the out-of-sample forecast. This can be seen as an indication that country heterogeneity in the fiscal sphere has strongly increased after 2000, further reducing the predictive power of the common threshold approach.

5   References

E. BALDACCI, I. PETROVA, N. BELHOCINE, G. DOBRESCU, and S. MAZRAANI (2011), "Assessing Fiscal Stress", IMF Working Paper 11/100.

EUROPEAN COMMISSION (2011), *Public Finances in EMU.* Brussels (Chap. 3).

M. FRATZSCHER, A. MEHL, and I. VANSTEENKISTE (2011), "130 Years of Fiscal Vulnerabilities and Currency Crashes in Advanced Economies", CEPR Discussion Paper No. 8612.

G.L. KAMINSKY, and C.M. REINHART (1999), "The Twin Crises: the Causes of Banking and Balance of-Payments Problems", *American Economic Review* 89 (3), pp. 473-500.

G. KAMINSKY, S. LIZONDO, and C.M. REINHART (1998), "Leading Indicators of Currency Crises", IMF Staff Papers 45 (1).

J.D. OSTRY, A.R. GHOSH, J.I. KIM, and M.S. QURESHI (2010), "Fiscal space", IMF Staff Position Note SPN/10/11, IMF, Washington DC, September.

---

[7]   Note that the signalling power can also take negative values.

THE SPANISH PRODUCTIVITY PUZZLE IN THE GREAT RECESSION

LAURA HOSPIDO AND EVA MORENO-GALBIS

While Spain has traditionally underperformed its European neighbors in terms of labor productivity, this trend reverses after 2007. Part of the explanation for this reversal is likely to be the direct impact of decreasing labor inputs relative to capital. Using a longitudinal sample of Spanish manufacturing and services companies between 1995 and 2012, we show that the recent increase in Spanish aggregate productivity is also driven by the behavior of firm-level total factor productivity (TFP), and by composition effects. Turning to the correlates of firm TFP, by combining firm-level information on balance sheet items, collective agreements and imports/exports, we find that firm TFP is positively correlated to firm-specific collective agreements and access to external markets during the whole period. In addition, our estimates indicate that firm TFP was negatively correlated to the proportion of temporary workers during the expansionary period (1995-2007), but positively correlated during the crisis (2008-2012).

1 Introduction

The divergent productivity growth experiences of the United States and various countries in Europe during the current economic crisis highlight the importance of understanding the factors underlying labor productivity growth (see Figure 1). In particular, the slowdown of Spanish labor productivity growth between the mid-1990s and 2000s contrasts with the positive productivity growth in the US and other European countries. Since 2007, the differential has mostly gone in the opposite directio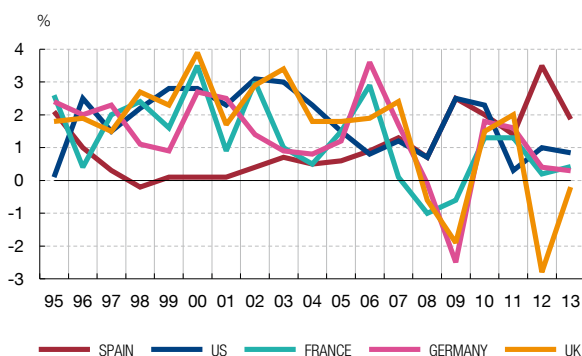n. Determining the temporary or permanent nature of the factors underlying recent productivity growth is important for predicting Spanish future competitiveness.

From an accounting point of view, GDP per capita can be decomposed into labor productivity and employment (measured as number of workers or hours of work). In Spain, the divergent evolution of GDP per capita and of labor productivity during the recent crisis is clearly related to the very adverse conditions in the labor market. Since 2007, unemployment has increased (particularly for men due to the downsizing of the construction sector), reaching 25% of the active population in 2012, and 40% for people between 16 and 29 years old. This evolution of the unemployment rate is mainly due to the massive destruction of jobs rather than the arrival of new entrants into the labor market. Moreover, job destruction has disproportionately affected employees with temporary contracts, which are usually associated with low productivity positions. Thus, the recent improvement in aggregate labor productivity could be related to a sharp drop in employment while the other factors of production remain fairly constant, but it could also be a composition effect due to the massive destruction of less productive positions.

This study estimates the evolution of total factor productivity (TFP) in Spain during the period 1995-2012, motivated by the role of TFP as the most informative predictor of future trends in labor productivity. We ask first whether the evolution of aggregate TFP results from a change in the TFP level of the majority of firms or if it instead reflects composition effects. Second, we study the relationship between the evolution of TFP at the firm level and available margins of adjustment, such as the mix of labor contracts used by the firm, the type of collective agreement, and the possibility of exporting or importing from abroad. In particular, we focus on the importance of these flexibility margins during the recent economic crisis (2008-2012).

2. Measuring TFP

Data sources

We combine information from several data sources. Data on the annual accounts of firms and on the number of employees by type of contract, capital, and

LABOR PRODUCTIVITY GROWTH IN SPAIN, US, FRANCE, GERMANY AND UK   **FIGURE 1**

SOURCE: OECD. Labor productivity defined as GDP per hour worked.

intermediate inputs were obtained from the Banco de España's Central Balance Sheet Data Office (CBSO) and from the Mercantile Registries. Information on the type of collective agreements comes from the Collective Agreement Registries. Finally, information on imports and exports is provided by the Balance of Payment Registries. The final sample is an unbalanced panel of 964,284 manufacturing and non-financial firms with 5,627,598 annual observations from 1995 to 2012.

Estimation of the production function

TFP is measured at the firm level as a residual from an estimate of the production technology obtained using a measure of output and information on the amounts of all the observable inputs. We characterize technology as a Cobb-Douglas production function with a logarithmic specification on gross output and inputs:

$$y_{it} = \beta_0 + \beta_L l_{it} + \beta_M m_{it} + \beta_K k_{it} + u_{it} \qquad (1)$$

$$u_{it} = \omega_{it} + \varepsilon_{it} \qquad (2)$$

where, for each firm i in year t, y_{it} denotes the log of gross real output; l_{it} and m_{it}, denote the logs of labor and intermediate inputs, respectively; k_{it} is the log of the fixed capital stock, and u_{it} is a random term containing any unobserved factors affecting production. In particular, we assume that u_{it} is the sum of two terms: the random variable ω_{it}, which represents firm-specific factors that affect productivity, such as managerial ability, firm specific human capital, efficiency in the use of technology and inputs, known by the firm when choosing labor and intermediate inputs but unobserved to the econometrician; and the random variable ε_{it}, an idiosyncratic term that includes measurement error in output or shocks affecting output that are unknown when the firm decides the amount of inputs. The random variable ω_{it}, usually called TFP, should affect input decisions, whereas ε_{it} is assumed to be independent of ω_{it} and other inputs.

In this framework a classical endogeneity problem arises from the fact that ω_{it} may be correlated with input choices. To overcome this problem we use the control function approach proposed by Olley and Pakes (1996). OP assume ω_{it} follows a first-order Markov process, without requiring any parametric assumption. Instead of instrumenting the endogenous regressors, they include other decision variables – such as investment - monotonically related with the productivity shock. Levinsohn and Petrin (2003) propose to use intermediate inputs, which (unlike investment) are likely to be nonzero at all times. In this case, the materials demand function $m_{it} = m_t(\omega_{it}, k_{it})$ is inverted to obtain $\omega_{it} = \omega_t(m_{it}, k_{it})$, under monotonicity plus some additional assumptions.

In general, Levinsohn and Petrin's method estimates the intermediate inputs elasticity β_M. But they point out[1] that under perfect competition, a separable production function, and some additional assumptions, (1) also applies to value added v_{it}, suppressing materials on the right-hand side. The equation becomes

$$v_{it} = \beta_L l_{it} + \phi_t(m_{it}, k_{it}) + \varepsilon_{it}, \qquad (3)$$

where $\phi_t(m_{it}, k_{it}) = \beta_0 + \beta_K k_{it} + \omega_t(m_{it}, k_{it})$. In practice, we approximate $\phi_t(m_{it}, k_{it})$ by means of a third-order polynomial in m_{it} and k_{it}. Then equation (3) is estimated by OLS in a first stage to get the estimated coefficient β_L.[2]

A second stage of the routine identifies β_K. Assuming that ω_{it} is governed by a first-order Markov process, and that capital is predetermined, so that k_{it} does not respond to the time t innovation in productivity, the estimated coefficient β_K is found by minimizing a sum of squares that represents i.i.d. residuals.

