



SPAIN

SELECTED ISSUES

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Approved By
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SPAIN: DRIVERS OF FIRM PRODUCTIVITY GROWTH¹

Spain's weak productivity performance has been linked to the dominance of many low productive small firms and inefficient allocation of resources. This paper identifies empirically the relative importance of the drivers for firm productivity and growth. The biggest gain can be expected from lowering regulatory barriers to competition and the cost of doing business, including at the regional level. Further improving the access to equity and credit financing, in particular for innovative start-up companies, and addressing potential disincentive effects of size-contingent rules, can also make important contributions to raising productivity growth. Finally, supporting innovation through increasing the efficiency of R&D incentives and enhancing the private R&D investment should generate positive spillovers, which are difficult to capture empirically, however.

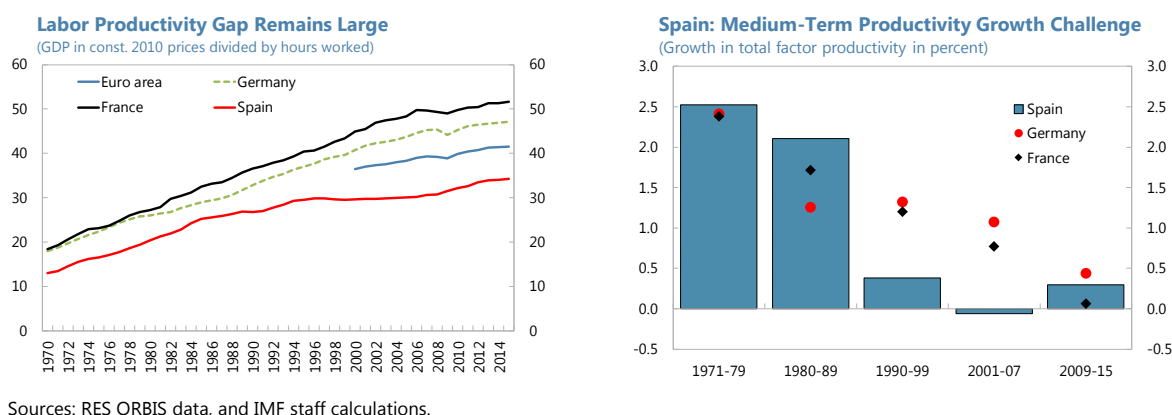
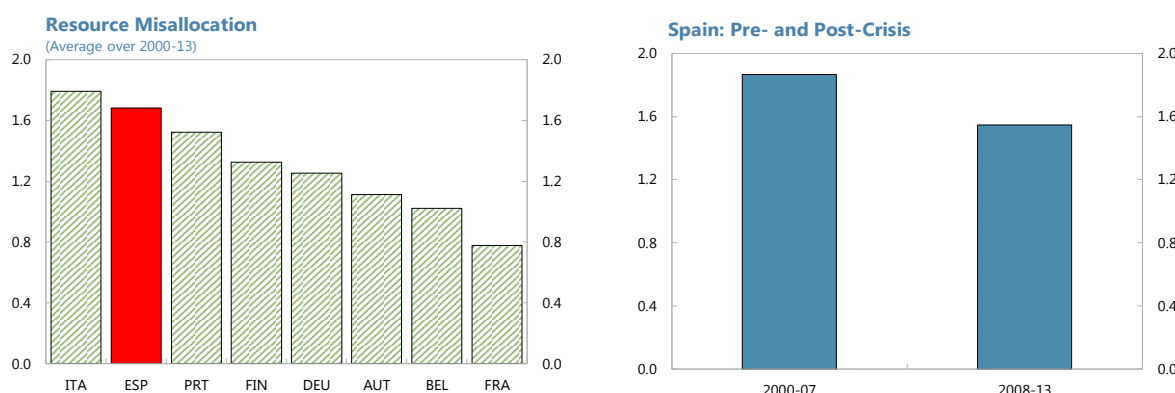
A. Introduction

1. In spite of recent improvements, a sizeable productivity gap remains between Spain and European peers. Labor productivity has been below that of Germany and France and the gap has widened since the 1990s, when Spanish productivity growth slowed significantly and even turned negative during the pre-crisis boom.² During the global financial crisis, the gap between Spain and European peers narrowed somewhat, largely as a result of productivity gains in Spain in contrast to further productivity growth slowdown in European peers. In spite of these improvements, the productivity gap is still much higher today, compared to the 1970s through 1990s. Post-crisis total factor productivity (TFP) growth turned positive but remains below its long run average and a large part of this improvement is likely cyclical, related to massive labor shedding during the crisis. Still, at least in part, the recent improvements have also been linked to the exit of low-productivity firms during the crisis and improved efficiency of resource allocation (Bank of Spain, 2015).

2. Spain's weak productivity record has been linked to the dominance of many low productive small firms and inefficient allocation of resources. Spanish firms tend to be smaller, less productive and innovative; tend to grow at a slower pace, and are less export-oriented than European peers (Figure 2 and IMF, 2017). The productivity gap between small and large firms is also wider than in other European countries (IMF, 2015a). Significant within-sector heterogeneity in firm productivity points to inefficient resource allocation. Figure 2 shows that resource misallocation in Spain was among the highest in advanced European countries, though it declined somewhat in the post-crisis period, in line with previous empirical findings (2014 Bank of Spain Annual Report and Garcia-Santana, 2016).

¹ Prepared by Nina Budina (EUR). I would like to thank Alexander Hijzen, Peter Gal, and Romain Duval for sharing their cleaned firm-level database based on various vintages of Orbis.

² Note that the size of the gaps could differ somewhat when using constant purchasing power parities (PPPs), which ignores the changes in relative prices over time (Mora-Sanguinetti and others, 2012).

Figure 1. The Productivity Challenge**Figure 2. Misallocation of Resources 1/**

Sources: RES ORBIS data, and IMF staff calculations.

1/ See Hsieh and Klenow (2009), "Misallocation and Manufacturing TFP in China and India," Quarterly Journal of Economics. The authors decompose the logarithm of sectoral TFP into the difference between the logarithms of the "clean" TFP, i.e. TFP that would exist in a sector without factor market distortions, and a measure of resource misallocation. Misallocation is proxied by the variance of the logarithm of the total factor revenue productivity of a firm in a specific sector, adjusted by the price elasticity of demand in the same sector. For illustration, imagine a two firm economy, where only one of the firms faces capital distortions, e.g. capital subsidies. Removing the distortion and reallocating the same amount of capital across all firms (so as to equalize their marginal products of capital) would increase the aggregate output. This would remove the firm-level distortion and also increase sectoral TFP, since the economy would produce more with the same inputs.

3. Against this background, this chapter assesses the importance of several policy and firm-specific factors for firm productivity and growth. Using firm-level data, the analysis investigates the following questions: (i) What are the main stylized facts of total factor productivity level and growth, key policy and firm-specific factors, particularly in recent post-crisis years? (ii) Why have productivity and productivity growth of Spanish companies been so low? What role was played by policy-related factors, such as regulations, size-related tax incentives, and innovation? What has been the impact of access to finance and firm-specific factors? and (iii) What is the relative importance of the factors and how can policies support growth?

4. This chapter is structured as follows. Section B summarizes key findings of the literature, and discusses data and the empirical strategy. Section C presents stylized facts of productivity and

productivity growth and its determinants, focusing on the regulatory and business environment, size-related public policies, including CIT tax incentives for small firms, innovation activities, and the role of corporate balance sheets. Section D identifies the impact of these factors on firm growth and productivity. The last section offers policy considerations and conclusions.

B. Literature Review, Data, and Empirical Strategy

Literature Review

5. The literature has identified several key policy and firm-specific factors that affect firm productivity dynamics. Labor market duality, proxied by the share of temporary workers, and the use of sector level collective bargaining agreements, affected negatively firm TFP in Spain (Hospido and Moreno-Galbis, 2015). Stringent labor market regulations also tend to reduce efficiency of resource allocation (Hopenhayn and Rogerson, 1993; and Garicano et al., 2013 for France). In addition, weak productivity and resource misallocation has been linked to financial frictions from size-dependent borrowing constraints (Gopinath et al., 2015, Garcia-Santana, 2016), functioning of the product market and the quality of the resources available to the economy (Bank of Spain, 2016). Financial constraints related to weak firm balance sheets have been particularly important in the Euro Area in the aftermath of the global financial crisis (Aghion, 2014, IMF 2015a, IMF 2015b, IMF 2016c). Product market regulation has been found to be increasingly detrimental to productivity dynamics in sectors more exposed to regulation, through its impact on misallocation of resources (Andrews and Cingano, 2014). Size-related policies, including tax incentives for small firms, tend to create a “small business trap”, constraining firm and productivity growth (IMF, 2016a; Almunia and Lopez Rodriguez, 2014). Innovation is found to be positively linked to productivity growth (Aghion et al., 2014). Finally, empirical analysis shows that young and innovative firms contribute more to productivity growth than small firms (IMF, 2016a).

Data

6. The paper uses data for about 500,000 Spanish companies for the 2000–13 period.³ Firm-level data used in the analysis are from the ORBIS database of Bureau Van Dijk (BvD), compiled by the Research Department of the IMF (Gal and Hijzen, 2016). The database includes all companies reporting to the country business registries. It captures a significant fraction of all micro, small and medium-size enterprises (Annex Table A1). The coverage of this dataset is relatively large, with firms included in the sample accounting for about half of corporate gross value added and two thirds of total cost of employees. Nevertheless, micro firms are somewhat underrepresented compared to the data from the National Statistical Institute, reflecting, among other things, lighter reporting standards for those firms. ORBIS contains balance sheets, income statements, several productivity variables, location and sectoral classification over 2000-13 and the data exclude outliers. See the Annex for the variables description.

³ See Table A1 and A2, containing information for the temporal, sectoral, and size structure of the.

Empirical Strategy

7. We study the association between various policy and firm-specific factors and firm productivity dynamics. Specifically, we regress several measures of firm performance—total factor productivity, productivity growth, and value added growth—on various policy and firm-specific factors, exploring both panel and cross-section data driven by data availability.

$$Y_{ist} = \beta * Exp_s * Reg_t + \gamma * (EMTR_{nt_{i,s,t}} - EMTR_{i,s,t}) + \delta * X_{ist} + \alpha_a + \alpha_i + \alpha_t + \varepsilon_{ist} \quad (1)$$

Where Y_{ist} measures TFP level, growth or value added growth of firm i operating in sector s at time t . The first explanatory variable ($Exp_s * Reg_t$) is an industry level index, proxying the impact of regulation on firms operating in different sectors. The second explanatory variable ($Emtr_{nt_{i,s,t}} - Emtr_{i,s,t}$) measures the impact of size-related tax incentives, X_{ist} is a vector of other proxies for firm-specific factors, such as firm innovation activity, access to finance, and firm-size. The year fixed effects, α_t , directly control for macroeconomic fluctuations and all other factors that may affect productivity equally across firms. The estimations also include a set of dummies for five age related categories of firms α_a to control for the differing effect of firm age on productivity, firm fixed effects, α_i and an error term, ε_{ist} , estimated as robust standard errors, clustered at the firm level. This equation is estimated on annual firm level data.

Explanatory Variables

8. Product market regulation: The coefficient β captures the extent to which product market liberalization is associated with better firm outcomes in sectors highly exposed to stringent regulation. We proxy stringency of product market regulation using the OECD Product Market Regulation (PMR) index, which is based on *de jure* data on laws and regulations, abstracting from implementation issues that might impact effectiveness of regulation. The index varies in the (0,6) range, with higher values denoting more stringent regulation. The PMR index is interacted with sectors' exposure to regulation, proxied by the U.S. firm turnover at the two-digit NACE level, under the assumption that the marginal impact of product market liberalization would be greater for firms operating in industries with naturally low barriers, compared to firms operating in industries with naturally high barriers (Andrews and others, 2015).⁴ A negative β coefficient on the interaction between the PMR index and the exposure indicator would imply that easing regulation would boost firm performance disproportionately more in sectors highly exposed to regulation.

9. Tax incentives: Size-related tax incentives are measured as the difference between effective marginal tax rates under the standard corporate income tax (CIT) rate and those under the targeted (lower) CIT rates for targeted (smaller) firms. Firm-specific forward-looking effective marginal tax rates, in turn, are simulated combining firm-level data with information from the tax code (Box 1). A negative γ coefficient on the difference between effective marginal tax rates under the standard CIT

⁴ Using the data for the U.S. firm turnover (a country with low regulation) would mitigate concerns regarding possible endogeneity of the exposure indicator to the level of regulation.

rate and those under the targeted (lower) CIT rates for smaller firms implies that lowering the differential between effective marginal tax rate under the standard CIT rate and that under the targeted (lower) CIT rate for smaller firms would boost the dependent variable (TFP level and growth and value added growth).⁵

Box 1. Measuring Size-Related CIT Tax Incentives¹

CIT tax incentive estimates are based on effective marginal tax rates. This approach uses a forward-looking hypothetical marginal investment project to evaluate the impact of taxes on the firm cost of capital. Forward-looking effective tax rates measure the effective tax burden on a hypothetical investment project using information from the tax code and firm level variables, such as investment, financing, and repatriation decisions (Devereux and Griffith, 1999). The effective tax burden on a hypothetical investment depends on the statutory tax rate, the net present value of tax depreciation, and the tax treatment of debt and equity financing. For a marginal investment the expected after-tax rate of return is equal to the after-tax rate of return of an alternative investment. The pre-tax rate of return necessary to generate this after tax rate of return is called the cost of capital (p) (see Egger and Loretz, 2010). The effective marginal tax rate (EMTR) is then defined as the difference between the cost of capital and the after-tax rate of return of an alternative asset, relative to the cost of capital. Size-related tax incentive is defined in turn as the differential between the EMTR calculated using the standard CIT rate and EMTR calculated using the targeted (lower) CIT rates for SMEs.

Key Assumptions. Information on the standard and SME-specific CIT rates and threshold for eligibility for the tax incentive are based on the OECD database. For some of the parameters required for the calculation, firm-level data have been used, but where those are not available, assumptions based on ZEW (2012) have been used, following Egger et al. (2009). Country-specific depreciation rules are also taken from ZEW (2012). Key assumptions are: (i) real rate of return of 5 percent, annual inflation of 2 percent and a pre-tax real rate of return on capital of 20 percent; (ii) economic depreciation rates for four categories: machinery, buildings, intangibles, and land and the share of assets by these categories, resulting in tax saving on depreciation allowance; and (iii) firm-level data used to compute the share of debt financing.

¹ See Egger and others (2009) and Benedek, Budina, Deb, Gracia, Saksonovos, Shabunina (forthcoming).

10. Access to finance. The analysis uses debt-to-asset ratio as a proxy for the strength of firm balance sheets and access to finance.⁶ This proxy has been typically used in earlier empirical analysis. Given the excessive reliance on bank financing and very low availability of venture capital in Spain, such constraints are particularly important for R&D investment, leading in turn to lower productivity growth (Aghion, 2014). There is evidence for the importance of this channel for firm investment growth, efficiency of resource allocation and TFP level and growth in Spain (Hospido and Moreno-Galbis, 2015, and Moral Benito and others, 2016). Moreover, access to finance maybe much more of an issue for small companies with relatively smaller tangible assets, often used as collateral when obtaining bank credit. To check if access to finance matters more for small firms, the empirical analysis also includes access to finance proxy interacted with a dummy variable for SMEs.

⁵ For a cross-country analysis and Benedek and others (forthcoming).

⁶ We define debt as the sum of short-term financial debt (loans) and long-term financial debt (long-term liabilities), as in ECB (2014).

11. Other factors.⁷ Innovation, proxied by the share of intangibles to total assets, is also included in the empirical analysis (following IMF, 2016c). Sustained innovation is a key driver of TFP growth and generates knowledge spillovers to other firms and sectors (IMF, 2016a). In addition, the analysis includes firm-specific factors, like firm size and age. Intuitively, smaller firms are in general less productive than the large ones, (Haltiwanger and others, 2011; IMF, 2016a), though recent evidence suggests that firm size is endogenous to firm productivity (Garcia-Santana and others, 2016). To this end, we have proxied firm size by lagged value added growth and found that lagged firm size was an important determinant of firm productivity and growth, with smaller firms being less productive compared to larger firms. We also found evidence that the same policy factors play critical importance for firm output growth.