Evolution of the estimated TFP

Once the technological parameters have been obtained, we recover our predicted TFP by plugging the estimated coefficients in the production function:

$$\widehat{(TFP)}_{it} \equiv \exp(\hat{\omega}_{it}) = \exp(v_{it} - \hat{\beta}_L l_{it} - \hat{\beta}_K k_{it}),$$

where v_{it} is the log of value added, that is, gross output net of intermediate inputs' contribution. Since TFP is estimated as a residual, we have different TFP estimations for each of the different model specifications and subsamples that we consider.[3]

Figure 2 compares the evolution of the average TFP growth at the firm level (left hand side panel), with that at the aggregate level (right panel). We can see that the growth rate of the average firm's TFP has been continuously negative and decreasing since the beginning of the crisis (between 2010 and 2012 there is
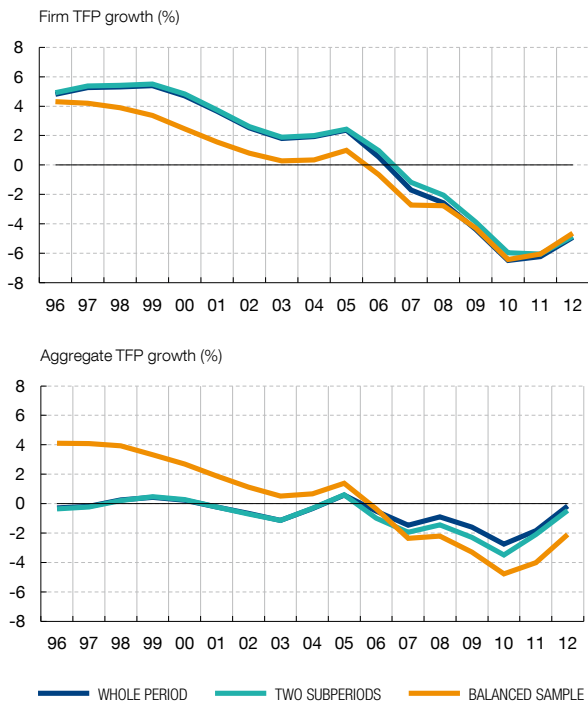
---

[1] See their Appendix B.
[2] To allow for differences across industries, we estimate a production function for each economic sector separately. We consider a 10-sector classification: Agriculture, Extractive, Manufacture, Energy, Construction, Sales, Transport, Tourism, Education-Health, Other non-financial services.
[3] Figure 2 reports estimates for the cases where production coefficients are estimated: (i) for the whole period; (ii) by sub-periods (1995-2007 versus 2008-2012); and (iii) for the whole period in a balanced panel of firms.

Firm TFP growth (%)

Aggregate TFP growth (%)

——— WHOLE PERIOD   ——— TWO SUBPERIODS   ——— BALANCED SAMPLE

NOTES: Firm TFP = simple average across firms; Aggregate TFP = firms aggregated using employment weights. Five years moving averages of annual growth rates.

a slight increase in the growth rate, though it remains below –5%). For aggregate TFP, the growth rate is negative but closer to zero during the crisis period. Moreover, in 2012 the growth rate becomes positive. Thus, composition effects seem to have played a major role in explaining the better performance of TFP at the macro level. That is, firms having a relatively larger size within the total population of firms have displayed a rising behavior of TFP during the crisis which has partially compensated the bad TFP performance of the vast majority of (smaller) firms.

Moreover, if we look within the balanced sample of firms (orange lines, representing firms that are present through the whole period) the evolution of aggregate TFP is not so different from that of the average firm. The lower average productivity in the balanced sample (orange) compared with unbalanced sample (blue) in the top panel indicates that some highly productive firms were nipped in the bud by the crisis. But in the bottom panel, we see that the balanced sample is initially much more productive in the aggregate than the unbalanced sample, indicating that the recession especially destroyed large firms with low TFP growth. In addition, the figure shows that among firms that survived the crisis, larger ones are more productive than the average and, moreover, large new firms that

have entered during or after the crisis are especially productive.

3   Adjustment margins

Finally, we quantify the relationship between firm TFP and some margins that companies have in order to adjust to changing economic conditions. More precisely, we consider two distinct types of adjustment margins. On the one hand, input adjustment margins concern the type of contract proposed to workers or the type of collective agreement. On the other hand, the output adjustment margin concerns the markets where firms sell their products.

Estimation results

Formally, we regress log TFP for firm i in year t, $\hat{\omega}_{it}$, on a set of variables including input and output adjustment margins:

$$\hat{\omega}_{it} = \eta_i + \eta_t + \gamma_a \, a_{it} + \gamma_z \, z_{it} + \tau_{it}$$

where a_{it} stands for the adjustment margins, η_i and η_t are the firm fixed effects and time dummies, respectively, z_{it} includes dummies on the firm's size, age, region of location and indicators of the firm debt structure, and τ_{it} stands for the random error term.

Similarly to Alonso-Borrego (2010), it is important to note that given the lack of a theoretical model to justify the set of explanatory variables, our estimates are capturing partial correlations, which cannot be given a causal interpretation. The evidence provided can only help to understand what variables are related to TFP, but further research is needed to support a causal interpretation of the estimated effects.

Table 1 reports fixed effects estimates of the correlation between the adjustment margins and firms' TFP. The first column considers the whole sample of firms and the third column adds financial ratios. The debt ratio is defined as the ratio between the firm's debt (long run and short run debts) over its equity. The short term debt ratio is defined as the share of short run debts over total debts. These two ratios are only available in our sample for firms classified as reliable by the CBSO according to several statistical criteria. Thus, to assess the possible existence of sample selection, column 2 considers the subsample of firms for which we have information on the financial ratios.

Several conclusions can be drawn from the estimations reported in table 1. First, we find that the share of

FIRM FIXED EFFECTS REGRESSIONS OF ESTIMATED TFP

TABLE 1

	Full sample	Sample with financial data	Controlling for financial data
Share of temporary workers	-0.051***	-0.037***	-0.037***
	(0.001)	(0.002)	(0.002)
Importer-exporter	0.086***	0.060***	0.063***
	(0.001)	(0.001)	(0.001)
Firm agreement	0.122***	0.075***	0.076***
	(0.002)	(0.002)	(0.002)
Province agreement	-0.025***	-0.019***	-0.019***
	(0.002)	(0.002)	(0.002)
Regional agreement	-0.027***	-0.034***	-0.033***
	(0.003)	(0.004)	(0.004)
National agreement	-0.006***	-0.004	-0.003
	(0.002)	(0.002)	(0.002)
Debt ratio			-0.046***
			(0.001)
Short term debt ratio			-0.005***
			(0.000)
Observations	5,618,004	2,862,843	2,862,843

NOTES: Robust standard errors in parentheses. Firm's size, age, year, region and sector dummies included. *** Significant at 1%, ** 5%, and * 10% level, respectively.

temporary workers is negatively correlated with TFP performance during the considered period, 1995-2012. Firms with a larger share of temporary workers are associated with poorer performance in terms of TFP. Second, firms having signed a collective agreement at the firm level perform better, in terms of TFP, than firms subject to a sectoral agreement. Third, being an importer-exporter positively correlates with TFP performance, whatever the definition we adopt for this indicator. Fourth, a negative and significant correlation arises between the debt ratio and TFP. Similarly, the short term debt ratio negatively correlates with TFP.

Time variation

In order to assess how the relationship of adjustment margins with TFP varies over time, we also allow the coefficients on the adjustment margins to vary year by year. The time variation of coefficients associated with the share of temporary workers, the firm agreement level and the use of foreign markets is displayed in Figure 3. As previously, we control for time dummies, debt ratios and for indicators of firms' size, age, region and sector.

Results show that firms committed to a collective agreement at the firm level perform better than the average in TFP terms since the beginning of the crisis, although the estimated effect is imprecise. Similarly, firms using external markets perform better than average since the late nineties. On the contrary, firms
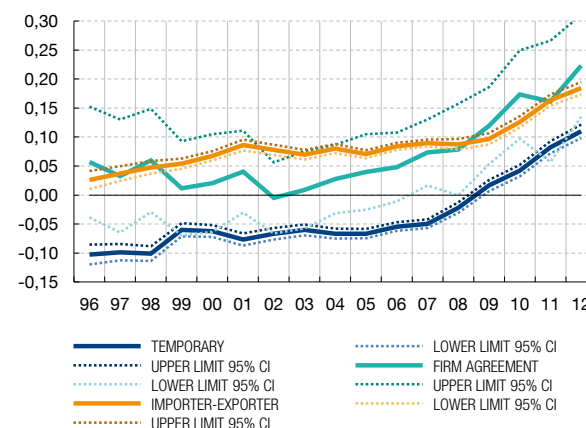
with a larger share of temporary workers perform worse in TFP terms during years preceding the crisis. This situation is though reversed from 2009. Firms with a larger share of temporary workers perform increasingly better during the period 2009-2012. This sign reversal could be explained by the massive destruction of temporary jobs that yielded a selection process. It appears that highly productive firms are now quickly hiring temporary workers, and it is likely that these new workers have different characteristics from those occupying temporary positions during years preceding

TIME VARIATION IN ADJUSTMENT MARGINS

FIGURE 3

NOTES: Estimates from firm fixed effects regressions of TFP on firm's age, size, region, sector, debt ratios, adjustment indicators, and interactions of these latter with time dummies.

the crisis. Indeed, administrative records show that the proportion of high-skilled workers has increased among temporary employees since 2007.

4 Conclusions

This paper seeks to gain insights on the apparently puzzling behavior of labor productivity in Spain during the economic crisis. While Spain had traditionally underperformed its European counterparts in terms of productivity, the trend is reversed during the crisis. Since 2007 Spain displays growth rates of aggregate labor productivity which are above France, Germany, the UK and the US. Our analysis shows that this behavior of Spanish labor productivity results from a composition effect, with larger firms displaying a better TFP performance during the crisis.

Our estimates suggest that, while the share of temporary workers is negatively correlated to TFP during the whole period 1995-2012, when we focus on the crisis period, the sign of this correlation is reversed. Again, compositional changes in the population of temporary workers during the crisis may justify this sign reversal. On the other hand, firms having committed to a collective agreement at the firm level display better TFP performance than firms engaged in sectoral collective agreements over the whole period. Firms that are exporters or importers also display a better TFP behavior than average.

In sum, the recent upsurge in Spanish productivity may not be explained entirely by permanent factors, as average TFP has decreased during the crisis period. Instead, the recent improvement in labor productivity results from massive jobs destruction, and an increased weight of large firms displaying better TFP performance. This second effect, however, might be permanent to some extent.

5 REFERENCES

C. ALONSO-BORREGO, (2010), "Firm Behavior, Market Deregulation and Productivity in Spain," Bank of Spain Working Paper 1035.

J. LEVINSOHN AND A. PETRIN (2003), "Estimating Production Functions Using Inputs to Control for Unobservables," *Review of Economic Studies,* 70: 317-342.

G. S. OLLEY AND A. PAKES (2006), "The Dynamics of Productivity in the Telecommunications Equipment Industry," *Econometrica,* 64: 1263-1297.

FINANCIAL INNOVATION IN SOVEREIGN BORROWING AND PUBLIC PROVISION OF LIQUIDITY
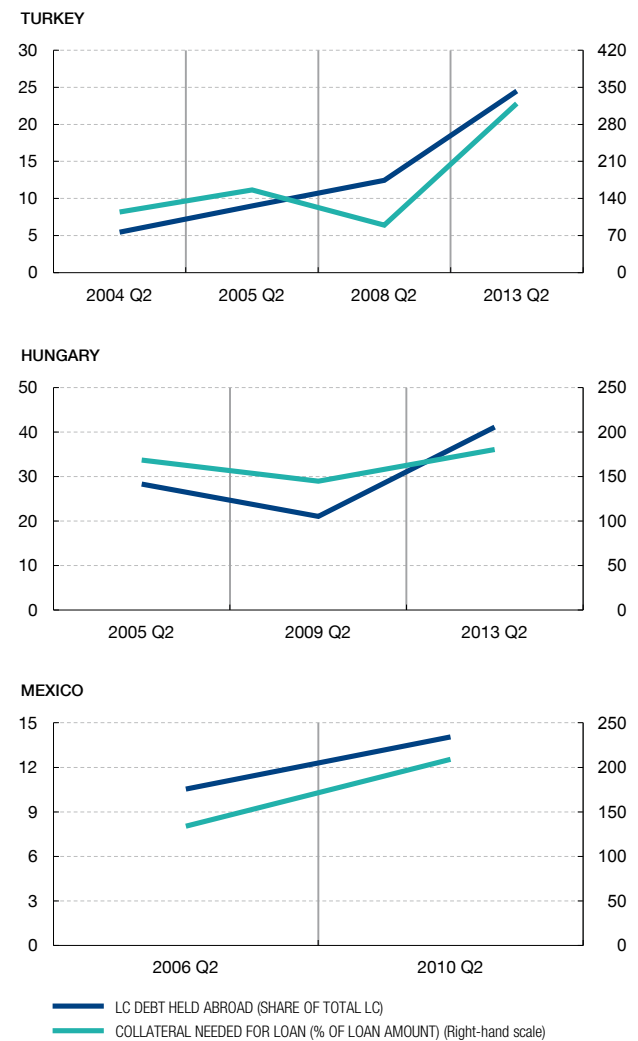
PATRICIA GÓMEZ GONZÁLEZ

This paper studies how financial innovation in sovereign debt markets can increase a country's level of private investment and welfare. I propose a model where public debt has a liquidity purpose for the domestic private sector and is demanded as a saving vehicle by more patient international investors. The public bond is risky: it has a low (high) return when the government's fiscal capacity is low (high), but the government cannot strategically default on it. The main result of the paper is that the government can increase private investment by increasing the number of assets supplied, tranching its fiscal capacity, and issuing a safe and a risky bond. The risky bond is held only by international investors and the domestic private sector demands the safe bonds. Safe bonds lower the cost of liquidity hoarding for the private sector which enables it to increase investment. I test the predictions of the model using a dataset on public debt and local currency sovereign debt ownership for a group of emerging economies. I find that domestic collateral constraints are key determinants of the shares held abroad of total public debt, and especially of relatively riskier debt instruments (local currency debt).

1 Financial innovation, sovereign debt ownership and portfolio composition

The set of instruments governments issue is large and has expanded over time. They issue debt with different maturities and in different currencies, as well as bonds indexed to inflation or to some reference interest rate. Financial innovation has transformed sovereign debt markets of advanced and emerging economies and this process is still ongoing.

Apart from a large variety of financial instruments in sovereign debt markets, there is also a large variety of investors. Recently there have been sizeable shifts in sovereign debt ownership. First, after the financial crisis, financial institutions in emerging and advanced economies increased their holdings of their own sovereign debt, while at the same time less was held abroad. Also, there have been changes in portfolio composition: foreign investors are increasingly holding more local currency (LC) debt. Furthermore, the share of LC debt that is held abroad is closely correlated with the strength of collateral constraints in the domestic economy (see figure 1).

LOCAL CURRENCY DEBT HELD ABROAD AND COLLATERAL CONSTRAINTS

FIGURE 1

SOURCE: Arslanalp and Tsuda (2014) and World Bank Enterprise Surveys.

2 A stylized model of risky sovereign debt

This paper proposes a three-period model where the local private sector has an investment opportunity and buys public debt to hoard liquidity for an uncertain future liquidity shock. After the shock hits the project can be downsized. However, it is socially desirable to always continue the project at full scale. Sovereign debt markets are also open to more patient risk-neutral international investors who demand the public assets as a savings vehicle.

The government's future fiscal capacity is uncertain, which renders public debt risky. Likewise, the private sector's liquidity needs are uncertain. For simplicity, uncertainty is modeled by assuming two possible states of the world, in which the public and private sector shocks are perfectly correlated. One is a bad state, where public fiscal capacity is low and the private sector needs outside liquidity to continue the project at full scale; the other is a good state where fiscal capacity is high and the project can be self-financed by the private sector.

3. Main result and optimal financial innovation

Consider first the case where the government sells just one type of public asset. The main result of the model in this case is that productive domestic investment decreases with the ratio between the public fiscal capacity in good times and that in bad times. Since the payoff of the asset is determined by the government's fiscal capacity, this ratio parameterizes the amount of wasted liquidity the private sector holds in good times in order to finance its liquidity needs in bad times.

To analyze possible improvements in liquidity provision, the paper also considers the case where the government may issue more than one asset in sovereign debt markets. In doing so, the government will internalize the behavior of the private sector. It is constrained by its fiscal capacity and also by a monotonicity assumption: for realism, it is assumed that the government cannot introduce assets that pay more in bad times than in good times.

In this setup, the government´s optimal financial innovation is to tranch its fiscal capacity and introduce two types of bonds. Optimally, it should issue one senior bond that pays a safe return, and a junior bond which pays the residual fiscal capacity. In equilibrium, the riskless asset is demanded by the domestic private sector, while the risky asset is bought exclusively by international investors. This solution increases productive investment at home since the availability of senior bonds decreases the amount of wasted liquidity the private sector has to buy. This financial innovation caters to the different motives investors have to hold public debt.

4   Comparative statics

The baseline model with one asset predicts that a tightening of collateral constraints brings about a repatriation of sovereign debt to act as collateral. The model with two assets predicts that when collateral constraints tighten there is an shift towards international holding of riskier debt instruments, since these are less useful as collateral for the domestic private sector.

An increase in the government's fiscal capacity in the bad state in the future is associated with less sovereign debt held domestically in the baseline model and an international shift to safer debt instruments because a smaller share of the safe asset is needed at home.

Finally an increase in the international discount factor, which captures the world demand for assets, crowds out domestic demand for sovereign debt and for the relatively safer debt instrument, resulting in decreased domestic investment.
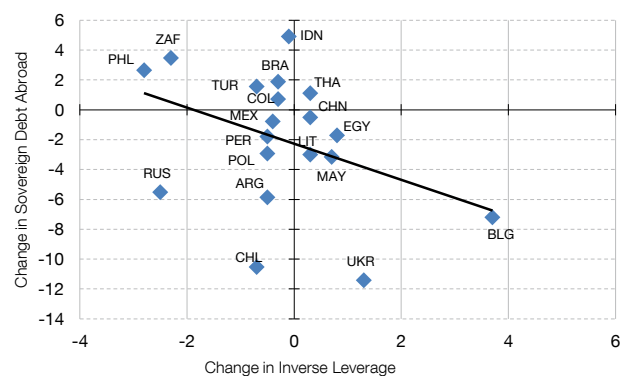
5   Empirical analysis

Using a quarterly panel dataset of 21 emerging economies between 2004 and 2010, the paper tests the aforementioned comparative statics.

The relatively riskier debt instrument in the data is interpreted as local currency debt, since devaluations occur more frequently in bad times. Tightening of collateral constraints is measured as decreases in local credit available and reductions in banks' leverage. Fiscal capacity is measured by tax revenues over GDP, and the international discount factor is measured by the inverse of the federal funds rate.

In addition to the variables of interest mentioned above, the regression analyses that test the predictions include country and time fixed effects, and a battery of additional controls (GDP growth, stock of debt, political

THE GLOBAL FINANCIAL CRISIS   FIGURE 2
AND SOVEREIGN DEBT OWNERSHIP

SOURCE: Arslanalp and Tsuda (2014) and World Bank Indicators.

risk, financial openness, and the nominal exchange rate, among others).

The main comparative statics of both models are supported by the data. However, it is the domestic liquidity conditions (measured by local credit available and banks' leverage) that emerge as crucial and robust in determining the share of sovereign debt held abroad, and the share of LC debt held abroad.

Exploring how the global financial crisis affected sovereign debt ownership can shed some light on the effects of tighter collateral constraints. Figure 2 plots the change in the share of sovereign debt that is held abroad against the change in inverse leverage, both between 2007Q4 and 2008Q4. Indeed, we see that those countries whose banks' leverage decrease more, and thus experience a more severe tightening of collateral constraints, experience larger sovereign debt repatriations.

PUBLICATIONS

RECENT WORKING PAPERS
LINK TO WORKING PAPERS PAGE

REAL-TIME FORECASTING US GDP FROM SMALL-SCALE FACTOR MODELS
MÁXIMO CAMACHO AND JAIME MARTÍNEZ-MARTÍN
WORKING PAPER Nº 1425

We show that the single-index dynamic factor model developed by Aruoba and Diebold (Am Econ Rev, 100:20-24, 2010) to construct an index of US business cycle conditions is also very useful for forecasting US GDP growth in real time. In addition, we adapt the model to include survey data and financial indicators. We find that our extension is unequivocally the preferred alternative for computing backcasts. In nowcasting and forecasting, our model is able to forecast growth as well as AD and better than several baseline alternatives. Finally, we show that our extension could also be used to infer US business cycles with great accuracy.