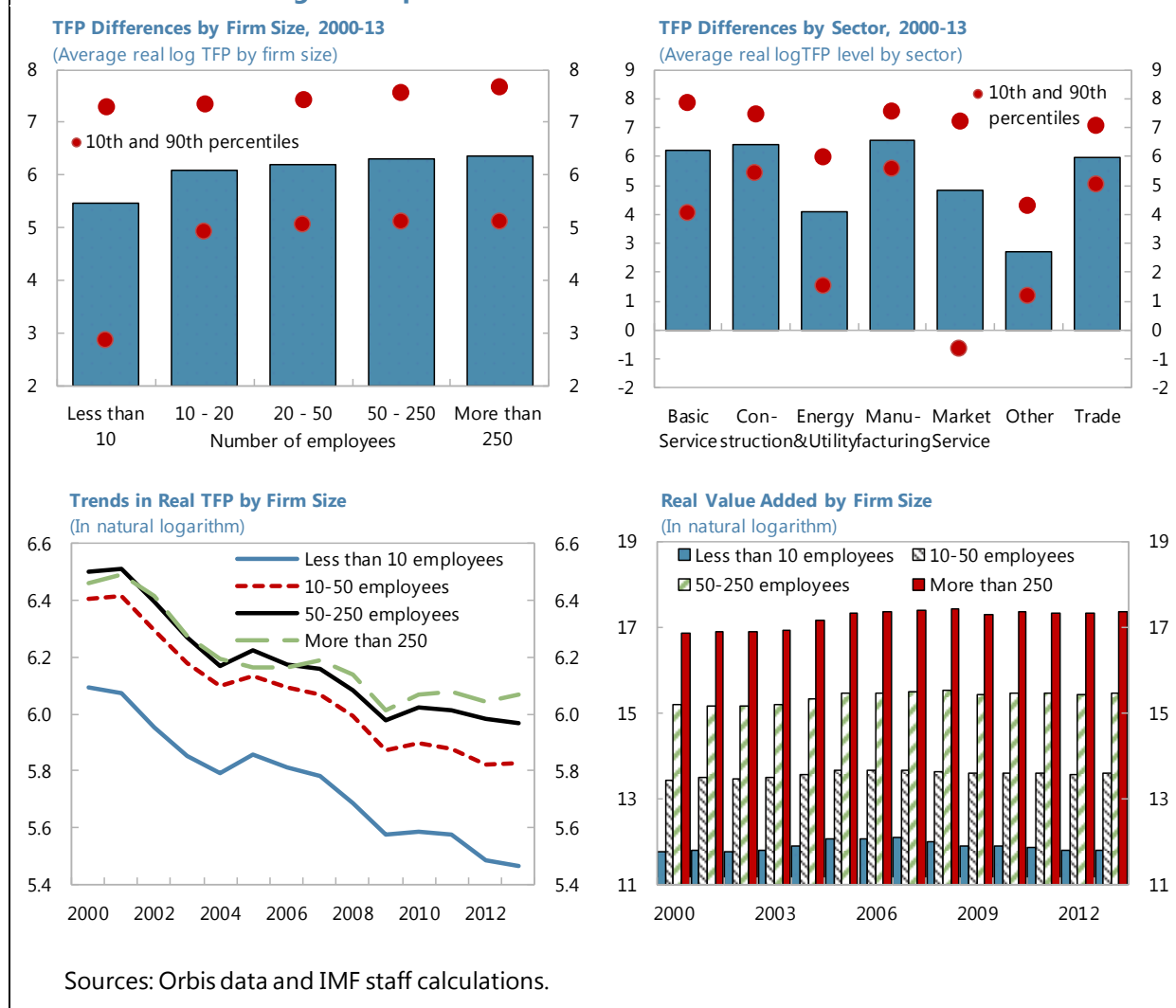
C. Stylized Facts

12. Firm total factor productivity varies across firm size, sectors and time (Figure 3).⁸

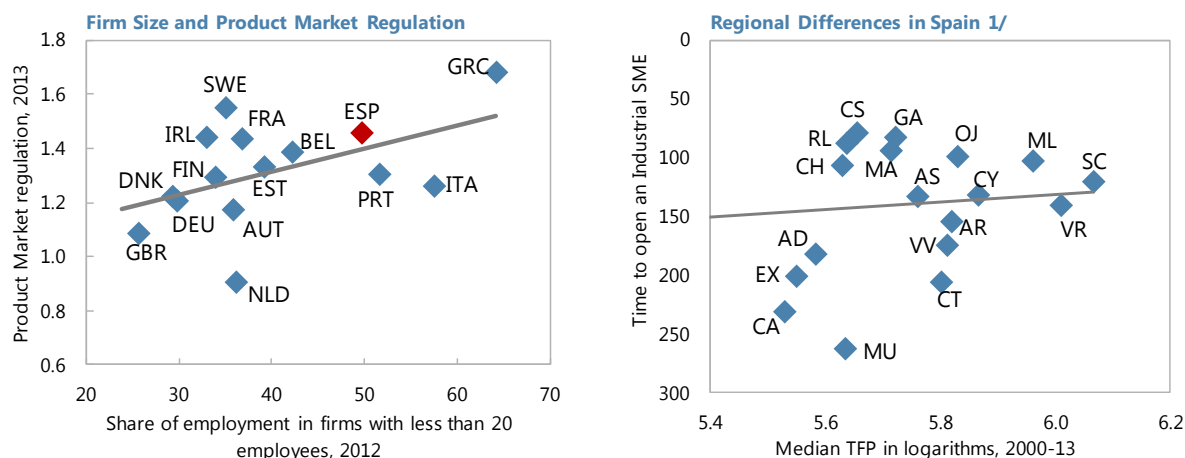
- Larger Spanish firms enjoy higher median productivity levels and lower productivity dispersion relative to smaller firms, in particularly micro firms. Yet, the share of small firms is very high and even increased slightly, following the global financial crisis. In 2013, micro and small firms (with less than 20 employees) comprised 90 and 95 percent of the total number of non-financial firms in Spain, respectively.
- As expected, there are also sizeable TFP gaps across sectors, with relatively low productivity and large productivity differentials in market services, agriculture, and energy and the highest productivity of manufacturing.
- Firm TFP has been declining well before the global financial crisis. While following the crisis, real TFP has stabilized and even started to recover among the larger firms, the declining trend is yet to be reversed among the micro firms.
- Firm growth, proxied here by the real value added growth, has lost its dynamism for the larger firms particularly during the post-crisis period, while the real value added of micro firms even declined during the same period.

⁷ Note that the analysis did not include a proxy for labor market distortions, because suitable proxy was not available. Despite this, the impact of any other factors beyond those included explicitly in the analysis is implicitly accounted for by the time and firm fixed effects.

⁸ Real total factor productivity (in logarithms) is calculated as a Solow-type residual, based on firm-level production function (Cobb-Douglas) and individual firm inputs.

Figure 3. Spain: Trends in Firm TFP and Value Added**13. Regulation remains a burden for competition in product and service markets**

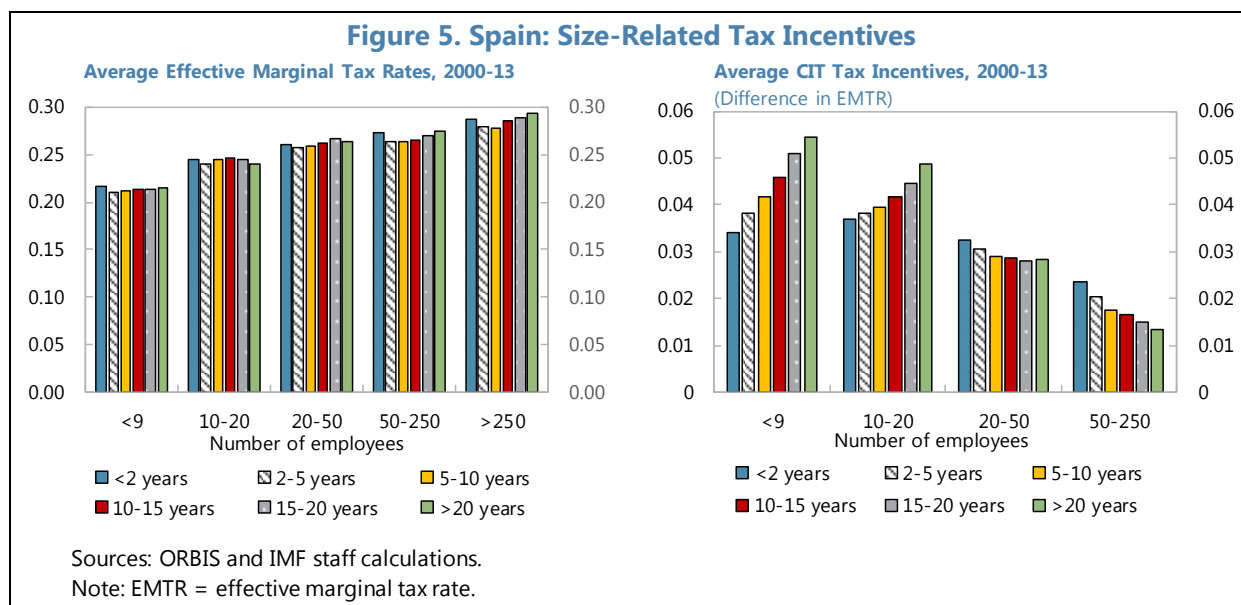
(Figure 4). As evident by the OECD index of product market regulation, in spite of recent improvements, the strictness of “de jure” regulation is still elevated compared to peers, as well as barriers to entrepreneurship, barriers to entry in the service sector, and relatively more cumbersome license and permit systems. This tends to hamper entrepreneurial activity, market entry and growth of small firms in Spain (Scarpetta and others, 2002; IMF, 2016b; Bank of Spain, 2016). In addition, the “de facto” regulation, factoring the effects of the “de facto” institutional environment could have even more important effects (Mora-Sanguinetti, 2016). There is also evidence of regulatory barriers and market fragmentation across regions (World Bank, 2015; Bank of Spain, 2016; European Commission, 2016). For example, the time to open an industrial SME varies greatly across the regions, with some regions in southern Spain taking twice the time to open an industrial SMEs compared to some of the northern regions.

Figure 4. Firm Size, Productivity and Regulation

Sources: ORBIS, and Subnational Doing Business, World Bank, 2015.

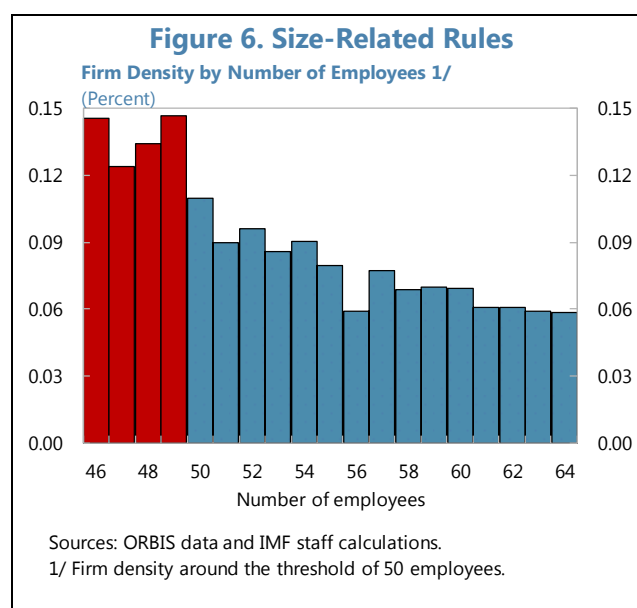
1/ Region names are abbreviated as follows: AD-Andalusia, AR-Aragon, AS-Asturias, CA-Ceuta, CH-Castile-La Mancha, CS-Castile-Leon, CT-Cantabria, CY-Catalonia, EX-Extremadura, GA-Galicia, MA-Madrid, ML-Melilla, OJ-La Rioja, RL-Balearic Islands, RU-Murcia, SC-Basque Community, VR-Navarre, VV-Valencian Community.

14. Size-related tax incentives vary across sectors, firm age and firm size (Figure 5). The effective marginal tax rate (EMTR) increases with firm size in our sample. Within SMEs, smaller firms get higher benefits. During 2010–14 the CIT rate varied between 20 and 30 percent, with the smallest firms (those with less than 25 employees and with turnover below €5 million) taxed at the lowest end of this range; larger SMEs were taxed at 25 percent for the first €300,000 of their profit and at 30 percent for profits exceeding this threshold, while large firms were taxed at the upper end of this range. However, this has changed with the 2015 tax reform that lowered the CIT rate to 25 percent for all firms and replaced the lower CIT rate for small firms with a 15 percent CIT rate for new firms. Given the variation in the composition and size of assets and the debt-to-asset ratio, there are also significant differences in the tax incentives by sectors as well, with firms in agricultural, service and energy sectors benefiting from relatively larger tax incentives, compared to other sectors. In terms of age, the current incentive structure does not favor young companies in Spain, as they have lower tax benefits, compared to older firms.

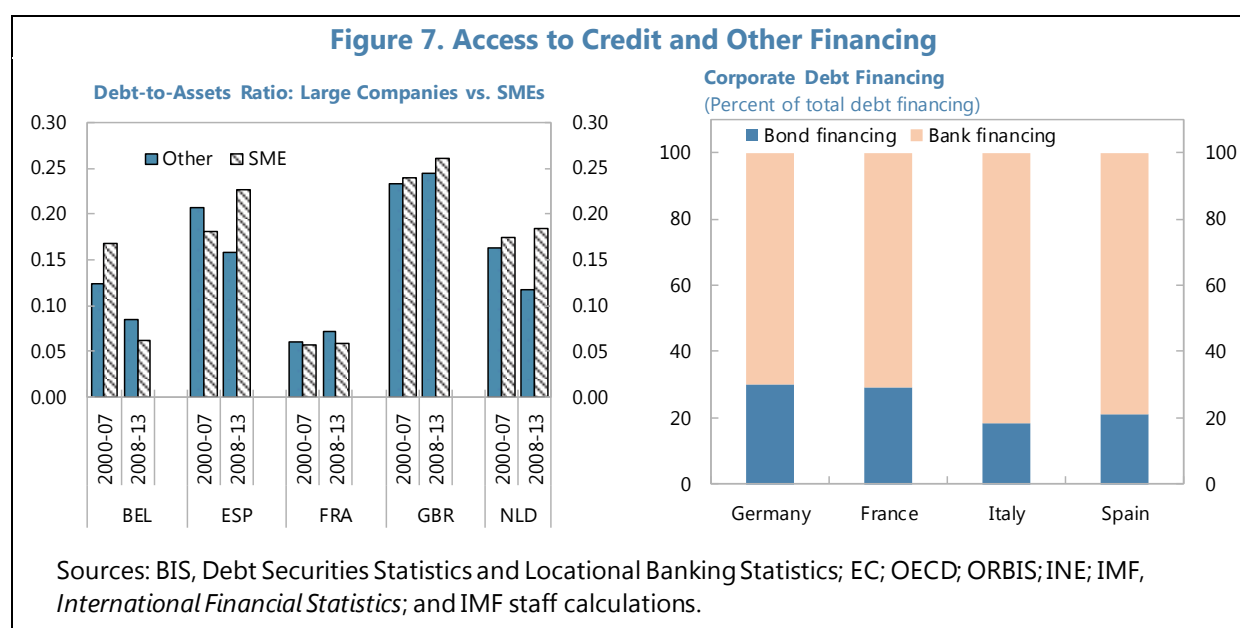


15. There are also a number of rules and regulations that depend on the employment size.

A number of rules and regulations exist that include certain requirements, once a firm reaches a particular threshold for firm employment, total assets, company turnover or a combination of those (Bank of Spain, 2015; European Commission, 2016). For example, these include certain audit requirements, accounting rules or labor regulations that apply to firms with more than 10, 30, and 50 employees. As a result, the firm density drops around several employment thresholds including at 50 workers (Figure 6). In addition, other potential obstacles include thresholds on the firm turnover (€450,000 and €6 million) for the application of the simplified VAT regime and the CIT collection of advance payments, though recent reforms have reduced the burden of some of these regulations (European Commission, 2016, Almunia and Rodriguez, 2014).



16. Debt-to-asset ratios have been relatively high and increased for SMEs further during the crisis (Figure 7). Given the excessive reliance of Spanish corporate sector on bank financing, such constraints have been particularly strong during the crisis, affecting particularly the R&D investment (Aghion, 2014). Financing constraints, proxied by the firm debt-to-asset ratio, prevent firms from investing and growing that in turn result in inefficient resource allocation, thereby affecting productivity level and growth (Bank of Spain, 2016, Hospido and Moreno-Galbis, 2015).



D. Determinants of Firm Productivity Performance: Empirical Results

17. We estimated the impact of various factors on TFP growth, level, and growth of value added, using several econometric specifications. Specifically, we estimated the model on panel data over 2000–13, using fixed effects regressions (Table A3).

18. Results indicate the role of several policy and firm-level factors for firm productivity growth (Figure 8):

- **Regulation.** Regulatory entry barriers and administrative burden from licensing requirements and market fragmentation across regions by preventing creative destruction are found to be detrimental to productivity and productivity growth. This is even more in sectors more exposed to regulation. The findings are consistent with Bank of Spain (2016), European Commission (2016), and OECD (2015).
- **High debt-to-asset ratio, proxing credit constraints,** is found to be negatively and significantly correlated with TFP level and growth. This effect is even stronger for the SMEs, as they tend to have weaker financial position compared to other firms. This is in line with previous studies suggesting that investment growth was relatively more constrained when firms face financing constraints, resulting from weaker balance sheets (IMF, 2016b Euro Area Policies, Article IV Report, Box 2). Investment constraints could prevent firms from growing and result in inefficient resource allocation, thereby affecting productivity level and growth (Bank of Spain, 2016). Such constraints might be particularly important for R&D investment, leading in turn to lower productivity growth (Aghion, 2014).

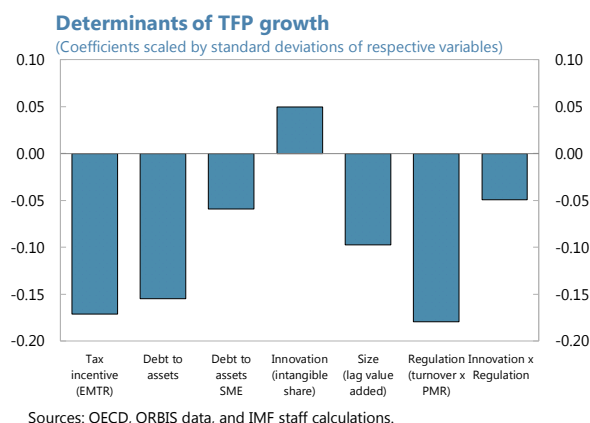
Figure 8. Estimation Results: Factors of Firm Productivity and Growth 1/

Sources: ORBIS data, OECD and IMF staff calculations.

1/ Cross-reference the tables with detailed regression results in the Annex.

Note: EMRT = effective marginal tax rate; PMR = product market regulation index.

- **Size-related tax incentives** affected negatively and significantly TFP level, TFP growth, and growth in value added. Thus, tax incentives were on average more harmful than helpful for productivity level and growth as they create disincentives for firms to grow, resulting in “small business trap.”
- **Innovation.** The results suggest that more innovative firms, as proxied by the share of intangibles to total assets were more productive and have grown faster. However, the impact is relatively small possibly due to the relatively low level of R&D investment in Spain compared to peers. The finding may also not fully account for positive knowledge spillovers, generated by innovation, affecting positively TFP level and growth. The effect of the innovation proxy is larger positive, but this is offset by a negative effect from the interaction between regulation and innovation, suggesting that stringent regulation could affect productivity growth negatively also through its negative impact on innovation (Table A3). Innovation is important, but it becomes less so in the presence of regulation, which explains why the overall effect of innovation is small.
- **Firm size and age.** While smaller firms were in general less productive than the large ones, regressions indicate that productivity growth tended to be negatively related with firm size and firm age, in line with existing literature (Haltiwanger and others, 2011; IMF, 2016a). Specifically, firm size was an important determinant of firm productivity and growth (proxied here by the lagged value added growth), with smaller firms less productive compared to larger firms. Larger firms could reap benefits from economies of scale, but were less dynamic and tended to grow at a relatively slower pace, compared to smaller firms.



19. The analysis suggests that policy factors have played an important role for firm productivity and growth. Specifically, policy factors, in particular those related to strictness of product and service market regulation, size-related tax incentives and finance constraints were negatively correlated with firm productivity level and growth, and firm growth, proxied by the growth in real value added. This suggests that reforms should continue to focus on fostering the competition in product and service markets and on further improving access to equity and credit financing, in particular for small and innovative firms. Furthermore, the elimination of the CIT size-related tax incentives with the recent tax reform should also help and further progress towards reducing other size-related rules and regulations would further stimulate firm growth and productivity. Finally, other reforms that aim at improving the quality of labor input, such as labor market and education reforms could boost firm productivity further.

E. Conclusion

20. This chapter uses firm-level data to examine policy and firm-specific factors that explain TFP level and dynamics of Spanish firms. In line with the literature, the analysis suggests that TFP level and growth was uneven across the Spanish firms. Specifically, the results show that firm size is the key determinant of productivity growth—while small firms are less productive compared to larger firms, large firms are less dynamic and have lower productivity and value-added growth. On average, younger firms tend to grow faster compared to older firms, while firms with higher innovation activity tend to grow faster. Firms that receive more size-related tax incentives witness lower TFP growth and firm growth. Importantly, the impact of such incentives on productivity level and growth is comparable to the effect of financial constraints and regulatory hurdles. Other size-related rules and regulations also seem to create disincentives for firms to grow, lowering firm productivity and growth. Market inefficiencies and lack of competition due to excessive strictness of regulatory requirements and practices (such as permits and standards) in particular at the regional and local level affects negatively barriers to entry and inhibit competition, in particular in sectors more exposed to regulation, which can hurt firm productivity and growth.

21. High productivity growth requires frontier innovations and efficient allocation of resources. This chapter examined in turn firm readiness to innovate and the efficiency of within sector allocation of resources. Both call for policies to address barriers to competition, disincentives for firm growth, ability to innovate, and further improvements in access to financing.

22. The analysis suggests that policies could help enhance firm TFP dynamics by:

- **Fostering competition in product and service markets** by addressing the delays in the implementation of the Market Unity Law and lowering the regulatory barriers and the administrative burden faced by firms from the three government layers and by pressing ahead with the long delayed liberalization of professional services would enhance firm TFP dynamics.
- **Further reducing and eliminating size-related rules and regulations** (in reporting, auditing, and labor-related regulation) that create small business trap and can hurt productivity and growth. Some of these disincentive effects have been reduced recently, in particular with the 2015 tax reform that equalized the CIT rate across firms of different sizes, to 25 percent and replaced lower CIT rates for small firms with a 15 percent CIT rate for new firms.
- **Further improving access to finance**, in particular equity financing for small firms, would be critical to maintain robust investment growth, including sustained growth in R&D investment, therefore enhancing firms' TFP growth.
- **Other policies** include further enhancing firms' innovation capacity through addressing the remaining weaknesses with public R&D spending efficiency and weak public-private sector cooperation. Last, but not least, addressing labor market duality through further labor market reforms and the quality of labor input through education reforms would also be important to sustain TFP growth and encourage innovation.

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Annex I. Data and Estimation Results

Table A1. Spain: Average SME Share and ORBIS Sample Size by Year			
Year	Average SME share	Sample size	
2000	0.990	56,993	
2001	0.992	82,486	
2002	0.994	109,483	
2003	0.994	140,657	
2004	0.991	215,489	
2005	0.991	313,573	
2006	0.990	332,000	
2007	0.988	320,026	
2008	0.989	335,716	
2009	0.989	342,234	
2010	0.989	334,684	
2011	0.989	317,808	
2012	0.988	281,026	
2013	0.988	230,905	
Total	0.990	3,413,080	

Table A2. Spain: Average SME Share and ORBIS Sample Size by Year			
Economic Sectors	Av. SME share	Sample size	
Agriculture	0.99	81,364	
Mining	0.99	13,107	
Manufacturing	0.98	538,263	
Electricity, gas, steam and air condition	0.93	8,157	
Water supply, sewerage, waste management	0.95	11,595	
Construction	0.99	543,596	
Wholesale and retail trade; repair	0.99	795,370	
Transportation and storage	0.99	150,075	
Accommodation and food service	0.99	172,459	
Information and communication	0.98	66,680	
Financial and insurance activities	0.98	31,861	
Real estate activities	1.00	103,785	
Professional, scientific and tech. services	0.99	230,614	
Administrative and support services	0.97	97,266	
Total	0.99	2,844,192	

Table A3. Spain: Effects of Policy and Firm Factors on Firm Productivity and Growth
(OLS with Fixed Effects, Robust Standard Errors)

	TFP Growth			TFP level			Value Added Growth		
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
Lagged total factor productivity	-0.84***	-0.84***	-0.84***				-0.29***	-0.29***	-0.29***
Tax incentive (EMTR)	-5.57***	-5.58***	-5.58***	-5.52***	-5.53***	-5.53***	-5.91***	-5.95***	-5.95***
Debt-to-assets	-1.05***	-0.76***	-0.76***	-1.09***	-0.86***	-0.86***	-0.85***	-0.02	-0.02
Debt-to-assets*sme		-0.29***	-0.29***		-0.23***	-0.23***		-0.84***	-0.85***
Innovation (share of intangibles)	0	0	0.11***	0.00*	0.00*	0.11***	0.01	0.01	0.18***
Innovation*Regulation			-0.00***			-0.00***			-0.00***
Size (lagged value added)	-0.06***	-0.06***	-0.06***	0.06***	0.06***	0.06***	-0.58***	-0.59***	-0.59***
Regulation (Exposure*PMR)	-0.02***	-0.02***	-0.02***	-0.02***	-0.02***	-0.02***	-0.03***	-0.03***	-0.03***
Age (2-5 years)	-0.01**	-0.01**	-0.01**	-0.03***	-0.03***	-0.03***	-0.08***	-0.08***	-0.08***
Age (5-10 years)	-0.01***	-0.01***	-0.01***	-0.05***	-0.05***	-0.05***	-0.08***	-0.08***	-0.08***
Age (10-15 years)	-0.02***	-0.02***	-0.02***	-0.06***	-0.06***	-0.06***	-0.08***	-0.09***	-0.08***
Age (15-20 years)	-0.01**	-0.01**	-0.01**	-0.05***	-0.05***	-0.05***	-0.09***	-0.09***	-0.09***
Age (Over 20 years)	-0.02**	-0.02**	-0.02**	-0.05***	-0.05***	-0.05***	-0.09***	-0.09***	-0.09***
Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	7.05***	7.05***	6.97***	6.49***	6.49***	6.41***	11.21***	11.22***	11.09***
Number of observations	2,051,207	2,051,207	2,051,207	2,051,352	2,051,352	2,051,352	2,089,036	2,089,036	2,089,036
R-sq.	0.47	0.47	0.47	0.11	0.11	0.11	0.47	0.47	0.47

Notes: The sample spans the years 2000-13. EMTR = Effective Marginal Tax Rate; EATR = Effective Average Tax Rate; PMR = Product Market Regulation.

ASSESSING SPAIN'S COMPETITIVENESS¹

Three years of current account surpluses, in conjunction with positive GDP growth, are a remarkable achievement but vulnerabilities remain, including the large net external debt positions. Strong export growth, a rising global export market share, and a larger number of exporting firms reflect increased competitiveness. However, an important share of export growth is concentrated in large firms, and firms' entry into exporting activities has slowed as domestic demand started recovering. Imports, while compressed since the crisis, continue to have a high income elasticity which is a source of vulnerability as the economic recovery continues. Simulations based on estimated trade equations point to risks for the needed external debt reduction from an external demand slowdown, oil price increases, and real appreciation. By sustaining competitiveness and increasing productivity and firm growth, labor and product market reform could support competitiveness and export growth. Together with continued fiscal consolidation, this would help to gradually reduce vulnerabilities from the highly negative net international investment position.

A. Introduction

- 1. Spain has a large net external debtor position which is a source of vulnerability, although there are mitigating factors.** While private sector deleveraged since the crisis, fiscal deficits and valuation effects slowed down the reduction in the net international investment position (NIIP). As a consequence, Spain's negative NIIP is still among the largest in Europe (90 percent of GDP) and its large share of debt is a source of vulnerabilities in the medium term. The low interest environment and the long debt maturity act as mitigating factors.
- 2. Spain has sustained external surpluses since the crisis.** Since 2014, both the current account showed surpluses and the economy expanded strongly, a combination that it is historically exceptional. The surplus was sustained by regained competitiveness and export growth, low oil prices, and low interest rates. The staff's baseline forecast envisages current account surpluses in the order of 1.8-2.0 percent of GDP over the medium term. While export dynamism contributed to trade balance surpluses, the high income elasticity of imports continues to be a source of vulnerability.
- 3. Structure of the paper.** Section B discusses strengths and vulnerabilities in Spain's current account and net international investment position. Section C presents an external debt sustainability analysis (DSA) that is extended to incorporate estimated export and import demand equations. Section D analyzes the performance of Spain's exporting firms in more detail. Section E summarizes the findings and presents the conclusions.

¹ Prepared by Federico Grinberg.

B. Spain's Current Account and Net International Investment Position: Strengths and Vulnerabilities

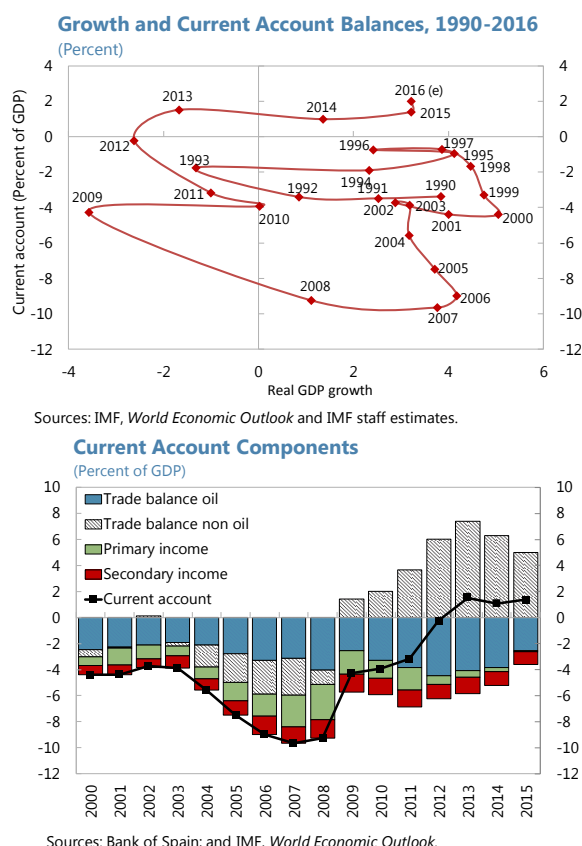
Current Account

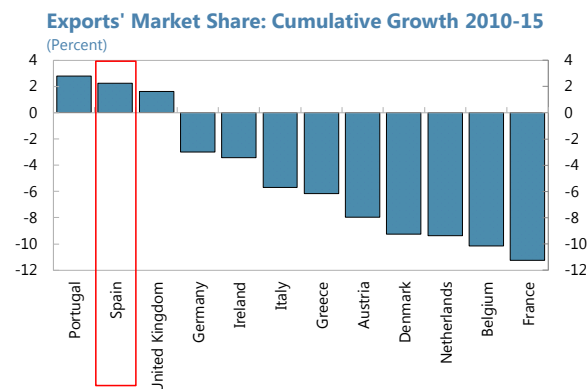
4. Spain's external surpluses of the past three years are an exceptional achievement. Only since the post-crisis recovery has Spain been able to sustain a combination of positive current account balances with positive real GDP growth. From 1990 to 2012, Spain had current account deficits every year. Thus, while significant progress has been made in improving the outlook for external sustainability, this also puts into historical context the formidable challenges to sustainably reduce external imbalances.

5. Structural, cyclical, and external factors all played a role in current account surpluses. Strong export dynamics on the back of better competitiveness, a large positive terms-of-trade shock—due to the fall in oil prices—, and low interest rates resulting from the Euro Area monetary policy, helped the recent improvement in the current account. The steady recovery in non-energy imports, growing above GDP, partially offset the strengthening of the external balance.

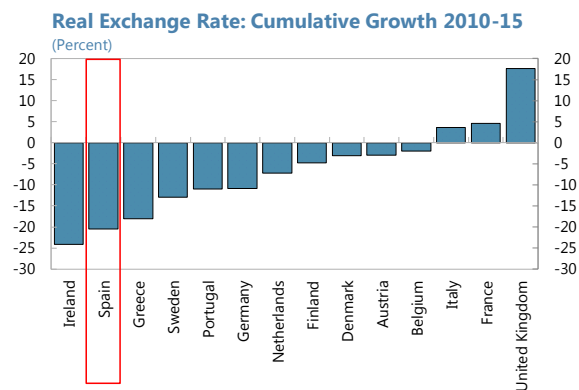
6. Better export competitiveness has been reflected in a growing global export market share. Three factors—wage moderation, firms' internationalization, and ECB monetary policy—helped competitiveness. First, in the run up to the 2008 financial crisis, export shares remained resilient despite a substantial deterioration in price competitiveness. After the crisis, however, wage moderation helped regain competitiveness and raise export shares. This increase in competitiveness had an important impact on export performance as confirmed by latest estimates (Box 1). As a result, from 2010–15, Spain's relative price adjustment was among the largest among European peers, and its export share growth (relative to world's imports) stood out compared to others. Second, both market diversification and the increase in firms' internationalization played a role in the export share growth (see Section D). Lastly, the ECB's expansionary monetary policy also contributed to Spain's competitiveness. Since 2014, the euro depreciated by about 20 percent against the US dollar, having a direct effect on Spain's exports to non-Euro Area countries. The euro depreciation also had an indirect positive effect for Spanish exports: as an important component of its trade with other Euro Area countries is linked through global value chains, the euro depreciation also increased these countries competitiveness and exports, increasing their demand for Spanish products.²

² An example of this are the German-Spanish car manufacturing production chains.





Source: IMF DOTS.



Source: IMF World Economic Outlook.

Box 1. Elasticities of Spanish Exports and Imports

Empirical estimates confirm that exports are sensitive to relative prices and external demand.

Using an error correction model, non-energy goods exports and services exports respond strongly to variations in the real effective exchange rate in unit labor costs terms (REER-ULC) both in the short and in the long run. The elasticity to foreign demand is also significant, highlighting the relevance of the global environment to support Spain's export growth.

Imports are very sensitive to domestic demand and exports, but not the REER. In line with earlier findings (e.g., IMF, 2015), latest estimates show that non-energy goods and services imports are not elastic to the REER, while they depend strongly on domestic demand, with an income elasticity of about 1½. Moreover, there is evidence that goods exports also influence the path of imports, which is consistent with the presence of global value chains and a significant import content of exports in manufacturing industries.