PRODUCTIVITY AND WELFARE: AN APPLICATION TO THE SPANISH BANKING INDUSTRY
ALFREDO MARTÍN OLIVER, SONIA RUANO PARDO AND VICENTE SALAS FUMÁS
WORKING PAPER Nº 1426

This paper examines the links between productivity and social welfare, with an application to the banking industry. It models spatial price competition between bank branches jointly with banks' decisions on the opening or closing of branches based on profit expectations. The model predicts that more productive banks set lower (higher) interest rates on loans (deposits) and increase their market share through both higher demand per branch and a larger network of branches. Specifically, the paper i) uses a new measure of bank productivity; ii) provides a productivity differences-based explanation of the distance between bank branches and bank customers; and iii) shows how the intensity of market competition may be unaffected when the number of banks decreases, provided that banks continue expanding their branch network. The empirical implementation of the model uses Spanish banks over the period 1993-2007 and it confirms the theoretical predictions of the paper.

INFLATION DYNAMICS IN A MODEL WITH FIRM ENTRY AND (SOME) HETEROGENEITY
JAVIER ANDRÉS AND PABLO BURRIEL
WORKING PAPER Nº 1427

We analyse the incidence of endogenous entry and firm TFP-heterogeneity on the response of aggregate inflation to exogenous shocks. We build up an otherwise standard DSGE model in which the number of firms is endogenously determined and firms differ in their steady state level of productivity. This splits the industry structure into firms of different sizes. Calibrating the different transition rates, across firm sizes and out of the market we reproduce the main features of the distribution of firms in Spain. We then compare the inflation response to technology, interest rate and entry cost shocks, among others. We find that structures in which large (more productive) firms predominate tend to deliver more muted inflation responses to exogenous shocks.

SOVEREIGN RATINGS AND THEIR ASYMMETRIC RESPONSE TO FUNDAMENTALS
CARMEN BROTO AND LUIS MOLINA
WORKING PAPER Nº 1428

Changes in sovereign ratings are strongly asymmetric, as downgrades tend to be deeper and faster than upgrades. In other words, once a country loses its initial status it takes a long time to recover it. Using S&P data, we characterise "rating cycles" in terms of their duration and amplitude. We then study whether the agency reaction to new economic and financial domestic information also differs during upgrade and downgrade phases. Our results indicate that favourable fundamentals could be helpful for smoothing and slowing down the path of downgrades, whereas favourable fundamentals do not seem to accelerate the rating recovery.

FLIGHT-TO-LIQUIDITY FLOWS IN THE EURO AREA SOVEREIGN DEBT CRISIS

JUAN ÁNGEL GARCÍA AND RICARDO GIMENO

In periods of market stress, portfolio reallocations in bond markets reflect both safety and liquidity concerns. Using sovereign and national agency bonds, we construct indicators of liquidity premia in major euro area bond markets; we document the weakening of the correlation between core and periphery market liquidity during the euro area sovereign bond crisis; and we identify several episodes of significant flight-to-liquidity (FTL) flows above and beyond flight-to-safety (FTS) spells in the period 2009-13. We show that FTL flows led to significant inverse moves in sovereign bond yields in euro area core and periphery markets. Moreover, FTL flows triggered declines in core and periphery stock markets and are associated with lower macroeconomic confidence in the euro area as a whole, which underscores the importance of FTL episodes for investors and policymakers alike.

MEASURING URBAN AGGLOMERATION. A REFOUNDATION OF THE MEAN CITY-POPULATION SIZE INDEX

ANDRÈ LEMELIN, FERNANDO RUBIERA-MOROLLÓN AND ANA GÓMEZ-LOSCOS

In this paper, we put forth the view that the potential for urbanisation economies increases with interaction opportunities. On the basis of that premise, three properties are key to an agglomeration index, which should: (i) increase with the concentration of population and conform to the Pigou-Dalton transfer principle; (ii) increase with the absolute size of constituent population interaction zones; and (iii) be consistent in aggregation. Confining our attention to pairwise interactions, and invoking the space-analytic foundations of local labour market area (LLMA) delineation, we develop an index of agglomeration based on the number of interaction opportunities per capita in a geographical area. This leads to Arriaga's mean city-population size, which is the mathematical expectation of the size of the LLMA in which a randomly chosen individual lives. The index has other important properties. It does not require an arbitrary population threshold to separate urban from non-urban areas. It adapts readily to situations where an LLMA lies partly outside the geographical area for which agglomeration is measured. Finally, it can be satisfactorily approximated when data are truncated or aggregated into size classes. We apply the index to the Spanish NUTS III regions, and evaluate its performance by examining its correlation with the location quotients of several knowledge-intensive business services (KIBS) known to be highly sensitive to urbanisation economies. The Arriaga index correlations are clearly stronger than those of either the classical degree of urbanisation or the Hirshman-Herfindahl concentration index.

CONTRACT STAGGERING AND UNEMPLOYMENT DURING THE GREAT RECESSION: EVIDENCE FROM SPAIN

LUIS DÍEZ-CATALÁN AND ERNESTO VILLANUEVA

We study the impact of (widespread) downward wage rigidity on the flows from employment to non-employment at the onset of the Great Recession. Downward wage (growth) rigidity is due to the fact that sector-level collective agreements in Spain are automatically extended to all firms, setting wage minima for workers in the same province-industry-skill cell. We identify the impact of wage rigidity on employment because, unlike settled ones, newly bargained contracts can adjust to aggregate shocks. Using the exact dates of bargaining periods of all sector-level contracts in Spain, we find that agreements reached after the fall of Lehman Brothers were for an average wage growth of 1.8%, while agreements signed before 15 September 2008 were for mean wage increases of 3.1%. Matching information on collective agreements with longitudinal Social Security records on workers, we document two findings. Firstly, the probability of job loss between 2009 and 2010 was 1 percent higher among workers covered by agreements signed before the fall of Lehman Brothers than among workers covered by contracts signed afterwards. Secondly, the analysis of a subsample of contracts with information about the exact province-industry-skill level minimum wage suggests that the impact of date of contract signature on wage changes and employment losses is confined to workers whose pre-recession earnings were below 1.2 times the contract-specific minimum wage. Those findings are consistent with the hypothesis that the staggering of contracts and the inability to renegotiate contracts amplify aggregate shocks. We end with a discussion of whether those results can be extrapolated to other sample periods.

THE SPANISH PRODUCTIVITY PUZZLE IN THE GREAT RECESSION

LAURA HOSPIDO AND EVA MORENO-GALBIS

See Features section.

FINANCE FOR ALL: THE IMPACT OF FINANCIAL LITERACY TRAINING IN COMPULSORY SECONDARY EDUCATION IN SPAIN

LAURA HOSPIDO, ERNESTO VILLANUEVA AND GEMA ZAMARRO
WORKING PAPER Nº 1502

We estimate the impact on objective measures of financial literacy of a 10-hour financial education program among 15-year-old students in compulsory secondary schooling. We use a matched sample of students and teachers in Madrid and two different estimation strategies. Firstly, we use reweighting estimators to compare the performance in a test of financial knowledge of students in treatment and control schools. In another specification, we use school fixed-effect estimates of the effect of the course on changes in scores in tests of financial knowledge. The program increased treated students' financial knowledge by between one-fourth and one-third of a standard deviation. We uncover heterogeneous effects, as students in private schools did not increase their knowledge much, possibly owing to a less intensive implementation of the program. Secondly, we analyze the bias that arises because the set of schools that participate in financial literacy programs is not random. Such selection bias is estimated as the pre-program performance in financial PISA of students in applicant schools relative to a nationally representative sample of schools. We then study whether estimators that condition on school and parental characteristics mitigate selection bias.

SPAIN: FROM IMMIGRATION TO EMIGRATION?

MARIO IZQUIERDO, JUAN F. JIMENO AND AITOR LACUESTA
WORKING PAPER Nº 1503

Since the start of the Great Recession the unemployment rate in Spain has risen by almost 18 percentage points. The unemployment crisis is affecting all population groups, including the more highly educated; but it is even more acute for the foreign population, whose unemployment rate is close to 40%. This situation follows a period of very high immigration flows (1995-2007) that set the number of foreigners living in Spain at 11% of the population. This paper documents the characteristics of recent migration flows to Spain and compares how foreign and Spanish nationals are moving abroad and across Spanish regions in response to the unemployment crisis. Building on this comparison, we shed some light on the selection of migrants by educational level and offer conjectures as to the implications of the migration outflows observed in recent years.

REAL WAGE RESPONSIVENESS TO UNEMPLOYMENT IN SPAIN: ASYMMETRIES ALONG THE BUSINESS CYCLE

PAULINO FONT, MARIO IZQUIERDO AND SERGIO PUENTE
WORKING PAPER Nº 1504

We estimate real wage cyclicality in the period between 1987 and 2013 using a large administrative dataset of workers in Spain. Real wages are weakly procyclical in Spain and, focusing on different phases of the business cycle, we find significant differences between expansions and recessions, with even lower real wage cyclicality in recessions. Furthermore, higher levels of unemployment do not translate into additional real wage adjustments when the economy is contracting, while lower levels of unemployment during expansions have incremental effects on wage elasticity. This general result holds after accounting for differences in tenure, type of contract and age. Nevertheless, wages of newly hired workers are the most sensitive to the business cycle and exhibit the lowest asymmetric pattern between expansions and recessions. At the other end of the scale, wages of workers with more than six years' tenure provide the most protection against economic downturns. The same is true for fixed-term vs. permanent workers and for young vs. older workers.