	Exports	
	Non-oil goods	Services
<i>Error Correction Mechanism</i>	-0.43	-0.19
<i>Long term</i>		
Constant	2.42	1.55
Foreign demand	0.91	0.74
REER_ULC	-0.63	-0.42
<i>Short Term</i>		
Δ Foreign demand	0.70	1.96
Δ REER_ULC	-0.24	-0.07

	Imports	
	Non oil goods	Services
<i>Error Correction Mechanism</i>	-0.32	-0.22
<i>Long term</i>		
Constant	-15.86	-16.98
Domestic demand	1.44	1.70
Exports	0.45	0.36
<i>Short term</i>		
Δ Domestic demand	0.46	0.35
Δ Exports	0.15	0.17

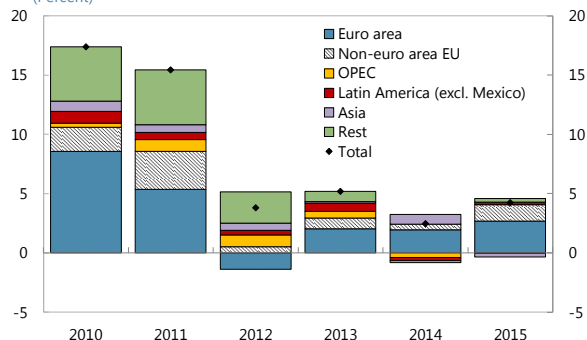
Estimation period: 1995Q1-2015Q4

1/ Estimation of Error Correction Model in one step. Variables are in logarithms.

¹ These results are in line with IMF (2015). Prades and Garcia (2015) findings are also similar, though they also explore the role of domestic demand in the export equation, which is omitted here.

7. The European Union (EU) is Spain's largest trade partner. While the share of Spain's exports to the EU declined 10 percentage points since the early 2000s, the EU remains the most important destination with 65 percent of Spain's exports in 2015. As a result, about half of Spain's nominal export growth in 2014 and 2015 is explained by exports to the EU. The share of exports with the UK

Contributions to Nominal Export Growth, by Destination



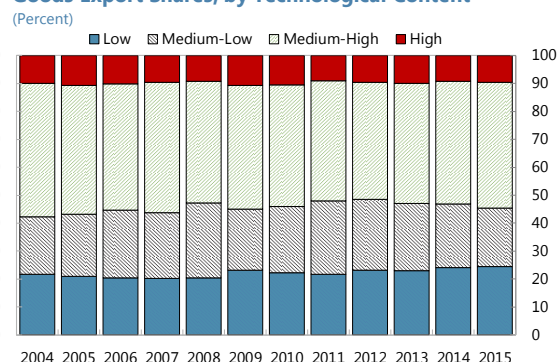
Source: Bank of Spain.

is smaller than that with other large EU member states at about 3½ percent of GDP of which about a quarter is tourism. Thus, the direct impact of the UK exit from the EU is manageable. Moreover, even as exports to emerging markets have grown after the crisis, Spain still has a relatively low direct exposure to emerging markets growth slowdown.³

8. The export technological content has been stable and mostly concentrated in medium and high technology goods.

About 45 percent of goods exports are goods with a medium-high technological content, with some recent growth in low technological content. Moreover, exports do not seem to have moved up in the productivity ladder, as the export composition remained roughly unchanged in the last decade. A move up the value-chain would require Spanish firms to step up their investment in intangibles such as research and development (R&D), training and advertising. The latest available data for investment in intangibles is from 2010 and show that Spain was one of the poorest performers in the EU-15.⁴

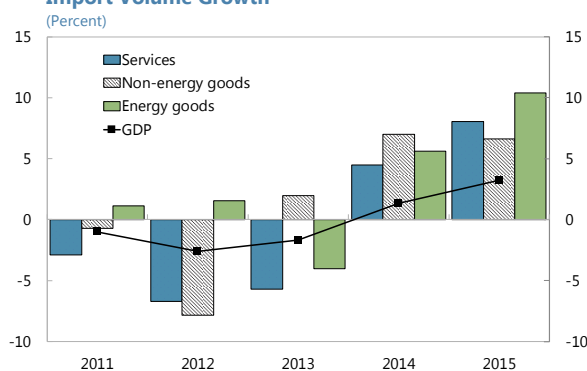
Goods Export Shares, by Technological Content



9. The high income elasticity of imports continues to be a source of vulnerability for the trade balance.

Since the recovery started, import volumes have grown strongly, though from low levels. For example, in 2015 imports expanded by over 5 percent in real terms, well above real GDP growth of 3.2 percent. Latest estimates put the income elasticity of imports at around 1½ (see Box 1).⁵ Thus, even though the baseline medium-term projection is one of sustained trade surpluses and gradual external sustainability improvements, the continued high import income elasticity could weigh on the size and sign of future trade balances.

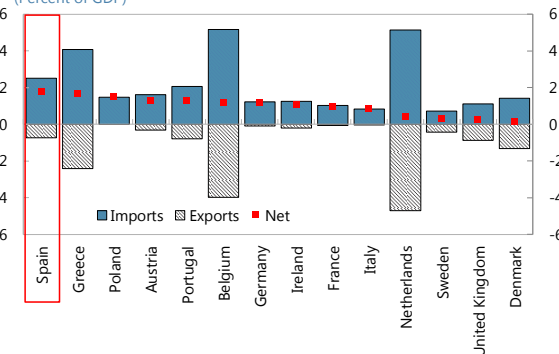
Import Volume Growth



10. Spain's trade balance benefited significantly from lower oil prices.

Spain has one of the largest energy trade deficits (as percent of GDP) in Europe, so the fall in oil prices in 2015 implied a larger positive terms-of-trade shock than for its peers. The fall in the oil price (of about 47 percent) gave an impulse to economic activity and also improved the trade balance

Impact of Terms-of-Trade Shock from Oil Prices in 2015



³ See box on spillovers from Latin America in the Staff Report.

⁴ See first chapter of the Selected Issues paper.

⁵ See also IMF (2015) for an alternative estimation of imports' income elasticities.

by about €20 billion (2 percent of GDP). However, while oil prices are forecasted to remain below last decade's average, the price volatility and uncertainty is a risk factor for the future trade balance.

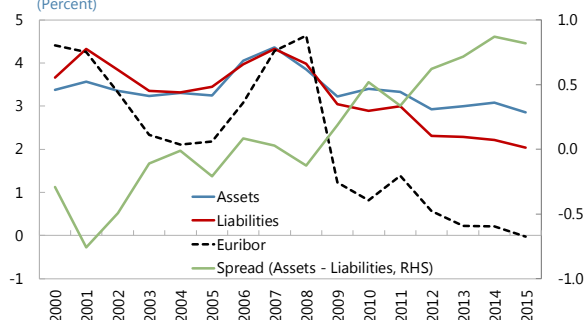
11. Low interest rates have helped the income balance. Record low interest rates have reduced Spain's external interest payments on its large level of gross external debt. At the same time, the remuneration of the increasingly diversified external asset portfolio has fallen less sharply, thus also improving Spain's net income payments.

Net International Investment Position (NIIP)

12. Despite three years of current account surpluses the NIIP debtor position is still very large and its structure heavily reliant on debt, though there are mitigating factors. Spain has one of the largest negative NIIP positions in Europe (about 90 percent of GDP at end-2015) and also has one of the highest net external debts ratios (88 percent of GDP at end-2015). Thus, the direct investment (equity) component of the NIIP is small compared to peers and provides little risk mitigation. However, the maturity structure is relatively favorable with only 9 percent of the portfolio investment falling due in the next twelve months. At the same time, the support by monetary policy through purchases of Spanish assets also acts as an additional and powerful mitigating factor against rollover and interest rate risks.

13. While private sector deleveraging contributed to the net external debt reduction, this was partially offset by growing public debt. In the run up to the 2008 crisis, households and corporations were behind the current account deficits, while the public sector was a net saver that partially compensated. After the crisis, this pattern reversed and the private sector generated net savings, and the public sector ran deficits. As a result of this, between 2010 and 2015, the

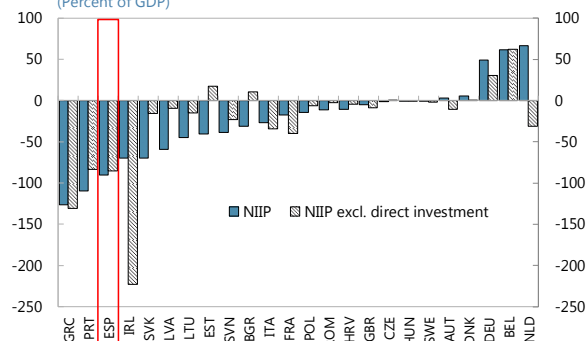
Effective Return Rates on Assets and Liabilities 1/ (Percent)



Sources: Bank of Spain; IMF, *World Economic Outlook*; and IMF staff calculations.

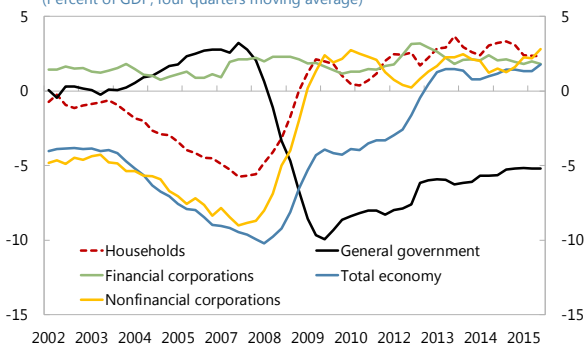
1/ Estimated as the ratio of current income to previous period asset holdings.

Net International Investment Position, 2015 (Percent of GDP)



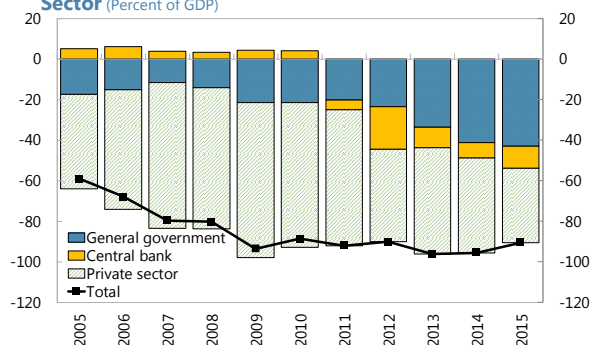
Source: Eurostat.

Savings and Investment (Percent of GDP, four quarters moving average)



Source: Haver Analytics.

Net International Investment Position by Institutional Sector (Percent of GDP)



Source: Bank of Spain.

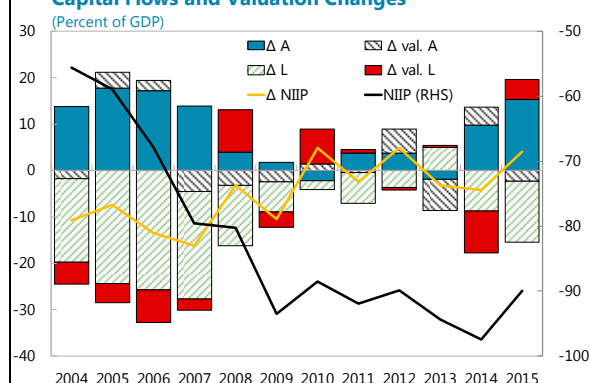
consolidated public sector NIIP (the sum of general government and the central bank) went from -17 to -54 percent of GDP. The private sector reduced its NIIP from -71 to -36 percent of GDP during this period.

14. Valuation effects also have slowed the reduction in the NIIP. In the last decade valuation effects have been large and volatile, averaging about of -3 percent of GDP annually, when excluding the 2012 crisis year. From 2013-15, they have worsened the NIIP by more than 5 percent of GDP per year. Without valuation effects, the negative NIIP position would have been 17.5 percent of GDP smaller in 2015. Higher values of Spain's liabilities reflect regained investor confidence and the ECB's asset purchases. However, in 2015 the NIIP also suffered from a lower valuation of Spain's foreign assets, especially direct investment, amounting to a valuation loss of about 3 percent of GDP.

Spain: Net International Investment Position and Valuation Changes

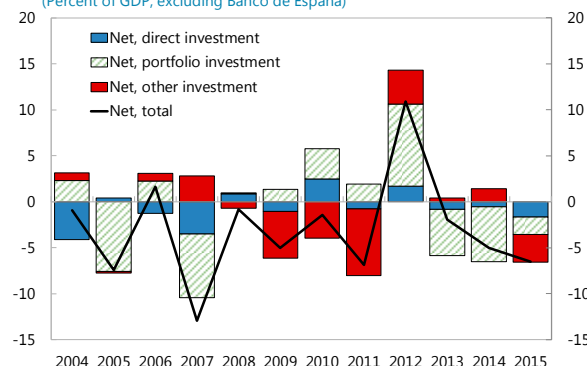
Gross capital flows have increased since the crisis, but valuation changes have also remained important.

Capital Flows and Valuation Changes



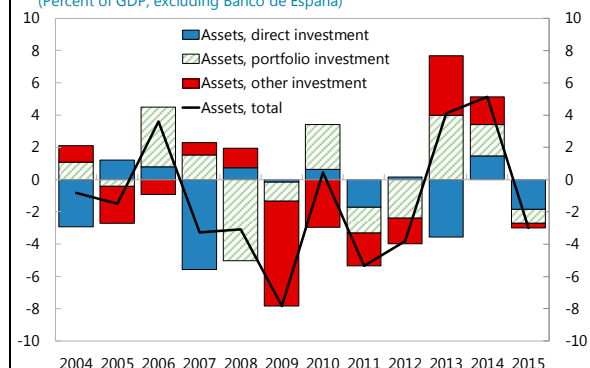
In net terms, revaluation of liabilities implied a larger negative NIIP since the 2012.

Valuation Changes in International Investment Position



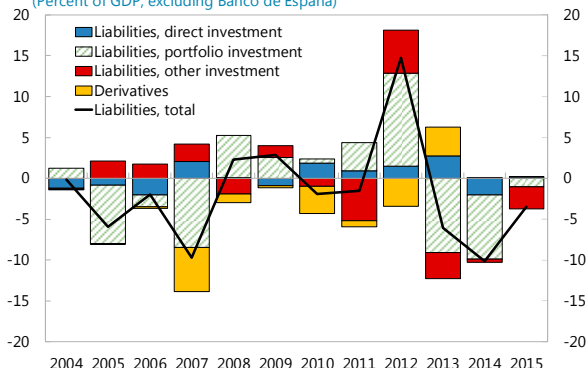
While assets revalued in 2013-14, they lost value in 2015.

Valuation Changes in International Investment Position



Liabilities revaluation continued to worsen the NIIP, but less than in recent years.

Valuation Changes in International Investment Position



Sources: Bank of Spain; and IMF staff calculations.

C. An Extended External Debt Sustainability Analysis

15. Drawing on the estimated trade equations allows to expand the analysis of various shocks to Spain's external debt sustainability. The standard external DSA is limited to relatively simple assumptions (comparable across a wide range of countries) to project a medium-term path of external debt. Taking the baseline projections for the non-interest current account, interest payments, debt stocks, GDP growth, and exchange rates, the external DSA computes the implied debt-to-GDP ratio. Basic scenarios can be computed by adding ad-hoc or historical-based shocks to this projections with the resulting debt-to-GDP ratios. Using exports and import elasticities from the error correction mechanism equations allows to simulate the behavioral response of the trade balance to shocks, both in the short and long run, and to estimate the debt-creating impact. Taking export and import deflators as given, scenarios can be constructed by adding shocks to the estimated determinants of export and import volumes.⁶ This also allows to create scenarios for changes in oil prices, real effective exchange rate, domestic or external demand, which are not directly included in the standard external DSA.⁷

16. Simulations show that the projected trade balance surplus over the medium term is subject to risks. The biggest risk arises from a slowdown in trading partners growth:

- In a baseline scenario that assumes broadly unchanged competitiveness position and broadly unchanged trade partners' growth, in the medium run the trade surplus is projected at 2.9-3.1 percent of GDP (current account surplus of 1.8-2.0 percent of GDP) and external debt at 142 percent of GDP.
- In a scenario in which the Euro appreciates against the USD by 30 percent, the REER-ULC would appreciate by 8 percent, slowing down export growth and reducing the trade balance to about ½ percent of GDP in the medium term. External deleveraging would be smaller than in the baseline, as external debt would be 149 percent of GDP in 2021 (8 pps above the baseline). Other factors, such as a reversal of the wage moderation, could also weigh on relative prices and external imbalances.
- In a scenario in which the oil price reverts to its 2001–15 average of US\$ 66 in 2017 would reduce the trade balance to 1.4 percent of GDP, and external debt to 152 percent of GDP by 2021.
- Should external demand decelerate by 1 percentage point every year in the projection period, export growth would slow down, reducing the trade balance to 1.7 percent of GDP and implying external debt of 152 percent of GDP in the medium term.

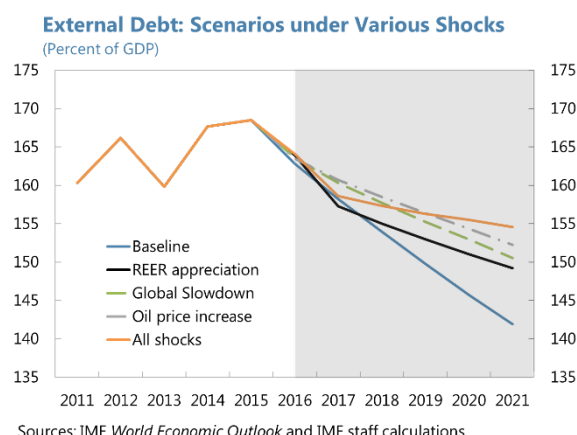
⁶ This is done by disaggregating exports and imports into goods (energy and non-energy) and services to account for different elasticities.

⁷ See Appendix IV in Staff Report for assumptions and forecasts of key underlying variables for the external DSA.

- In a scenario that combines all negative shocks (Euro appreciation, oil price increase, and external demand deceleration) the trade balance would be hit much more severely, resulting in a deficit of about 1½ percent of GDP which would imply an external debt of 157 percent of GDP.⁸

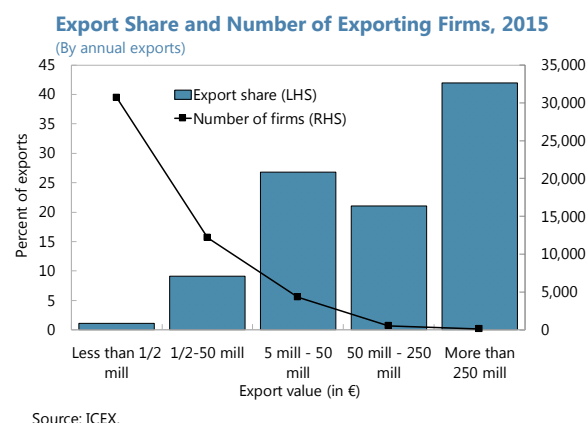
17. The materialization of negative shocks could decelerate the projected reduction of the external debt.

Taken individually, each of the negative shocks to the trade balance would raise debt in the medium run compared to the baseline, but the debt ratio would still be below the 2015 level. However, a combined scenario in which oil prices increase, there is a loss in competitiveness, and trade partners' demand slowing would weaken Spain's external position by adding 13 percent of GDP to Spain's external debt in 2021 compared to the baseline which is barely below the 2015 debt ratio.



D. A Closer Look at Spain's Resilient Export Performance

18. Large firms' exports have played a key role in Spain's strong overall export performance. In 2015, the largest 100 exporters (about 0.2 percent of all exporting firms) accounted for 42 percent of total exports, while the largest 5,000 exporters (about 10 percent of all exporting firms) accounted for about 90 percent of total exports. This high export concentration is explained by the high atomization in Spanish firms: the average Spanish firm size is a fraction compared to that of many other advanced economies. Thus, atomization limits export capacity as firm size is the largest single determinant for Spanish firms to start exporting (Cardoso and others, 2012).



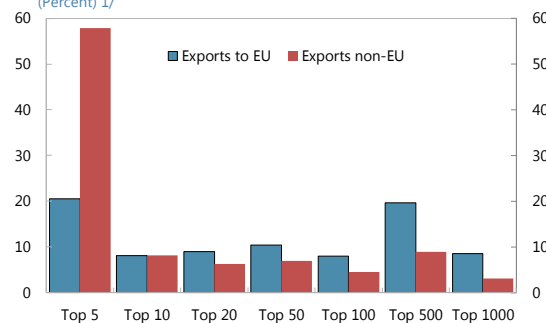
19. Export concentration varies significantly between destinations. Differences in export shares concentration can be an indirect evidence of the presence of varying fixed costs of exporting.

⁸ Note that this scenario would include negative demand and supply shocks.

Distance to markets increases the cost to export. Thus, farthestmost markets (i.e. non-EU countries) are typically served by fewer (and more productive) firms, making goods exports to non-EU destinations even more concentrated.

20. On average, Spanish firms are not particularly reliant on selling abroad. When compared to non-exporting peers both the average large and SME Spanish exporting firm have a relatively low turnover from exports.⁹

Manufactured Goods: Share of Exports by Destination
(Percent) 1/

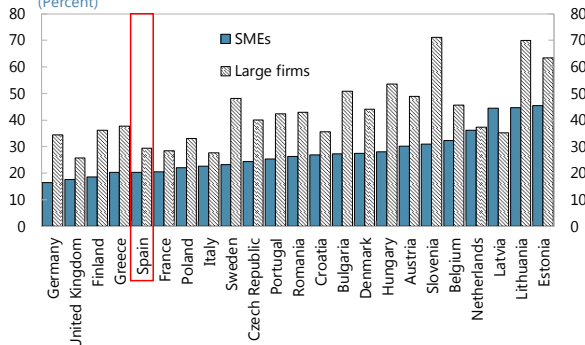


Source: Agencia Tributaria Española.

1/ Export shares per firm group are calculated in marginal increments.

21. Larger exporters have been more productive and resilient to macroeconomic shocks. Larger firms tend to have higher productivity growth, so their unit labor costs typically rise less than for smaller and less productive firms. This explains why Spanish exports were resilient in the run-up to the crisis when the real effective exchange rate appreciated significantly.¹⁰ The literature named this combination of resilient export shares and an appreciating real effective exchange rate (in unit labor cost terms) the “Spanish Paradox” (Antras and others, 2010). Also, more productive firms are more likely to exhibit a higher increase or a lower decline in their average export growth rates. Altomonte and others (2015) find that export growth during the current account adjustment in European deficit countries was mostly driven by the export growth of the most productive firms. The less productive firms, on the contrary, were not able to grow in the exports market.

Exports to Turnover Ratio
(Percent)

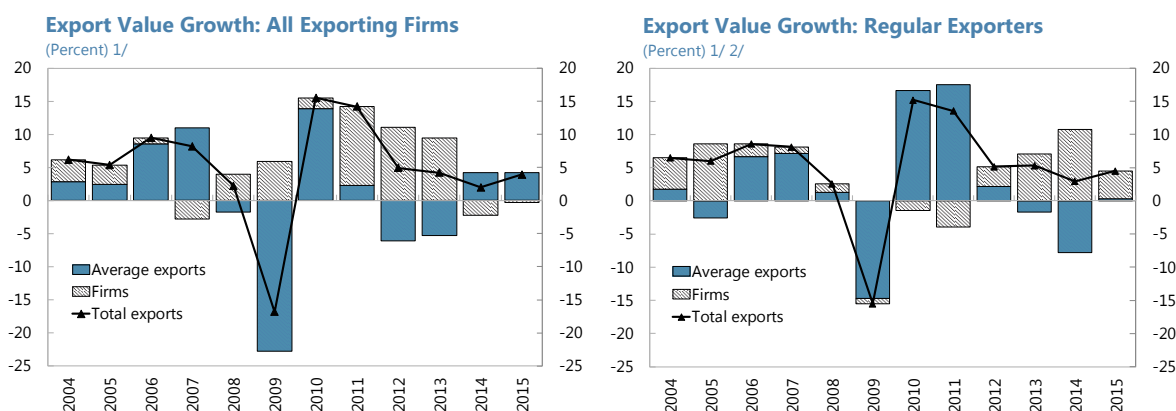


Source: OECD Entrepreneurship at a Glance 2015.

22. After the crisis, Spain’s export growth is linked to the rise in the number of (mostly large) exporting firms. The number of exporting firms rose by some 50 percent between 2011 and 2015. About 70 percent of total export growth since 2011 is explained by the number of firms that export more than €50 million per year (an increase of 107 companies in this category). A reason behind this strong export performance is that Spanish firms increased their competitiveness thanks to structural reforms and wage moderation. But also the collapse in domestic demand may have forced Spanish firms to seek sales abroad.

⁹ Of course, there could be relevant differences in the firms’ distribution of the export to turnover ratio.

¹⁰ In aggregate price indicators for the whole economy, such as the unit labor costs or consumer price index, the different performance of large exporting companies was not fully reflected due to aggregation and dispersion bias (Altomonte and others, 2012).



Source: ICEX.

1/ The sum of the growth rate in average exported value per firm and the growth rate of the number of exporters equals the growth rate of total exported values.

2/ For each year, regular exporters are defined as firms that have exported at least in the last 4 periods.

23. Firms that started to export after the crisis tended to remain exporting, but the recovery in domestic demand may have slowed down this process. The increase in regular exporters (those that have exported for at least four consecutive years) reflects that many firms that started exporting after 2011 are still exporting. This factor can be seen as a structural improvement, especially given the fixed costs firms have to incur in order to enter foreign markets. Therefore, firms that started exporting continue to export, but as domestic demand recovers, there may be no additional incentives for a significant number of newer entrants to export activity.¹¹

24. Future dynamism in firm internationalization hinges on pursuing an ambitious reform agenda. Further progress in labor and product market reform would increase firm competitiveness and would ease entry into exporting activities by removing obstacles to firm growth. These reforms would not only attain the objective of supporting external competitiveness and reducing external imbalances, but would also foster employment creation (see chapter I of Selected Issues paper).

E. Conclusion

25. While Spain has sustained a commendable external adjustment, the large and negative NIIP remains to be a source of vulnerability. Since 2014, the current account stayed in surplus while at the same time the economy recovered strongly, thanks to regained competitiveness and export growth, low oil prices, and low interest rates. However, both the overall NIIP debtor position and the net external debt are among the largest when compared to peers. With the private sector having deleveraged significantly already, the slow reduction in the NIIP is attributable to growing public debt and valuation effects. As both private and public indebtedness with the rest of the world

¹¹ The negative role of domestic demand in export growth is consistent with the findings at aggregate level in Prades and García (2014). They find evidence at the aggregate level that the domestic demand contraction may have played a role in goods exports dynamism.

are still high, negative shocks from international financial markets could be transmitted to the domestic economy through higher interest burden.¹²

26. Empirical estimates show that exports are sensitive to relative prices and external demand, while imports are very sensitive to domestic demand and exports. Regained competitiveness played a role in post-crisis export dynamism. In spite being compressed since the crisis, import growth associated to the economic recovery is a source of risk for the external surplus.

27. Since the crisis the number of exporting firms grew substantially with the bulk of exports attributable to large firms. After the crisis many more firms started exporting seeking new markets to compensate for a collapsing domestic demand. Even though many of those continue to export (and thus becoming “regular” exporters), dynamism in new exporters has become more subdued with the recovering economy. In terms of export shares by firm size, large and more productive firms account for an important part of Spain’s exports. These firms remained competitive before the crisis and explain a large share of post-crisis export growth.

28. Addressing Spain’s large net external debtor position together with internal imbalances requires steady and continued policy and reform efforts. Preserving both the current account surplus together with a dynamic economy should be a policy priority as it would gradually reduce vulnerabilities that arise from the external sector. On the fiscal side, this implies strengthening the public sector balance sheet and gradually reducing the fiscal deficit so as to increase external resilience. On the structural side, it implies further enhancing competitiveness, productivity growth, and employment. In particular, product market reforms that reduce barriers to firm growth and firm internationalization would also foster external competitiveness and resilience against negative shocks. Policies targeted to increase firms’ international competitiveness (such as fostering R&D and innovation in general) would also contribute to continue reducing Spain’s domestic and external imbalances.

¹² The ECB Public Sector Purchase Program (PSPP) is a mitigating factor as it has provided stable demand for Spain’s public sector liabilities. See Annex II in Staff Report for a more detailed analysis on the macro-financial linkages between domestic institutional sectors and the rest of the world.

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BANKING SECTOR: FACING NEW CHALLENGES WHILE BALANCE SHEET ADJUSTMENT CONTINUES¹

A. Introduction

1. This chapter discusses a few new macro-financial challenges that have emerged against the backdrop of ongoing balance adjustments. Following a summary of the current landscape of Spain's financial system (Section B), which was reshaped by the major banking sector reforms and adjustments in the economy, this chapter explores four macro-financial questions: (i) what has been the impact so far from the low interest rate environment on banks' profitability and what could be implications going forward (Section C), (ii) what could be the spillovers to the Spanish banking system from more difficult macro-environments in emerging economies (Section D), (iii) what challenges arise from the low profitability for the ongoing bank balance sheets adjustment (Section E), and (iv) how could low profitability impact banks' capacity to support economic growth over the medium term once credit growth picks up (Section F). Section G concludes with a discussion of policy implications.

B. Current Landscape

2. Spain's financial system remains largely bank-dominated. For financial institutions operating in Spain, banking system assets amounted to about 250 percent of GDP, which accounted for 70 percent of aggregated assets, as of end-2015 (Table 1). Meanwhile, insurance companies, pension funds, and investment funds accounted for 17 percent of aggregated assets. Banks are thus playing a relatively more important role in financial intermediation in Spain than in other major advanced economies. Shadow banking, which amounted to around 20 percent of GDP as of end-2014,² is also rather small in Spain (Figure 1). Spain appears to host one of the largest securitization markets in the euro area (after Ireland, Italy, and the Netherlands). The securitization activity largely involves financial vehicle corporations that issue debt instruments to hold securitized loans that are largely kept on banks' balance sheets, with their assets amounting to about 20 percent of GDP. In terms of financial markets, outstanding private sector debt securities issued domestically and internationally amounted to 68 percent of GDP and stock market capitalization stood at 62 percent of GDP as of end-2015. The local bond market is dominated by government securities.

¹ Prepared by Phakawa Jeasakul (MCM).

² Based on the FSB's economic function-based measure, which includes (i) management of collective investment vehicles with features that make them susceptible to runs, (ii) loan provision that is dependent on short-term funding, (iii) intermediation of market activities that is dependent on short-term funding or on secured funding of client assets, (iv) facilitation of credit creation, and (v) securitization-based credit intermediation and funding of financial entities. See the FSB's 2015 Global Shadow Banking Monitoring Report for more details.

Table 1. Spain: Financial System Structure, 2007–15

	In billion euros			In percent of GDP			In percent of total assets		
	2007	2011	2015	2007	2011	2015	2007	2011	2015
Financial institutions 1/									
Total assets	4,207	4,477	3,889	389	418	360	100.0	100.0	100.0
Banks	2,935	3,256	2,730	272	304	252	69.8	72.7	70.2
Insurance companies	233	249	285	22	23	26	5.5	5.6	7.3
Pension funds	102	102	125	9	10	12	2.4	2.3	3.2
Other financial institutions	937	870	748	87	81	69	22.3	19.4	19.2
o/w: Investment funds	...	155	253	...	14	23	...	3.5	6.5
o/w: Financial vehicle corporations	...	457	227	...	43	21	...	10.2	5.8
Financial markets									
Outstanding debt securities	1,291	1,781	1,651	119	166	153
o/w: Government	338	673	917	31	63	85
Stock market capitalization	821	446	672	76	42	62

Sources: Bank of Spain; BIS, Debt Securities Statistics; ECB; FSB, 2015 Global Shadow Banking Monitoring Report; IMF, World Economic Outlook database; and IMF staff estimates.

1/ Based on operations in Spain.

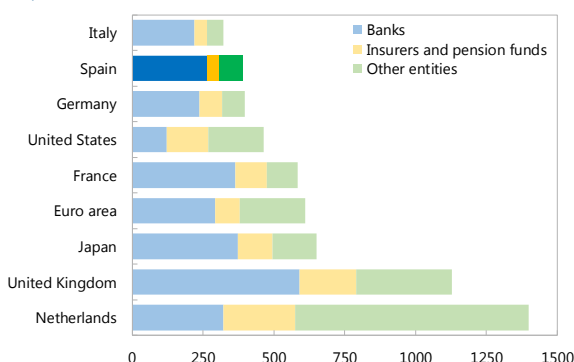
3. Following the extensive restructuring in the aftermath of the global financial crisis the Spanish banking system is now more concentrated. On the back of a series of mergers and acquisitions, the number of deposit-taking institutions decreased by about a third during 2008–15 to 134.³ In particular, only two savings banks remain, down from 47 in 2007, partly due to their excessive exposure to the housing market boom and subsequent bust. As a result of system-wide consolidation, the banking system has become more concentrated, with the Herfindahl index doubling between 2007 and 2015 (Figure 1). The significant banks (14 in total) under the oversight of the Single Supervisory Mechanism (SSM) account for about 93 percent of banking system assets on the consolidated operations basis.

4. The banking system comprises two large international banks, with the rest mostly operating only in Spain. The two largest banks—Banco Santander and BBVA—have thrived on their globally-diversified retail banking business, with their overseas operations primarily in the form of subsidiaries that are locally funded and managed. Operations outside Spain contribute around 85 percent of group-wide earnings of these two largest banks whose combined assets account for about 57 percent of banking system assets. The rest of the system comprises Spanish entities, as well as foreign subsidiaries and branches. Among other significant banks, three involve traditionally commercial banks, eight are derived from former savings banks, and one is formed by a group of credit cooperatives. These twelve institutions account for around a third of banking system assets. Foreign subsidiaries and bank branches in Spain are numerous (about 100) but assets are relatively small (about 4 percent of banking system assets).

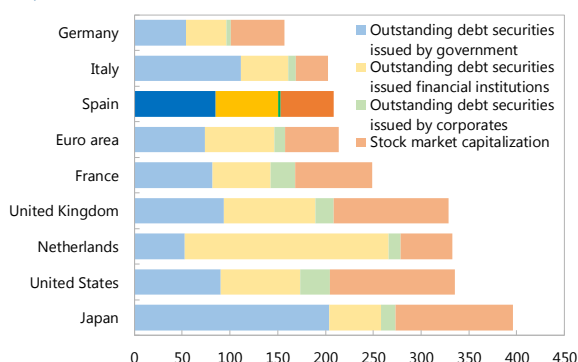
³ In Spain, there are three types of deposit-taking institutions—commercial banks (bancos), savings banks (cajas), and credit cooperatives (cooperativas).