LITIGATION IN SPAIN 2001-2010: EXPLORING THE MARKET FOR LEGAL SERVICES

JUAN S. MORA-SANGUINETTI AND NUNO GAROUPA
WORKING PAPER Nº 1505

There is empirical evidence of a cross-country positive association between the number of lawyers per capita and the extent of litigation. For instance, Spain has more litigation and more lawyers per capita than most OECD countries. How should this association be interpreted? In this paper we analyse the variation in both variables across Spanish provinces during the period 2001-2010, by means of an instrumental variable approach, to shed some light on the sources of the statistical association between them. Finally, implications of the results are discussed.

SECURITIZATION AND BANKS' CAPITAL STRUCTURE

ANDRES ALMAZAN, ALFREDO MARTÍN-OLIVER AND JESÚS SAURINA
WORKING PAPER Nº 1506

Asset securitization offers banks the possibility of altering their capital structures and the financial intermediation process. This study shows that the

introduction of securitization is associated with fundamental changes in the funding policies of banks. In particular, we present evidence of more intense use of securitization by banks (i) with stronger growth opportunities; (ii) with liquidity constraints; (iii) with costlier alternative sources of funding; and (iv) with restricted access to capital markets owing to adverse selection. Securitization is also observed to be higher on the pecking order of financing choices of small and medium-sized banks and non-listed banks, which are likely to face more severe adverse selection problems.

FINANCIAL STABILITY JOURNAL

The Financial Stability Journal (Revista de Estabilidad Financiera) is published biannually by the Banco de España, with the aim of disseminating and participating in discussions on issues related to financial stability, with special emphasis on regulation and prudential 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.

UNA PANORÁMICA DE LA UNIÓN BANCARIA
DAVID VEGARA FIGUERAS
ESTABILIDAD FINANCIERA 27, NOVIEMBRE 2014, 9-30.

After reviewing the background of the banking union, this paper analyses the project from a regulatory standpoint and, noticing the existing limitations, takes a favourable view of the regulatory and institutional initiatives undertaken. It concludes with comments on different areas which should be paid close attention in the near future: the use of bail-ins, the application of the principle whereby no creditor should be worse off than in liquidation, the need for inter-institutional cooperation, the problem of backstops and deposit guarantee schemes.

THE COUNTERCYCLICAL CAPITAL BUFFER IN SPAIN: AN EXPLORATORY ANALYSIS OF KEY GUIDING INDICATORS
CHRISTIAN CASTRO, ÁNGEL ESTRADA AND JORGE MARTÍNEZ
ESTABILIDAD FINANCIERA 27, NOVIEMBRE 2014, 31-60.

This paper explores the overall characteristics of the Basel III countercyclical capital buffer and its implementation in the EU and analyses a set of potential guiding indicators for Spain. Based on an empirical exploratory analysis of three stress events, it describes various practical and conceptual issues that may arise with the Basel benchmark buffer guide – the credit-to-GDP gap – and studies a number of complementary indicators. It finds that a broad but manageable set of indicators may help to improve decision-making in relation to this buffer.

A MULTIPLE RESOLUTION SCHEME FOR SPANISH GLOBALLY SYSTEMICALLY IMPORTANT BANKING GROUPS
SONSOLES EIREA ÁLVAREZ Y MANUEL ORDÁS FERNÁNDEZ
ESTABILIDAD FINANCIERA 27, NOVIEMBRE 2014, 61-86.

This paper reviews the regulatory response to the problem of institutions which are "too big to fail". Focusing on the key attributes of effective resolution regimes for financial institutions, published by the Financial Stability Board, it discusses what the main features of a resolution strategy should be for Spain's globally systemic banking groups. In view of the business models, legal and operational structures and management policies of such groups, it proposes the "multiple point of entry" approach. It concludes by explaining how a resolution might be implemented and discussing the challenges that still need to be addressed internationally for the effective resolution of such institutions.

TWO ILLUSIONS: CONSOLIDATION AND CAPITAL
JORGE PÉREZ RAMÍREZ
ESTABILIDAD FINANCIERA 27, NOVIEMBRE 2014, 87-110

This paper examines some common practices in the assessment of banks' solvency, under the principles and assumptions of accounting theory. More specifically, it assesses the potential limitations of using consolidated accounting statements as compared with individual statements when calculating regulatory solvency ratios. It suggests using market prices of the banks' own funds – the stock market value when the bank is listed – as complementary useful information for solvency assessment in prudential supervision. In each case, the paper compares the legal, financial and economic aspects to be taken into account when comparing the different proposals.

FIRMS' FINANCIAL SOUNDNESS AND ACCESS TO CAPITAL MARKETS
ALBERTO FUERTES AND JOSÉ MARÍA SERENA
ESTABILIDAD FINANCIERA 27, NOVIEMBRE 2014, 111-132.

This paper analyses the vulnerability of firms tapping international capital markets. Based on information on

firms from 36 emerging countries in the 2000-2013 period, it concludes that firms' balance sheets are not currently significantly worse than before the crisis. Although firms are less profitable, they have similar leverage and a better liquidity and solvency profile. However, they can access markets under better financial conditions. Finally, beyond this big picture, this paper identifies tail risks, such as the increase in the volume of issuances by more overstretched firms.

LOAN-LOSS RECOGNITION BY BANKS: PUMPS IN THE REAR-VIEW, BUMPS AHEAD

PABLO PÉREZ RODRÍGUEZ

ESTABILIDAD FINANCIERA 27, NOVIEMBRE 2014, 133-160.

This paper analyses internal (managerial performance assessment) and external (competition in credit markets) factors which impact on credit risk valuation and pricing in lending decisions. It also examines and compares different ways of recognising credit risk in bank loan portfolios through loan loss provisioning and puts forward some proposals which would give a fairer view of the accounting statements. The paper insists on the fact that expected loan losses depend largely on how lending decisions are made.

RECENT PUBLICATIONS IN REFEREED JOURNALS

OPTIMAL MONETARY POLICY WITH STATE-DEPENDENT PRICING

A. NAKOV AND C. THOMAS

INTERNATIONAL JOURNAL OF CENTRAL BANKING 10 (3), SEPTEMBER 2014, 49-94

THE IMF GETTING WHAT IT NEEDS IN (AS) THE AFTERMATH OF THE CRISIS

P. MORENO

ESTUDIOS DE ECONOMÍA APLICADA 32 (3), SEPTEMBER 2014, 935-962

LIQUIDITY, TERM SPREADS AND MONETARY POLICY

H. BASSO AND Y. AKSOY

ECONOMIC JOURNAL 124 (581), DECEMBER 2014, 1234-1278

RECENT REFORMS IN SPANISH HOUSING MARKETS: AN EVALUATION USING A DSGE MODEL

J.S. MORA-SANGUINETTI AND M. RUBIO

ECONOMIC MODELLING 44 (SUPPLEMENT 1), JANUARY 2015, S42-S49

MINIMUM WAGES: DO THEY REALLY HURT YOUNG PEOPLE?

S. GALÁN AND S. PUENTE

THE B.E. JOURNAL OF ECONOMIC ANALYSIS & POLICY 15 (1), JANUARY 2015, 299-328

MODEL AVERAGING IN ECONOMICS: AN OVERVIEW

E. MORAL-BENITO

THE JOURNAL OF ECONOMIC SURVEYS 29 (1), FEBRUARY 2015, 46-75

TESTING WEAK EXOGENEITY IN COINTEGRATED PANELS

E. MORAL-BENITO AND L. SERVÉN

APPLIED ECONOMICS 47 (30), FEBRUARY 2015, 3216-3228

IS INFRASTRUCTURE CAPITAL PRODUCTIVE? A DYNAMIC HETEROGENEOUS APPROACH

C. CALDERÓN, E. MORAL-BENITO AND L. SERVÉN

JOURNAL OF APPLIED ECONOMETRICS 30 (2), MARCH 2015, 177-198

LEARNING FROM EXPERIENCE IN THE STOCK MARKET

A. NAKOV AND G. NUÑO

JOURNAL OF ECONOMIC DYNAMICS AND CONTROL. 52, MARCH 2015, 224-239

DOES (AVERAGE) SIZE MATTER? COURT ENFORCEMENT, BUSINESS DEMOGRAPHY AND FIRM GROWTH

M. GARCÍA-POSADA AND J. S. MORA-SANGUINETTI

SMALL BUSINESS ECONOMICS 44 (3), MARCH 2015, 639-669

BANKING ON SENIORITY: THE IMF AND THE SOVEREIGNS' PRIVATE CREDITORS

A. ERCE

GOVERNANCE 28 (2), APRIL 2015, 219-236

PEER EFFECTS IN JUDICIAL DECISIONS: EVIDENCE FROM SPANISH LABOUR COURTS

M. MARTÍNEZ-MATUTE, Á. MARTÍN AND A. MORAL

INTERNATIONAL REVIEW OF LAW AND ECONOMICS 42, JUNE 2015, 20-37

FORTHCOMING ARTICLES IN REFEREED JOURNALS

A TOOLKIT TO STRENGTHEN GOVERNMENT BUDGET SURVEILLANCE

D. J. PEDREGAL, J. J. PÉREZ AND A. J. SÁNCHEZ-FUENTES

HACIENDA PÚBLICA ESPAÑOLA - REVIEW OF PUBLIC ECONOMICS

A TWIN CRISIS WITH MULTIPLE BANKS OF ISSUE: SPAIN IN THE 1860s

A. MORO, G. NUÑO AND P. TEDDE

EUROPEAN REVIEW OF ECONOMIC HISTORY

CAN WE USE SEASONALLY ADJUSTED INDICATORS IN DYNAMIC FACTOR MODELS?