Figure 1. Selected Advanced Economies: Financial System Structure**Aggregated Assets of Financial Institutions, 2014**

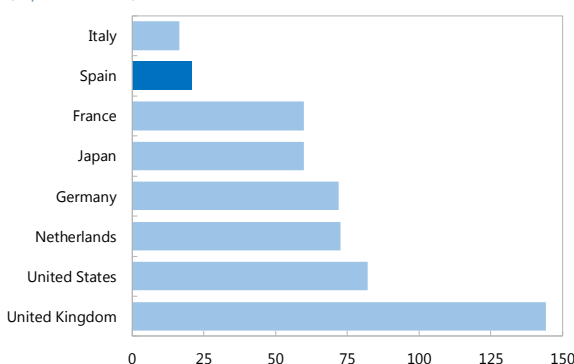
(In percent of GDP)

**Value of Financial Markets, 2015**

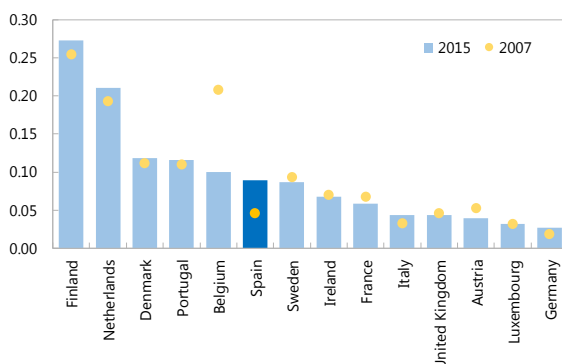
(In percent of GDP)

**Shadow Banking Activities, 2014**

(In percent of GDP)

**Concentration of the Banking Systems, 2007-15**

Based on the Herfindahl index



Sources: ECB, Banking Structural Financial Indicators; FSB, 2015 Global Shadow Banking Monitoring Report; IMF, World Economic Outlook database; and IMF staff estimates.

C. Profitability and Low Interest Environment

5. Profitability has remained well below the pre-crisis level but has so far been stronger than that of many European Union (EU) peers. As of 2016Q2, the return on assets for banking business in Spain over the past year was about 0.7 percentage points lower than in 2007, largely owing to lower net interest income and other operating income (0.27 and 0.35 percentage points, respectively), with broadly similar impairment costs. Nevertheless, Spanish banks had higher return on assets than EU peers, resulting from stronger pre-loss income despite larger impairment costs (Figures 2 and 3). They also enjoyed markedly larger net interest income, benefiting from their business model being more oriented to retail banking. In addition, Spanish banks managed to keep the cost-to-income ratio at a favorable level, against the background of costly retail banking business especially in terms of staff expenses. However, the falling trend in operating expenses has reversed more recently.

6. Profitability has varied widely across Spanish banks. In 2015, the two large international banks, along with three domestic-oriented banks, registered a relatively high return on assets by the

European benchmark. They largely benefited from their overseas subsidiaries that were operating in more favorable conditions, such as larger net interest margins. Other significant banks with above average profitability in 2015 benefited from their operating cost efficiency and limited asset impairment.

7. Profitability challenges arise from low interest rates, limited room to reduce funding costs, and continued deleveraging.

- **Repricing of loans in Spain is sensitive to money market rates.** In Spain, interest rates for new lending have fallen towards the levels prevailing in core euro area economies, as confidence in the banking system and the euro zone improved. In fact, the average interest deposit and lending rates based on outstanding deposits and loans have declined more rapidly in Spain than in other parts of the euro area (Figure 4). The repricing of interest rates charged for lending to small and medium enterprises (SMEs) and for house purchases is particularly more sensitive to changes in benchmark interest rates (e.g., EURIBOR) in Spain than in other European economies. Furthermore, housing loans account for a larger share of banks' total assets in Spain. A simple scenario calculation indicates that a further reduction of net interest margins by 10 basis points could lower significant banks' net income before taxes by about 10 percent, with differing interest rate sensitivities across banks.⁴
- **Banks have limited room to further reduce overall funding costs.** In particular, resident deposits account for about 55 percent of total funding, while the average interest rate on outstanding term deposits is at a very low level (Figure 4). In addition, banks will not benefit as much from negative interbank interest rates given their lesser use of interbank funding.
- **At the same time, Spanish corporates and households have continued to deleverage and bank lending has continued to fall** (Figure 4).⁵ For the banking system to maintain net interest income from lending activity as a consequence of compressed interest margins, it would take credit to grow by about 5.5 percent annually which compares with IMF staff projections of annual credit growth of slightly above 1 percent over the next five years.^{6,7} The Bank of Spain also assess the macroeconomic credit gap to still be large and negative (see Bank of Spain, 2016b).

8. The restructuring in the aftermath of the crisis has helped Spanish banks to be among the most cost-efficient in Europe, although operating expenses have been rising since 2013.

Banks in Spain have seen a significant reduction in offices and employees since 2008 as a result of

⁴ Based on net income before taxes during 2015 and 2016H1 and outstanding customer loans (which are assumed to be constant) as of 2016H1.

⁵ For more details on corporate and household deleveraging see also Figures 4 and 5 of the Staff Report.

⁶ This estimation is based on 14 significant Spanish banks. Required loan growth reflects the expansion in lending activity necessary for maintaining net interest income from lending activity as a consequence of compressed interest margins. The estimation assumes individual banks' own experience during 2015 and 2016H1; system-wide trend is applied in the case bank-level information is not available.

⁷ For a cross-country comparison, see "Box 1.3. The Impact of Low and Negative Rates on Banks" in IMF (2016a).

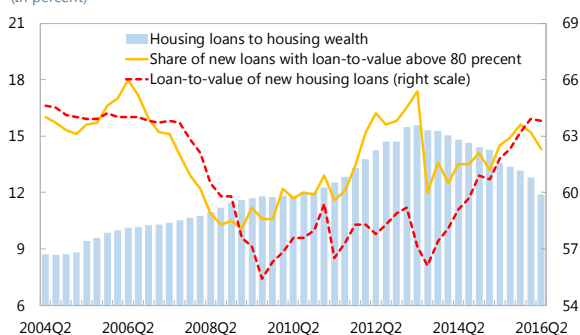
banking system consolidation (Figure 5). The cost-to-income ratio of Spanish banks appears competitive on the consolidated operations basis, despite relatively large operating expenses thanks to strong net interest income deriving from overseas retail banking business (Figure 2). Meanwhile, the cost-to-income ratio for banking business in Spain is also at about the same level, reflecting overall efficiency among domestic-oriented banks as well. However, staff and administrative expenses for banking business in Spain have steadily increased from the trough in early 2013, with most significant Spanish banks experiencing an increase in operating costs (Figure 5).

9. Nevertheless, low profitability poses a number of challenges going forward. Strong profits provide organic sources to further strengthen capital positions that would enhance the banking system's ability to withstand shocks. For example, in 2015 retained earnings underpinned most of the system's buildup of capital buffers (see also Section F). Profits can also facilitate continued NPL reduction by supporting problem asset sales and/or debt relief (see also Section E). Furthermore, when the return on equity is below the cost of capital, as it is currently the case in Spain and other European banking systems, it is more difficult for banks to raise new capital.

10. Thus, sustained low profitability would put pressure on bank business models. The low profitability environment is generally a key challenge for European banks. For Spanish banks, there seems to be scope to compensate the compressed net interest income by boosting their relatively low non-interest income (Figure 2), and further improving efficiency and reducing operating costs. For the latter, the greater use of technology, the consolidation of smaller banks to attain economies of scale, and the rationalization of some branch networks that consist of many small offices (Figure 5) are among the available options.

11. The low interest rate environment also highlights the need to continue to carefully monitor any buildup of risks. At the moment, the recovery of the housing market and deleveraging by corporates and households is still ongoing. However, there are some signs of increasing leverage in certain segments. In particular, the share of new mortgage loans with high loan-to-value (LTV) ratios and the average LTV ratio of new housing loans have both gone up, even if levels are still relatively low.

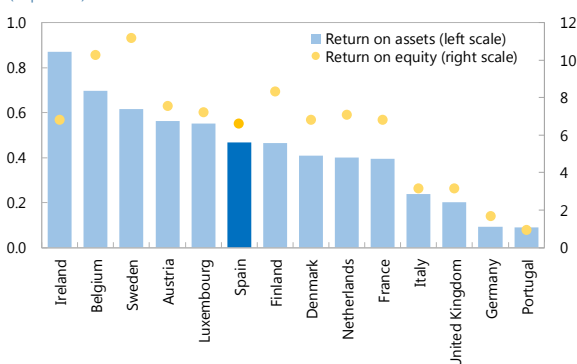
Leverage in Borrowing for Housing, 2004-16
(In percent)



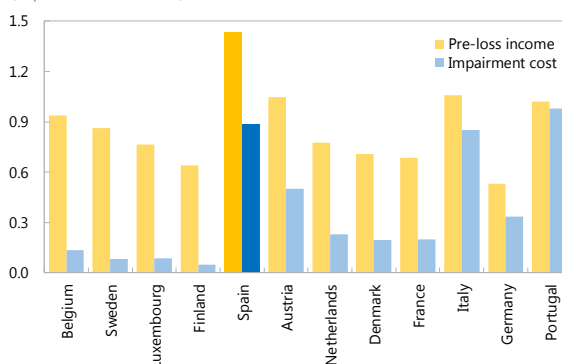
Sources: Bank of Spain; Haver Analytics; and IMF staff estimates.

Figure 2. Selected European Economies: Profits, Income, and Cost Structure**Profitability, 2015**

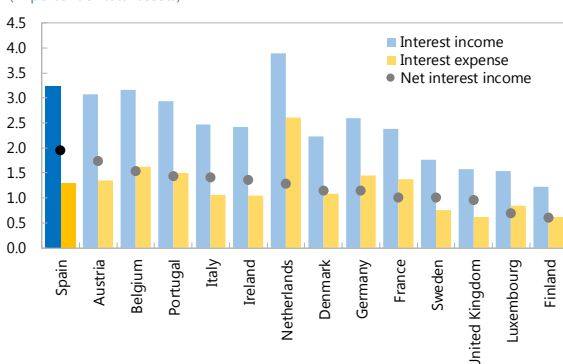
(In percent)

**Pre-loss Income and Impairment Cost, 2015**

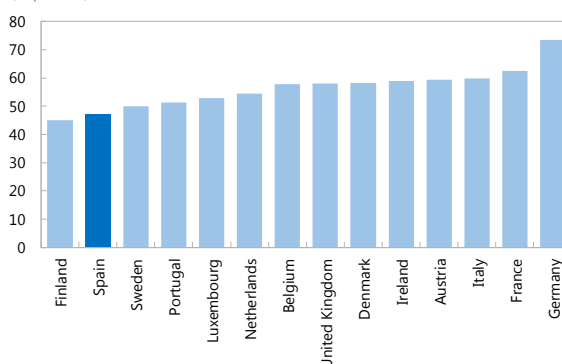
(In percent of total assets)

**Interest Income and Expense, 2015**

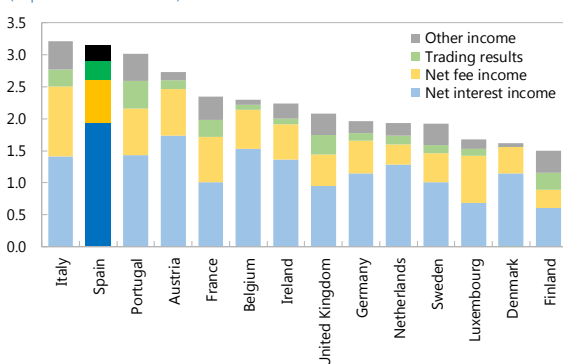
(In percent of total assets)

**Operating Cost to Operating Income, 2015**

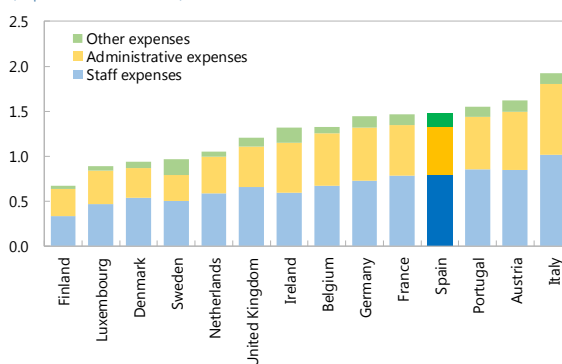
(In percent)

**Operating Income Structure, 2015**

(In percent of total assets)

**Operating Cost Structure, 2015**

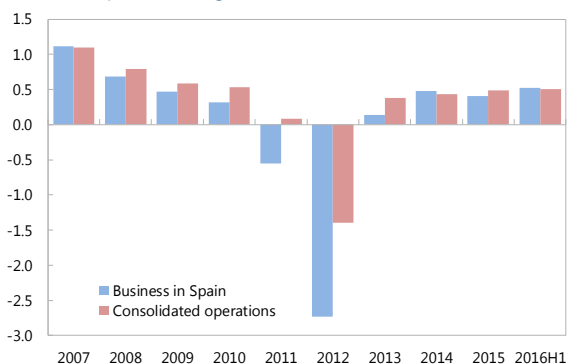
(In percent of total assets)



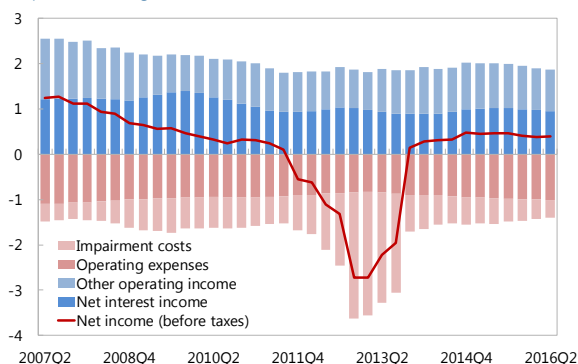
Sources: ECB, Consolidated Banking Data; and IMF staff estimates.

Figure 3. Spain: Profitability and Earnings**Profitability of Spanish Banks, 2007-16¹**

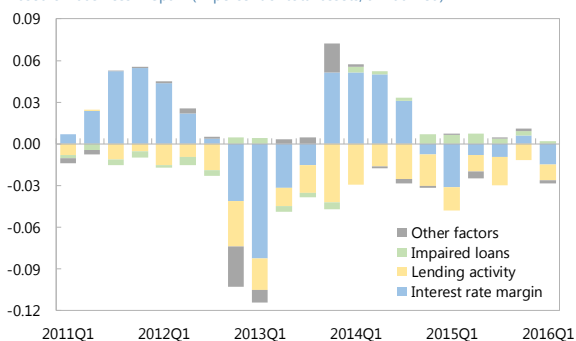
Net income in percent of average total assets

**Profitability of Banks in Spain, 2007-16¹**

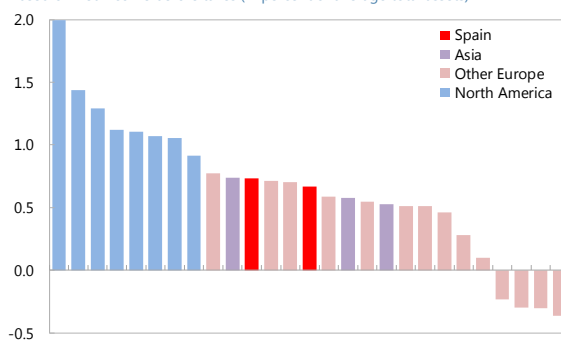
(In percent of average total assets)

**Driving Factors of Net Interest Income from Lending, 2011-16**

Based on business in Spain (in percent of total assets; annualized)

**Return on Assets of Global Systemically Important Banks in Advanced Economies, 2015²**

Based on net income before taxes (in percent of average total assets)



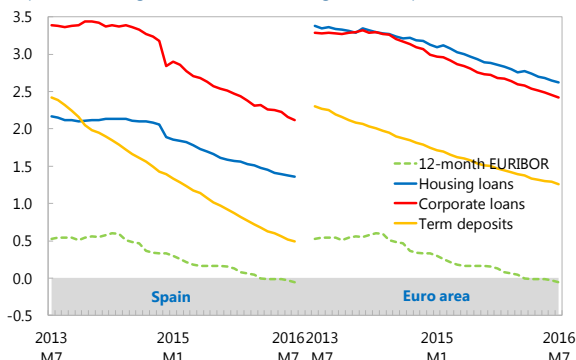
Sources: Bank of Spain; IMF, Financial Soundness Indicators database; SNL; and IMF staff estimates.

1/ For banking business in Spain, the aggregate figure of net income in 2011 and 2012 is amplified by the segregation process of savings banks' business to newly-created banks, with a significant portion of the shares of these new banks being part of the savings banks' investment portfolios. Profits/losses of these new banks would thus be counted twice. See Bank of Spain (2012) for more details.

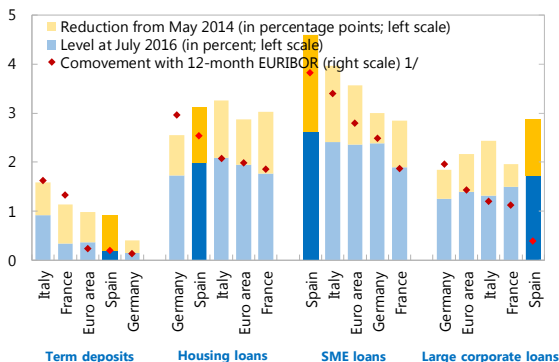
2/ Based on entities that have been identified as global systemically important banks since 2012.

Figure 4. Spain: Challenges due to Low Interest Rates and Continued Deleveraging**Interest Rates, 2013-16**

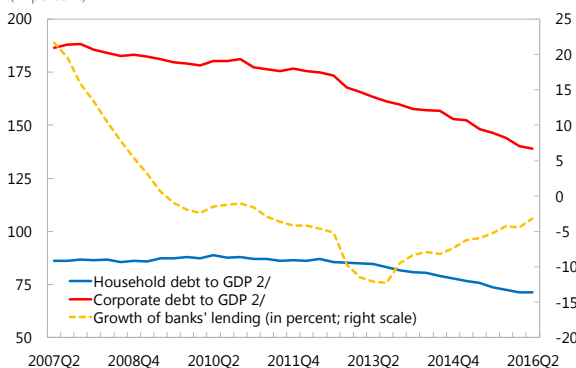
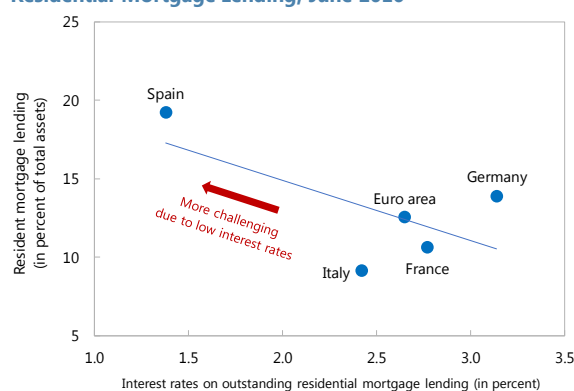
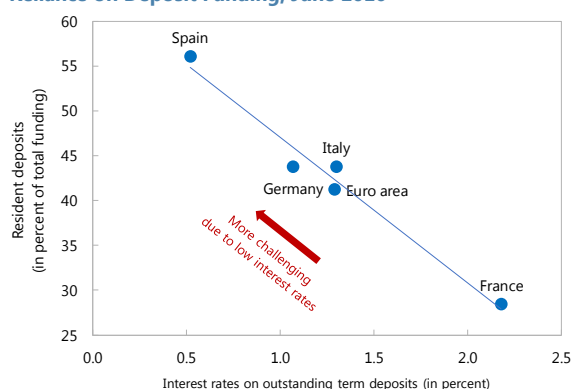
Deposit and lending rates based on outstanding amount (in percent)

**Repricing of Deposit and Lending Rates, 2014-16**

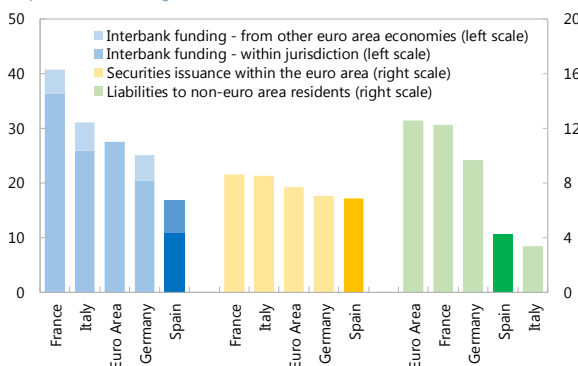
Based on new business

**Private Sector Debt and Banks' Lending, 2007-16**

(In percent)

**Residential Mortgage Lending, June 2016³****Reliance on Deposit Funding, June 2016³****Funding Structure, June 2016³**

(In percent of total funding)



Sources: Bank of Spain; Haver Analytics; IMF, International Financial Statistics; and IMF staff estimates.

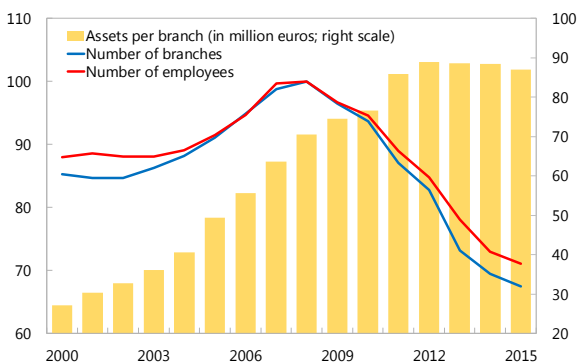
1/ Based on the coefficient β from bivariate regression: $\Delta R_t = \alpha + \beta \Delta EURIBOR_t$, where R_t is the deposit and lending rates, with Δ representing changes of interest rates over the period of 6 months.

2/ Based on total financial liabilities (excluding equity instruments), which include borrowings and accounts payable.

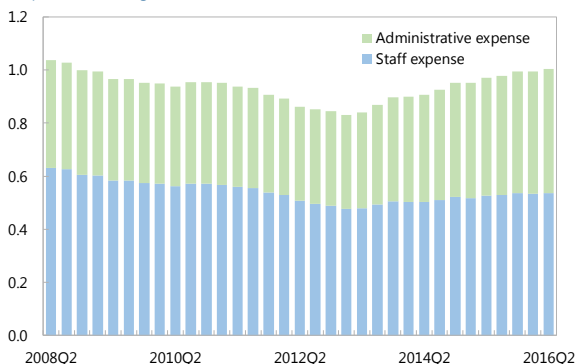
3/ Based on banking business in each jurisdiction.

Figure 5. Spain: Operating Efficiency**Banks' Branches and Employees in Spain, 2000-15**

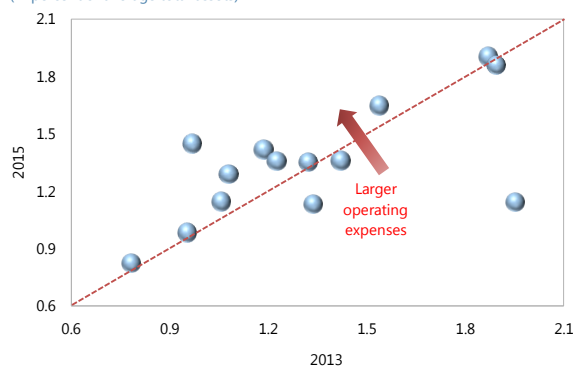
(2008 = 100)

**Operating Expenses of Banks in Spain, 2008-16**

(In percent of average total assets)

**Operating Expenses, 2013-15¹**

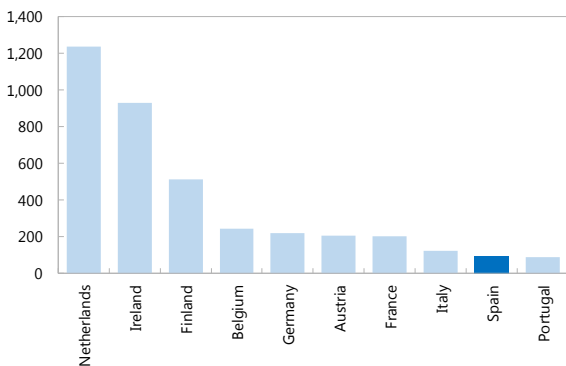
(In percent of average total assets)

**Income and Cost, 2015-16¹**

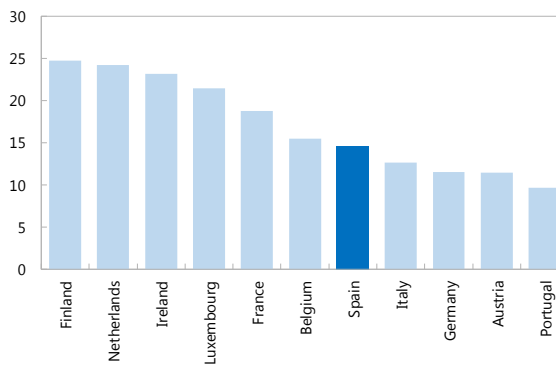
(In percent)

**Size of Assets per Branch, 2015**

(In million euros)

**Size of Assets per Employee, 2015**

(In million euros)



Sources: Bank of Spain; SNL; ECB, Banking Structural Financial Indicators; and IMF staff estimates.

1/ Based on 14 significant Spanish banks.

D. Cross-Border Linkages

12. The Spanish banking system has relatively strong cross-border linkages, particularly with Latin America and the United Kingdom. As of March 2016, Spanish banks' exposures to Latin America and the United Kingdom amounted to 12.2 and 11.4 percent of total exposures, compared with 54.6 percent for their exposures to Spain (Figure 6).⁸ Given that Spain's two large international banks have been pursuing their international expansion largely based on the standalone subsidiary model,⁹ the key channel of cross-border spillovers would be through the distribution of profits from subsidiaries to the parents, especially as Latin America and the United Kingdom are amongst the most important sources of earnings for these two global Spanish Banks.

13. The macroeconomic environment has become less favorable in some economies where Spanish banks have a strong footprint. Brazil has experienced an output contraction in recent years, although its growth prospects have started to improve. Meanwhile, many Latin America economies have already slowed down, and macroeconomic uncertainties have increased markedly especially in light of rising trade protectionism risks (e.g., for Mexico) (Figure 6). The outlook for the United Kingdom has also become increasingly uncertain in the aftermath of the 'Brexit' referendum. Problem assets have been on a rising trend in Brazil and Turkey.

14. Spanish subsidiaries appear to be in a solid position to deal with rising credit risk, but lower profits would weaken contributions to the parents' capital buffers. So far, the adverse macroeconomic conditions, and deteriorating asset quality have not yet significantly marked down profitability, although NPLs typically worsen with some lag.

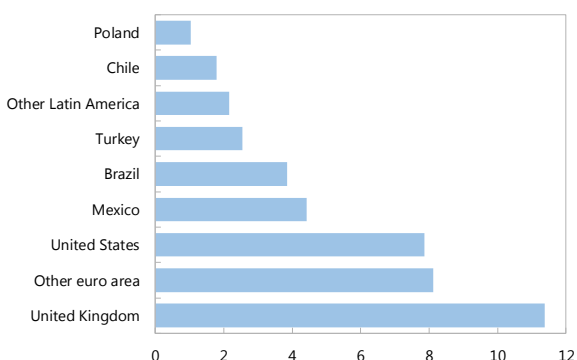
- **In Latin America,** Spanish subsidiaries exhibit relatively strong financial performance compared with other major banks in the region (Figure 6). Given their relatively strong profitability and relatively high provisioning, Spanish subsidiaries should be able to handle additional losses. Their annual pre-impairment net income could potentially absorb about up to twice the currently still moderate NPL level. However, an increase in their asset impairments could have a sizeable impact on group-wide profitability. For example, in a scenario in which impairment costs by subsidiaries increased by a 25 percent, this would reduce the contribution of profits to group-wide capital by about 25 percent.
- **In other regions,** the impact on additional credit losses would be much less. For instance, a 50 percent increase in impairment costs by subsidiaries in Turkey and the United Kingdom would reduce the contribution of profits to group-wide capital of these two banks by less than 5 percent.

⁸ Exposures are based on consolidated claims of Spanish banks, including parent entities' claims on "ultimate borrowers" in Spain and elsewhere, as well as subsidiaries' local claims in their operating jurisdictions.

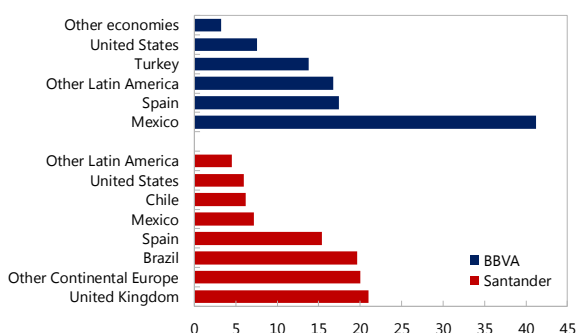
⁹ This business model is very distinct from those of other major European banks, with the greater importance of cross-border operations carried out by the parents or through branches, as well as in the form of subsidiary operations that are primarily funded by funding from the parents.

Figure 6. Spain: Cross-Border Financial Linkages**Overseas Exposures of Spanish Banks, March 2016**

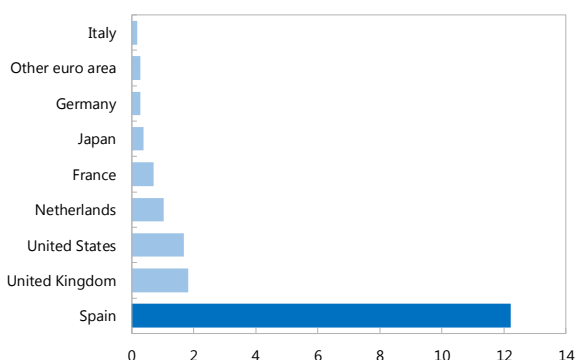
(In percent of total claims; based on the ultimate risk basis)

**Banco Santander and BBVA: Composition of Group-wide Profits, 2016H1**

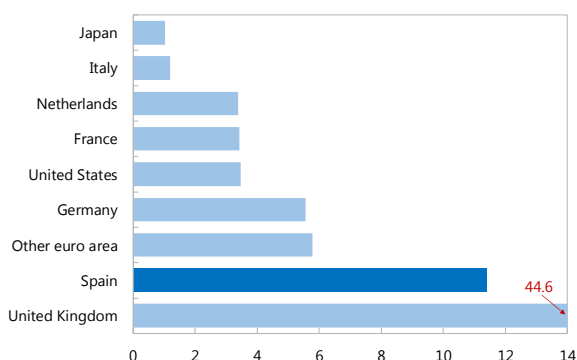
(In percent of attributable profits from operating areas, excluding corporate center)

**Exposures to Latin America, March 2016**

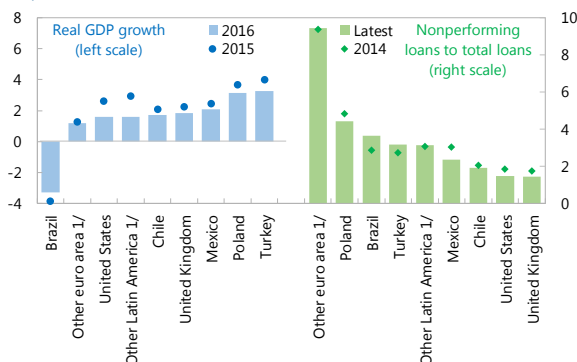
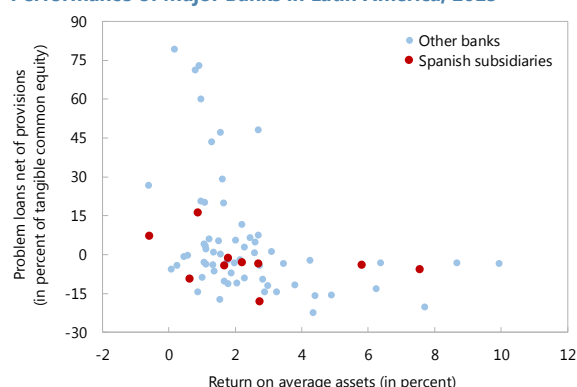
(In percent of total claims; based on the ultimate risk basis)

**Exposures to United Kingdom, March 2016**

(In percent of total claims; based on the ultimate risk basis)

**Real GDP Growth and Nonperforming Loans, 2014-16**

(In percent)

**Performance of Major Banks in Latin America, 2015 ²**

Sources: BIS, Consolidated Banking Statistics; IMF, Financial Soundness Indicators database and World Economic Outlook database; SNL; and IMF staff estimates.

1/ Based on economies where Spanish banks have large exposures. Other euro area includes Portugal, France, Italy, and Germany. Other Latin America includes Peru, Argentina, and Colombia.

2/ Based on a sample of largest banks in each Latin American economy, with total assets of at least €5 billion.

E. Balance Sheet Adjustments

15. The private sector has further deleveraged while access to credit has improved. New bank lending has picked up in line with the strong economic recovery, in particular consumer credit in the case of households, and lending to SMEs in terms of type of business and lending to agriculture, manufacturing and non-real-estate services in terms of sectors in the case of corporates. Nonetheless, total credit growth was still negative in October 2016. With private debt-to-GDP about 64 percentage points below its 2007 peak level (Figure 4), excess leverage is now concentrated mostly in a few corporate sectors for which loan repayment capacity is still weak (construction and real estate) and in households.¹⁰ Improving profit margins since the crisis have helped the corporate sector finance new investment with retained earnings, along with more debt financing by large corporates. Households proceeded in rebuilding their net wealth positions and further reduced their bank debt. At the same time, the strong economic recovery, swift employment creation, increase in disposable incomes, and low interest rates have supported borrowers' repayment ability. Going forward, deleveraging is projected to moderate and concentrated in a few sectors.