G. PÉREZ-QUIRÓS, M. CAMACHO AND Y. LOVCHA

STUDIES IN NONLINEAR DYNAMICS AND ECONOMETRICS

ENTREPRENEURSHIP AND ENFORCEMENT INSTITUTIONS: DISAGGREGATED EVIDENCE FOR SPAIN

M. GARCÍA-POSADA AND J. S. MORA-SANGUINETTI

EUROPEAN JOURNAL OF LAW AND ECONOMICS

ESTIMATION OF REGULATORY CREDIT RISK MODELS

C. PÉREZ MONTES

JOURNAL OF FINANCIAL SERVICES RESEARCH

EXTRACTING NON LINEAR SIGNALS FROM SEVERAL ECONOMIC INDICATORS

G. PÉREZ-QUIRÓS, M. CAMACHO AND P. PONCELA

JOURNAL OF APPLIED ECONOMETRICS

GROWTH EMPIRICS IN PANEL DATA UNDER MODEL UNCERTAINTY AND WEAK EXOGENEITY

E. MORAL-BENITO

JOURNAL OF APPLIED ECONOMETRICS

MEASURING URBAN AGGLOMERATION. A REFOUNDATION OF THE MEAN CITY-POPULATION SIZE INDEX

A. LEMELIN, F. RUBIERA-MOROLLÓN AND A. GÓMEZ-LOSCOS

SOCIAL INDICATORS RESEARCH

RETURNS TO SKILLS AND THE DISTRIBUTION OF WAGES: SPAIN 1995–2010

R. CARRASCO, J. F. JIMENO AND C. ORTEGA

OXFORD BULLETIN OF ECONOMICS AND STATISTICS

RISK FACTORS AND THE MATURITY OF SUBNATIONAL DEBT: AN EMPIRICAL INVESTIGATION FOR THE CASE OF SPAIN

J.J. PÉREZ, AND R. PRIETO

PUBLIC FINANCE REVIEW

SOVEREIGN DEBT RESTRUCTURINGS AND THE IMF: IMPLICATIONS FOR FUTURE OFFICIAL INTERVENTIONS

A. ERCE

JOURNAL OF COMPARATIVE ECONOMICS

THE FAILURE TO PREDICT THE GREAT RECESSION. A VIEW THROUGH THE ROLE OF CREDIT

G. PÉREZ-QUIRÓS AND M.D. GADEA

JOURNAL OF THE EUROPEAN ECONOMIC ASSOCIATION

THE SAFETY AND SOUNDNESS EFFECTS OF BANK M&A IN THE EU: DOES PRUDENTIAL REGULATION HAVE ANY IMPACT?

J. HAGENDORFF AND M. J. NIETO

EUROPEAN FINANCIAL MANAGEMENT

TOWARD A MORE RELIABLE PICTURE OF THE ECONOMIC ACTIVITY. AN APPLICATION TO ARGENTINA

M. CAMACHO, M. DAL BIANCO AND J. MARTÍNEZ-MARTÍN

ECONOMICS LETTERS

EVENTS

RECENT CONFERENCES
LINK TO CONFERENCES PAGE

12TH COMPNET MEETING
MADRID, 25-27 MARCH 2015

On 26 and 27 March 2015, the Banco de España hosted the 12th meeting of the Competitiveness Research Network Working Group (CompNet) at its Madrid headquarters. CompNet is led by the ECB and other Eurosystem central banks, with other international institutions taking part, including the European Commission and the OECD, as well as universities and research centres.

Luis Garicano, from the London School of Economics, delivered a keynote speech on the reasons why some countries have not fully benefited in productivity terms from the information technology revolution. Another keynote address was given by Gilbert Cette, from the Banque de France, on long-term productivity growth in Europe. The workshop also included sessions on foreign direct investment, international trade, and the use of firm-level data for policy analysis. There were also workstream sessions that allowed CompNet members to work on their specific research projects and on the final reports of the network.

To start off the meeting, there was a Roundtable discussion on 25 March entitled "Recovering competitiveness: challenges for the Spanish economy". The Roundtable included four presentations by experts on the Spanish economic situation: Óscar

Arce (Banco de España), Stefan Zeugner (European Commission), Rafael Doménech (BBVA), and Diego Puga (CEMFI).

RECENT ECONOMIC RESEARCH SEMINARS
LINK TO SEMINARS PAGE

INTERNATIONAL COMPETITIVENESS AND MONETARY POLICY
GIANCARLO CORSETTI
Cambridge University
10 SEPTEMBER 2014

FISCAL POLICY IN AN UNEMPLOYMENT CRISIS
PONTUS RENDHAL
Cambridge University
24 SEPTEMBER 2014

THE UK'S FISCAL RESPONSE TO THE CRISIS
PAUL JOHNSON
Institute for Fiscal Studies
26 SEPTEMBER 2014

THE PRECAUTIONARY SAVING EFFECT OF GOVERNMENT CONSUMPTION
VALERIO ERCOLANI
Banco de Portugal
1 OCTOBER 2014

DOVES FOR THE RICH, HAWKS FOR THE POOR? DISTRIBUTIONAL CONSEQUENCES OF MONETARY POLICY
KEITH KUESTER
Univ. of Bonn
15 OCTOBER 2014

TRANSMISSION OF MONETARY POLICY OPERATIONS

SILVANA TENREYRO

London School of Economics

22 OCTOBER 2014

TAX SYSTEMS

JOEL SLEMROD

Univ. of Michigan

29 OCTOBER 2014

BUSINESS CYCLE IMPLICATIONS OF MORTGAGE SPREADS

KARL WALENTIN

Sveriges Riksbank

8 OCTOBER 2014

A GLOBAL ASSESSMENT OF HUMAN CAPITAL MOBILITY: THE ROLE OF NON-OECD DESTINATIONS

FRÉDERIC DOCQUIER

Univ. Catholique de Louvain

19 NOVEMBER 2014

THE DISTRIBUTION OF WEALTH AND THE MARGINAL PROPENSITY TO CONSUME

JIRI SLACALEK

European Central Bank

26 NOVEMBER 2014

SIMULATING THE RISK OF CONSUMER DEBT PORTFOLIOS

CARLOS MADEIRA

Banco de Chile

5 NOVEMBER 2014

A POLITICAL ECONOMIC THEORY OF POPULISM AND DISCRIMINATION

GILLES SAINT-PAUL

Paris School of Economics

3 DECEMBER 2014

COMPETITION AND THE WELFARE GAINS FROM TRANSPORTATION INFRASTRUCTURE: EVIDENCE FROM THE GOLDEN QUADRILATERAL OF INDIA

MANUEL GARCÍA-SANTANA

ECARES

12 JANUARY 2015

CAN THE PRODUCTIVITY SLOWDOWN IN CONSTRUCTION EXPLAIN US HOUSE PRICES?

ALESSANDRO GALESI

CEMFI

13 JANUARY 2015

THE CALM BEFORE THE STORM: TIME VARYING VOLATILITY AND THE ORIGINS OF FINANCIAL CRISES

OMAR RACHEDI

Univ. Carlos III de Madrid

19 JANUARY 2015

FISCAL AUSTERITY AND REPUTATION

LUCA METELLI

London School of Economics

21 JANUARY 2015

SIGNALLING FISCAL AUSTERITY

ANNA GIBERT RIVAS

European University Institute

23 JANUARY 2015

AGGREGATE EFFECTS OF BUREAUCRATIC STARTUP COSTS

GUZMÁN GONZÁLEZ-TORRES

Stanford Universitiy

26 JANUARY 2015

DOMESTIC DEBT AND SOVEREIGN DEFAULT

ENRICO MALLUCCI

London School of Economics

2 FEBRUARY 2015

TIME-CONSISTENT MANAGEMENT OF A LIQUIDITY TRAP: MONETARY AND FISCAL POLICY WITH DEBT

DMITRY MATVEEV

Univ. Autònoma de Barcelona

3 FEBRUARY 2015

SENTIMENT SHOCKS AS DRIVERS OF BUSINESS CYCLES

AGUSTÍN ARIAS

Univ. of Mannheim

10 FEBRUARY 2015

DELEVERAGING. WHAT DELEVERAGING?

PHILIP LANE

Trinity College Dublin

12 FEBRUARY 2015

SEARCH FOR YIELD

RAFAEL REPULLO

CEMFI

19 FEBRUARY 2015

SIZE-DEPENDENT REGULATION AND FACTOR INCOME DISTRIBUTION

GABRIEL SMAGGHUE

Univ. Carlos III de Madrid

11 MARCH 2015

FINANCIAL FRICTIONS, PRODUCT QUALITY, AND INTERNATIONAL TRADE

ROSARIO CRINÒ

CEMFI

18 MARCH 2015

SIGN RESTRICTIONS, STRUCTURAL VECTOR AUTOREGRESSIONS, AND USEFUL PRIOR INFORMATION

CHRISTIANE BAUMEISTER

Bank of Canada

26 MARCH 2015

CREDIT AND ECONOMIC RECOVERY: DEMYSTIFYING PHOENIX MIRACLES

ANDREAS PICK

Erasmus University

7 APRIL 2015

MENU COSTS, ECONOMIC FLUCTUATIONS, AND LARGE SHOCKS

PETER KARADI

European Central Bank

22 APRIL 2015

THE DETERMINANTS OF LONG-TERM DEBT ISSUANCE BY EUROPEAN BANKS: A TALE OF TWO CRISES

ADRIAN VAN RITXEL

Bank for International Settlements

23 APRIL 2015

INATTENTION TO RARE EVENTS

MIRKO WIEDERHOLT

Univ. of Frankfurt

28 APRIL 2015

OPTIMAL TIME-CONSISTENT GOVERNMENT DEBT MATURITY

DAVIDE DEBORTOLI

Univ. Pompeu Fabra

29 APRIL 2015

PROFILES

JAVIER J. PÉREZ

Unit Head, Public Sector and Fiscal Policy Unit
Economic Policy Analysis Division
Economic Analysis and Forecasting Department
DG Economics, Statistics, and Research

Javier J. Pérez García joined the Banco de España in 2008 to head the Fiscal Policy Unit in the Economic Analysis and Forecasting Department. After receiving his undergraduate and doctoral degrees from the Univ. Complutense of Madrid, he taught both at Univ. Complutense and at Univ. Pablo de Olavide in Seville. From 1999-2001 and 2006-2008 he was employed by the Fiscal Policies Division of the European Central Bank, where he coordinated fiscal forecasting tasks and contributed to policy analysis.

RU: Before you joined the BdE you spent several years in the fiscal policy division of the ECB. What did you do there?

A: In the ECB I was coordinating fiscal forecasting, preparing projections for the EU as a whole and for individual countries, and incorporating fiscal forecasts into the overall macro projections.

I was not originally specialized in fiscal policy – I did quantitative macromodeling in general – but it was very interesting to participate in an area that provided crucial background for monetary policy decisions.

RU: Fiscal forecasting is a central issue now in the context of the European crisis. Recently you published some reviews of possible new monitoring tools for Europe. Tell us about that.

A: Fiscal forecasting became important well before the current crisis. Around the time of the adoption of the euro, 1999-2000, some countries were failing to fulfil their commitments. There was some cheating with statistics, and failure to meet targets. Of

course, this is a worldwide issue: all countries revise their data, and revisions are often correlated with the political cycle and with the business cycle. But it is especially important in the context of European agreements.

These issues grabbed my attention, both for day-to-day policy work and for research, for two main reasons. On one hand, in democracies where half of GDP passes through the hands of the state, governments need to honor their commitments because that is something they owe to their taxpayers. That's a basic principle of democracy.

And another more recent issue is that if fiscal policies depart very much from ex ante plans, or are very random, this creates a lot of aggregate uncertainty. Monetary theory teaches that policies need to be stable and predictable, so people know what to expect in any possible situation. But these ideas are not so clearly articulated in the fiscal policy literature.

RU: So what are your thoughts about improving monitoring or enforcement in Europe?

A: The European monitoring system is too complicated, and has a weak connection to observed data. It is complicated because there are many rules with interrelated criteria. For an outside analyst, even for someone who knows the system and the data well, it is difficult to anticipate what the Commission will say, because there is a lot of room for interpretation. To minimize that, you would have to simplify the rules. Bold steps have been taken recently at the European level to strengthen the system, but they also have a downside, since they make interpretation even harder.

And the second issue is that the European system is based on evaluating governments' fulfilment of previous targets, and fixing new targets for the future. But in between, the question is, what are the countries doing now, this quarter – how are they implementing their plans?.

RU: Which data are potentially useful for real-time evaluation of fiscal policy?

A: The new rules ask countries to produce a lot of new quarterly and monthly fiscal data, but those data are not yet fully incorporated into the assessment system. Typically assessments are made only after annual data have been released, or are based on forecasts. So this creates a break with the current state of nature.

RU: And so you don't know about compliance until long afterwards, which complicates the question of what to do if you observe that rules were broken.

A: Exactly. You only know that ex post, it takes some time, and in between many things can happen. And European institutions are so slow that they may miss the problem, and then it is too late to do much. So the predictive part has to be reinforced, by linking it to short-term data.

RU: Here at the Bank, and also at the ECB, there has been a lot of recent work developing "nowcasting" tools that are updated with each new statistical data release.

A: Yes. This is useful, because you need to know how current policies are affecting the macroeconomy today, and it is also useful for monitoring fiscal policies themselves. The good thing about nowcasting tools is that you can incorporate every new data release, and interpret it through a model, which provides a dispassionate, nonsubjective look at those news.

And also, you can incorporate other types of data in these short-term models. A difference in the fiscal case, compared with short-term GDP forecasting, is that you have information on the future course of fiscal policy. Now, in March, we have already incorporated data released in January and February, but we also know about the government's fiscal plans for the rest of the year. And this is not just a forecast, it is embodied in budget law, approved by the Parliament. So that budget law should give you some information.

RU: And you have found in the Spanish case, empirically, government pronouncements really are useful for forecasting.

A: Exactly. And this is important, because the time consistency literature, for example, suggests that we should not trust what governments say about their plans. But when you have a really big change in government consumption for example, maybe the government claims it will fall by eight percent, and in reality it only falls by four. Nonetheless, that policy announcement contains useful information for forecasting a change in spending.

RU: Another interesting finding in your research regards the accuracy of government versus independent forecasts. Because people often assume that we should trust independent agencies more than the government.

A: Yes, that is the usual assumption, but it is not necessarily true. This matters because the fiscal institutional framework is changing, to give more a prominent role to the European Commission and also to national fiscal councils. So there was this discussion, do we need to give more of a role to independent national councils, or is it sufficient to use the European forecasts?

What we find in our paper is that part of the bias that is seen in the government forecasts is inherited by European forecasts, and other international forecasts. Why? Partly, it is a practical question – it is hard for a small team of outsiders to get into the tiny details of fiscal decisions, which is where the bias accumulates.

And a second thing is that Commission forecasts are politically sensitive – for example, they determine the depth and speed of any fiscal adjustments under the Excessive Deficit Procedure. So the Commission needs to explain any small deviation of their forecast from the fiscal target. Given the level of uncertainty that you have in any forecasting area, but particularly in the fiscal case, where many variables depend directly on government decisions, the Commission needs to be prudent.

And basically, "prudent" means a loss function centered around the government's forecast. If you

say that the government will miss its targets, but it doesn't, then you have a problem, because governments are stakeholders of the Commission too. But if you say that the government is going to follow the rules, and then it doesn't, the Commission is perceived as weak. So when you run a regression, controlling for things properly, you find that the forecast errors of the European Commission are correlated with national political cycles.

RU: In Spain, under the new European agreements, a new fiscal monitoring authority is being established right now here in Madrid. And some of our Banco de España colleagues are helping set up their forecasting tools. What structure and role do you foresee for that new institution?

A: A fiscal council is very relevant in a country like Spain, where there is a great deal of federalism in fiscal decisions. Many different administrations control large stakes of the budget.

So if one administration is responsible for compliance with the stability rules, you also need someone to watch the watchdog. The central government has to ensure that regional and local governments live up to the European and (even stricter) national rules. So one important role of the fiscal council is to monitor the central government, gaining credibility by controlling all these public administrations evenhandedly and independently under the law. It needs to build trust between different administrative levels, because of different parties, different sensitivities.

And then there is transparency, which is improving in Spain in recent years but still has a way to go. More short term information is still needed, predictions about the impacts of tax reforms, pension reforms, and so forth. Having an independent agency that can challenge government opinions on these issues will help increase transparency. So this is the dual role that the fiscal council needs to play.

RU: What resources and structure will the fiscal authority have, and how will it be linked into the data flow and the institutional structure of the government?

A: It currently has around thirty economists. That is more than the Irish or Belgian institutions, for example, comparable to the one in Germany, but

smaller than that of the Netherlands, which is the biggest. So they have substantial resources. But their staffing needs are greater than in many other countries, because they will need to look at municipalities and regions, which is complex.

In terms of structure, there is a macro division, and a budgetary division. The macro division is in charge of examining the macro projections of the government, whether they are prudent or not; and also the sustainability of debt, and of the pension system. The other core division looks at budgetary developments, particularly focussing on the regions.

One concern about the current setup is that the fiscal authority's budget is controlled by the Finance Ministry. That contrasts with the Banco de España, which is likewise independent of the government, but moreover has its budget decided in the context of the Eurosystem.

RU: Besides the budget, the other crucial independence issue is data availability. Because the fiscal authority needs data from the government, whom it is supposed to be monitoring.

A: On paper, the law grants them access to all possible information. But we will have to see whether in practice this works. And whether they are able to transform this information into a timely assessment is linked to the issues we discussed before. Another issue is whether they are able to share this data with the public, which currently is not published. For accountability of the government, and of the institution, that is crucial.

RU: Earlier, while you were still at the ECB, you had a paper on the tradeoff between debt reduction and automatic stabilization. In a recession, tightening fiscal policy helps control debt, but loosening it may stabilize the economy. Have you reassessed those issues in the light of recent events in Europe?

A: That's a very relevant question today. In theory, during a crisis you should let automatic stabilizers work, and let public debt act as a shock absorber. So it is natural for debt to increase during a crisis, and then it should tend back towards a long-run steady state as recovery arrives.

Prior to the crisis, Spanish public debt was falling steadily, not only because nominal output growth

was strong, but also because fiscal policy was apparently quite sound, running a surplus. Debt fell as low as 35 percent of GDP, and then it is normal that it rose sharply. But then how far should it grow? This raises difficult theoretical questions about the optimal level of long-run debt.

Looking around the world, we see that even in boom times, developing countries have much lower debt levels than developed countries. Why does that happen? Can it be extrapolated to developed countries? I would say yes. Markets have some thresholds – some fiscal limits – above which they perceive danger. So one thing the crisis taught us is that those thresholds differ across countries.

For example in Spain, debt was 30 percentage points below the European average prior to the crisis. And it has only surpassed that average quite recently. But this just shows that the average is not really the right reference point. At a certain point, the markets started to have doubts about Spain. It was strange – they were demanding a high risk premium for Spain, because they viewed it as a high-debt country. But they were grouping it with Italy, and Greece, where the public debt to GDP ratio was two or three times higher. So maybe debt was indeed high, but only compared to a country-specific threshold.

So we need more research and analysis not only on the sustainable debt level, but also the optimal or prudent level that a country can afford, when debt acts as a shock absorber. And what is the threshold, where you approach the razor's edge. Beyond purely empirical benchmarks like the Reinhart-Rogoff ninety percent threshold, we need better theoretical grounding and also more policy-oriented country-specific research.

RU: You have also investigated the relationship between public and private wages. In your work, which of these do you see as the driving force, and which one is responding?

A: Yes, I'm still working on these issues, as a member of the Eurosystem Working Group on Public Finances. In theory, productivity should be the driving force behind all wages in the economy, and competition should align them across the private and public sectors. On the other hand, public workers are in the nontradeable sector, where there

is less competitive pressure, and even within that sector they are more protected. So if this duality is strong, public wages can hurt competitiveness when they fall out of line with private productivity.

Leadership also depends on country-specific factors. Union density tends to be high in the public sector, which may create powerful "envy effects". It may also depend on the degree of centralization of wage bargaining. For example, some recent literature stresses that in Italy, public bargaining tends to set wages equally in the North and in the South, but private wages are lower in the South. So this creates a distortion. On the other hand, openness can reduce the impact of public wages. There is a lot of cross-country heterogeneity in these factors, so empirically public wages impact the private sector in some countries but not others.

However, in recessions, public wage leadership may even be positive. For example, in Spain, as the crisis began, the private sector adjusted largely by firing, without changes in the wages of "insiders". Unemployment rose as high as 25% because most of the adjustment was done by quantities, rather than prices. So when wages of civil servants were frozen, or reduced, this promoted price adjustment in the private sector – though without statistical analysis this is just anecdotal, since it was simultaneous with some labor market reforms.

I have a recent paper on this with Ana Lamo and Enrique Moral, in which we allow for different linkages between public and private wages in recessionary and expansionary times. Looking at the impulse response function, you can see that there is potential for government wage setting to create a virtuous circle of adjustment by prices, instead of quantity adjustments that drive everyone into unemployment. So in the Spanish case the shock to public wages appears to have facilitated the adjustment of private wages.

RU: That is somewhat surprising, since public wages were still rising in 2009, when unemployment was already rising quickly.

A: That is true, but private wages were still rising too. Public wages started to decrease in 2010. But the unique thing about Spain is that in 2008 and 2009, in spite of a surge of unemployment, public and private wages were still growing. Even in the construction sector, collective agreements were still

increasing private wages at that time, when the sector was already shrinking. There was really no adjustment in private wages until 2011 or 2012. But the public wage adjustment started already in 2010.

So that is why I say that our empirical estimates are consistent with this anecdotal example from the recent crisis. Only when the public sector started controlling its wages, the private sector followed. Since it employs three million people, around fifteen percent of total Spanish employment, the public sector acts as a reference for wage negotiations in other sectors.

NEW FACES

LAURA CRESPO
Staff economist
Research Division
Monetary and Financial Studies Department

LAURA CRESPO joined the Research Division of the Banco de España in February 2015. She specialises in the design, production, and use of survey data as part of the team that conducts the Spanish Survey of Household Finances (EFF). Previously, since April 2006, she was a senior researcher at CEMFI, where she was in charge of the implementation of the Survey of Health, Ageing and Retirement in Europe (SHARE) in Spain as part of the Spanish country team. Laura obtained her Ph.D in Economics from the University of Alicante in 2007, and holds an M.Sc in Economics from Universitat Pompeu Fabra. During her graduate studies she was granted research fellowships from the Ramón Areces foundation and the Marie Curie Training Site Programme of the European Commission. She also worked as research assistant and affiliate Ph.D student at the Centre for Applied Microeconometrics, University of Copenhagen, during one year.

Laura does empirical research in the fields of labour economics, economics of ageing, and applied microeconometrics broadly defined. She also has methodological interests in the design and implementation of survey data collection.

Specifically, she has investigated the validity of several theoretical models of household labour supply to explain decisions of Spanish households using data from the European Community Household Panel. She has also analysed the relationship between parental health, caregiving and employment status of middle-aged women, and the protective effect of education on several dimensions of mental health such as depression and memory for several European countries using data from SHARE.

Laura is currently working on a comparative analysis of European and US life expectancy differentials by education levels, as well as on the estimation of the causal effect of retirement on individuals' cognition. Both studies are based on data drawn from SHARE.

VISITING FELLOWS

TRINO-MANUEL ÑÍGUEZ GRAU
Senior Lecturer, Westminster Business School
University of Westminster, London

TRINO-MANUEL ÑÍGUEZ GRAU obtained his bachelor's degree in economics at the University of Alicante in 1998 and completed his PhD in Economics from the University of Alicante in 2004. In 2003 and 2004 he was a research scholar and graduate teaching assistant at the London School of Economics. He has been a Senior Lecturer in Economics at Westminster Business School since 2005, and a faculty member at New York University in London since 2010. He also worked for the Spanish government as a professional clarinetist from 1987 to 1992, obtaining a degree as a teacher of clarinet from the Superior Conservatory of Music "Oscar Espla" of Alicante in 1994.

His research interests fall in the areas of econometric theory, financial econometrics, portfolio decision theory, and forecasting. He has published his work in *Economics Letters, Oxford Bulletin of Economics and Statistics, International Journal of Forecasting, Quantitative Finance, SERIEs,* and the *Journal of Forecasting,* among other journals. Trino-Manuel is visiting the Research Division from February until July 2015. His research at the Banco de España focuses on: (1) the importance of higher-order statistical moments and risk preference properties in optimal portfolio choice, with applications to economic modelling and forecasting under high levels of uncertainty, and (2) semi-parametric densities for multivariate volatility models as a feasibly parameterized way to represent conditional correlations, skewness and heavy tails observed in empirical distributions.

RESEARCH PAGE:
http://www.westminster.ac.uk/about-us/
our-people/directory/niguez-trino

ANNOUNCEMENTS

UPCOMING CONFERENCES
LINK TO CONFERENCES PAGE

23RD CEPR EUROPEAN SUMMER SYMPOSIUM IN INTERNATIONAL MACROECONOMICS (ESSIM) RODA DE BARÁ, TARRAGONA
TARRAGONA, 26-29 MAY, 2015
HOST: BANCO DE ESPAÑA

The 23rd CEPR European Summer Symposium in International Macroeconomics (ESSIM) will take place 26-29 May 2015 at the Banco de España facilities in Tarragona, Spain.

ESSIM is an annual meeting that brings together about 75 economists from across Europe and key researchers from outside the region to focus on international economics and other areas of macroeconomics. It provides a unique opportunity for macroeconomists from different institutions and countries to discuss research, and for young researchers to meet and discuss their work with senior economists. The programme combines workshop sessions with time for collaboration and consultation.

4TH WB-BE POLICY CONFERENCE: THE ECONOMIC CHALLENGES ASSOCIATED WITH RISING (AND FALLING) INEQUALITY
MADRID, 8 JUNE 2015

On June 8, the Banco de España will host its Fourth Joint Conference with the World Bank, entitled "The economic challenges associated with rising (and falling) inequality". The goal of the conference is to bring together academics and policy makers to discuss the challenges that inequality represents for modern economies. In a keynote speech, Leandro Prados de la Escosura will place present inequality in a historical perspective. There will also be two round table discussions. In the first, Leonardo Gasparini (CEDLAS-Univ. Nacional de La Plata), Augusto de la Torre (World Bank) and Santiago Levy (Inter-American Development Bank) will discuss recent developments in inequality in Latin America. In the second, Marcelo Olarreaga (Univ. de Genève), Romain Ranciere (Paris

School of Economics) and Andrea Brandolini (Banca d'Italia) will elaborate on the macroeconomic implications of inequality.

STRUCTURAL REFORMS IN THE WAKE OF RECOVERY: WHERE DO WE STAND
MADRID, 18-19 JUNE 2015

On 18-19 June 2015, the Banco de España will host a research conference, jointly organized with Banque de France, entitled **"Structural reforms in the wake of recovery: Where do we stand?"** The conference seeks to bring together academics and policy-makers to discuss the aggregate implications of structural reforms, including reforms in labor and product markets, and in fiscal frameworks. The event is open to both theoretical and empirical analyses. Confirmed speakers include Yann Algan (Sciences Po Paris), Jordi Galí (UPF), Luis Garicano (LSE) and Francesco Giavazzi (U Bocconi). The scientific committee includes Tullio Jappelli (Naples), Casey Mulligan (Chicago), Jesús Fernández-Villaverde (Pennsylvania), Marco Celentani (Carlos III), Fabio Ghironi (Washington), and Gerard Llobet (CEMFI). Finally, the conference will include a policy panel featuring Frank Smets (ECB), Vitor Gaspar (IMF), Alain de Serres (OECD) and Marcel Fratzscher (DIW Berlin).

SEVENTH HIGH-LEVEL POLICY DIALOGUE OF THE EUROSYSTEM AND LATIN AMERICAN CENTRAL BANKS
MADRID, 29 JUNE 2015

This meeting will be hosted by the Banco de España in Madrid on 29 June 2015 (following the BIS Annual General Meeting in Basel). The 2015 edition will focus on issues under the heading "Monetary policy, macro-prudential policy and financial stability – experiences from advanced and emerging economies", with policy relevance for both the European and Latin American regions.

The Banco de España *Research Update* is edited by the **Directorate General Economics, Statistics and Research** of the Banco de España.

Views expressed in the *Research Update,* including those expressed in featured articles and personal profiles, are the responsibility of the authors themselves, and do not necessarily represent the opinions of the Banco de España.

Reproduction for educational and non-commercial purposes is permitted, provided that the source is acknowledged.

To subscribe to or unsubscribe from the Research Update email distribution list, contact researchupdate@bde.es.