Asset Quality

16. Asset quality of the banking system has continued to improve markedly. The NPL ratio for consolidated operations fell to 5.8 percent in June 2016 from 6.9 percent a year earlier, and is 3.6 percentage points below its peak in 2013 (Figure 7). The NPL ratio for banking business in Spain declined from 11.0 to 9.4 percent over the same period, despite the contraction of overall lending, and is now 4.2 percentage points below its peak in 2013 (almost 30 percent reduction over three years). Over the same period, the amount of foreclosed real estate assets has remained broadly stable given the balanced pace of both asset sales and new foreclosures. The NPL ratio for overseas operations has been broadly stable at around 2.3 percent.

17. Despite the sharp reduction the amount of legacy assets on bank balance sheets is still sizeable. For the system as a whole, the shares of nonperforming and forborne exposures are still higher than the EU-wide average, reflecting the sizeable impact that the financial crisis had on Spain compared to other countries (Figure 8).¹¹ NPLs for banking business in Spain were €123 billion by mid-2016. The starting points of NPLs and pace of NPL reduction have differed across banks, so that a few banks still have a longer way to go than the rest to bring their level of problem assets to the EU-wide or pre-crisis levels (Figure 7).

18. The decline in NPLs in Spain took place across all types of loans, with NPLs still highest in the construction and real estate sectors. Given that the housing market's recovery has been rather weak (house prices are up by about 8 percent from the trough), NPLs in these sectors remain sizeable, amounting to 28 percent of outstanding lending to the sector and 38 percent of total NPLs (Figure 7).

¹⁰ For more details on corporate and household deleveraging see also Figures 4 and 5 of the Staff Report.

¹¹ Forborne exposures are the EU term for restructured exposures.

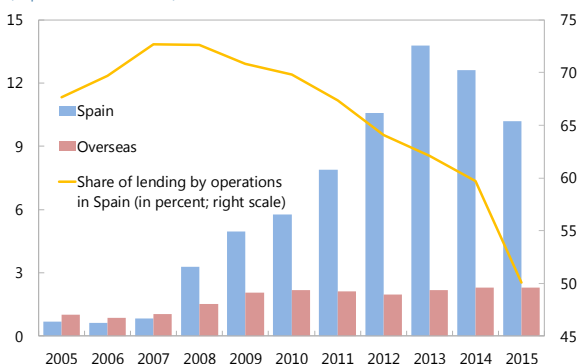
19. Provisioning for non-performing exposures is generally high. The provisioning coverage of nonperforming exposures (NPEs), with provisions and collaterals accounting, was 95 percent for the Spanish banking system compared to the EU-wide average of 86 percent (as of end-June 2016; Figure 7). In fact, at that point in time each of the Spanish significant banks exceeded the EU-wide provisioning average. Similarly, Spanish banks have adequate capital buffers to cover uncovered NPEs. For significant Spanish banks overall and most of them individually, aggregated uncovered NPEs amounted to 4.1 percent of CET1 capital, well below the EU-wide level at 9.5 percent. The asset quality review in the ECB's 2014 Comprehensive Assessment identified only small capital adjustments (the lowest among euro area members) (Figure 8).

20. Completing the NPL clean-up will take more time. If the reduction of problem assets were to continue at the same speed as observed so far (about €30 billion a year), it could take on average more than five years to completely resolve legacy assets. Following time-bound, realistic and ambitious NPL reduction plans as foreseen in the ECB Guidance to Banks on NPLs is therefore a welcome tool in the Spanish banking system's final stretch to fully put the crisis legacies behind.

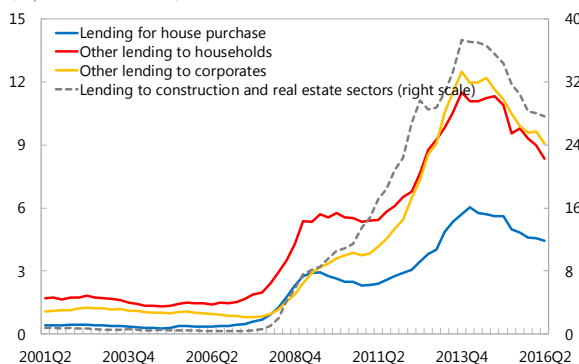
21. Continued NPL reduction will be beneficial in further lowering two vulnerabilities. Should Spanish banks still carry sizeable NPLs by the time that interest rates start to rise, an increase in funding costs could weigh down the typically beneficial steepening in the yield curve for bank profitability. A sensitivity analysis on banking business in Spain (with other things remaining unchanged) would suggest that an increase in interest rates by 1 percentage point could reduce the return on assets by about 0.07 percentage points based on the current level of NPLs and foreclosed real estate assets. Moreover, with the above EU average NPL levels, banks remain somewhat more exposed to credit losses. In the adverse scenario of the EBA's 2016 stress testing exercise estimated credit losses increases for Spanish banks by 0.82 percent of risk weighted assets relative to the baseline scenario, compared with the EU-wide level by 0.58 percent of risk weighted assets (Figure 8).

Figure 7. Spain: Asset Quality**Nonperforming Loans of Spanish Banks, 2005-15**

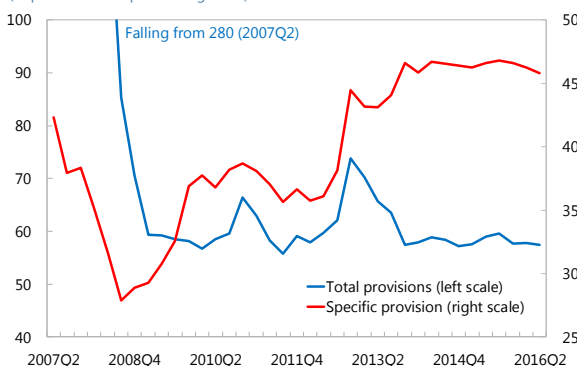
(In percent of total loans)

**Nonperforming Loans, 2001-16**

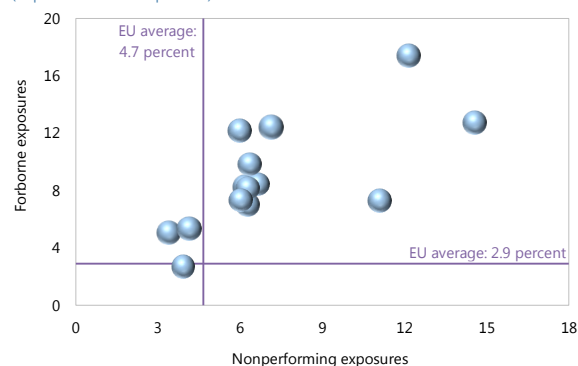
(In percent of total loans)

**Provisioning of Banks in Spain, 2007-16**

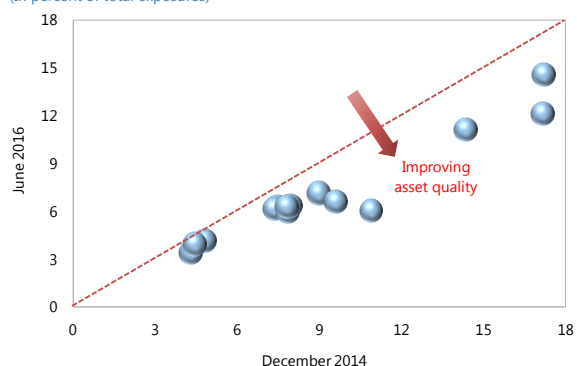
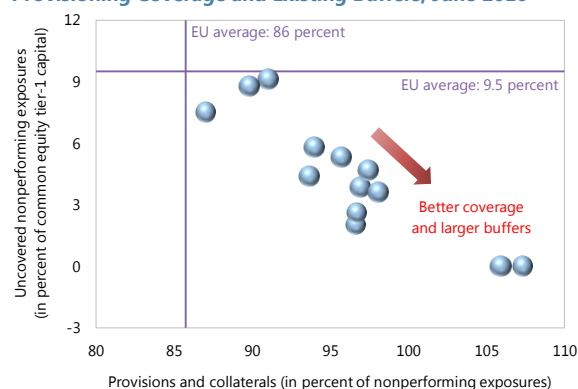
(In percent of nonperforming loans)

**Nonperforming and Forborne Exposures, June 2016¹**

(In percent of total exposures)

**Nonperforming Exposures, 2014-16¹**

(In percent of total exposures)

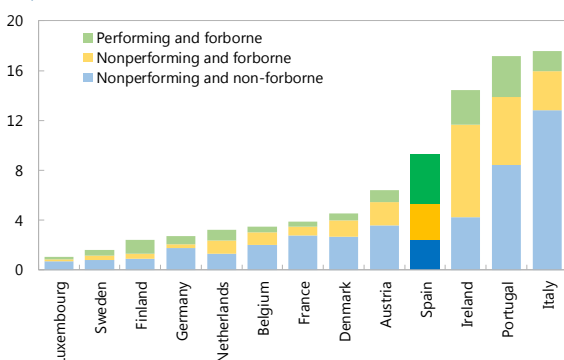
**Provisioning Coverage and Existing Buffers, June 2016¹**

Sources: Bank of Spain; EBA, 2015 and 2016 Transparency Exercises; IMF, Financial Soundness Indicators database; SNL; and IMF staff estimates.

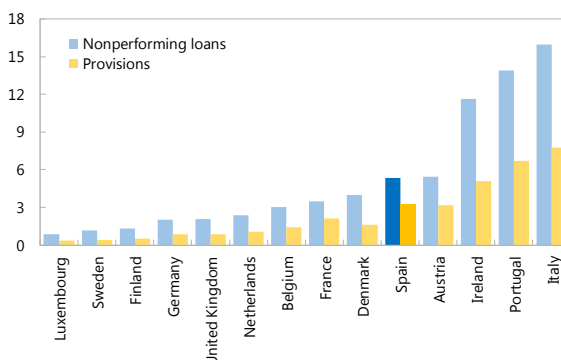
1/ Based on 14 significant Spanish banks.

Figure 8. Selected European Economies: Asset Quality**Nonperforming and Forborne Loans, December 2015**

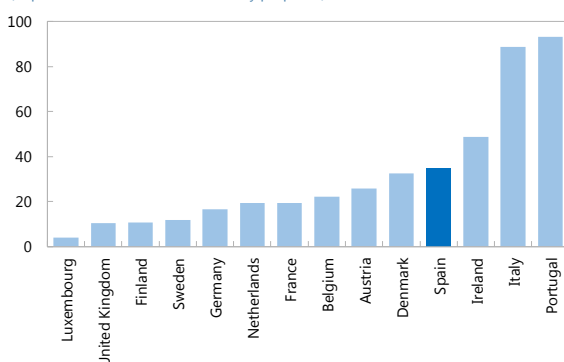
(In percent of total loans)

**Nonperforming Loans and Provisions, December 2015**

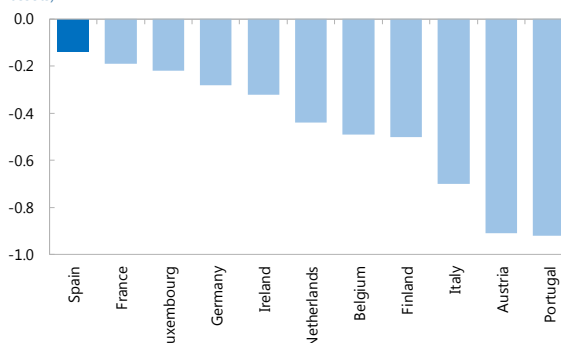
(In percent of total loans)

**Net Nonperforming Loans, December 2015**

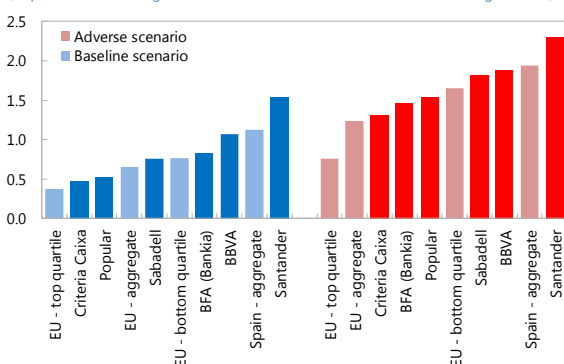
(In percent of own funds for solvency purposes)

**Capital Adjustment: Asset Quality Review, December 2013**

Based on the ECB's 2014 Comprehensive Assessment (in percent of risk weighted assets)

**Estimated Credit Loss, 2015-18 ¹**

(In percent of risk weighted assets; based on the 2016 EBA Stress Testing Exercise)



Sources: EBA, 2016 Stress Testing Exercise; ECB, Consolidated Banking Data; SNL; and IMF staff estimates.

1/ Based on the EBA's 2016 Stress Testing Exercise. Credit loss is estimated based on macro-financial conditions in the baseline and adverse scenarios. The estimation is largely affected by projected macro-financial conditions (broadly similar across the EU economies) and financial soundness of borrowers at the beginning of the exercise (relatively weaker in Spain given the still high level of problem assets).

Capital Adequacy

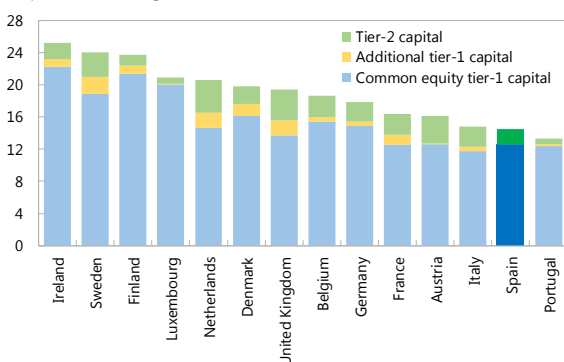
22. Banks have built further capital buffers and continuing to do so will enhance the system's resilience to shocks. The total capital ratio stood at 14.6 percent at end-June 2016, up from 13.7 percent at end-2014. Spanish banks' holding of such high-quality as CET1 capital exceeds the regulatory and supervisory minima, but still lags behind European peers (Figure 9). Furthermore, the EBA's 2016 Transparency Exercise showed that the CET1 capital ratio of significant Spanish banks on the fully-loaded basis was 1.6 percentage points below the transitional basis. The lower capital position on the fully-loaded basis is related largely to intangible assets. The EBA's 2016 Stress Testing Exercise, which covered the six largest Spanish banks, generally showed that Spanish banks display a similar resilience to adverse shocks as EU peers when measured in the reduction in CET1 capital ratios though most of the banks would end up with somewhat lower leverage ratios than the EU-wide average (Figure 11). Moreover, ongoing regulatory reforms, even if still uncertain at this stage, could imply higher capital requirements. And finally, capital buffers prepare banks to finance economic growth once credit demand picks up over the medium term, though the system as a whole already has ample room, assuming no further charges on its capital position (see Section F).

23. Spanish banks are generally less leveraged than European peers. The ratio of tangible equity to tangible assets of the Spanish banking system is broadly in line with the EU-wide average, despite the lower level of capital (Figure 9). The main driving factor is the greater risk weight intensity of Spanish banks due to the more prevalent use of the standardized approach, which tends to apply higher risk weights than the internal ratings-based approach for similar exposures. The risk weight intensity of the two Spanish global banks is higher than most global systemically important banks. Based on the EBA's 2015 Transparency Exercise, most significant Spanish banks therefore outperformed European peers in terms of the leverage ratio (i.e., tier-1 capital to total exposures) despite somewhat lower CET1 capital ratios (Figure 10).

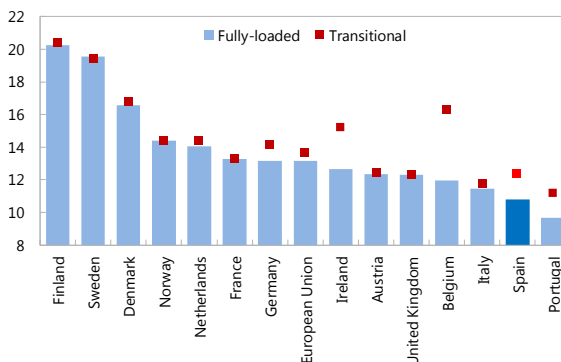
24. Strong retained earnings underpinned the buildup of capital buffers in 2015. Net interest income and other net operating income boosted the capital ratio by 4.3 and 2.1 percentage points, respectively (Figure 10). Meanwhile, impairment costs reduced the capital ratio by 1.6 percentage points, down from 5 percentage points in 2012. Net capital injection (newly raised capital net of paid dividends) and change in risk weights assets barely affected the capital ratio. This experience highlights the importance of retained earnings as an organic source to strengthen capital positions and the challenges that could arise from sustained low profitability for building further capital buffers (see Section C).

Figure 9. Selected European Economies: Capital Adequacy and Leverage**Regulatory Capital, December 2015**

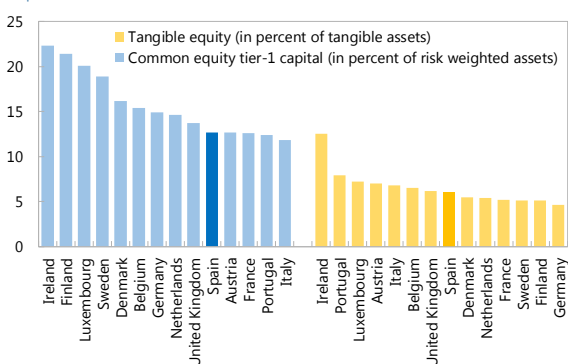
(In percent of risk weighted assets; based on transitional definition)

**Common Equity Tier-1 Capital, June 2016**

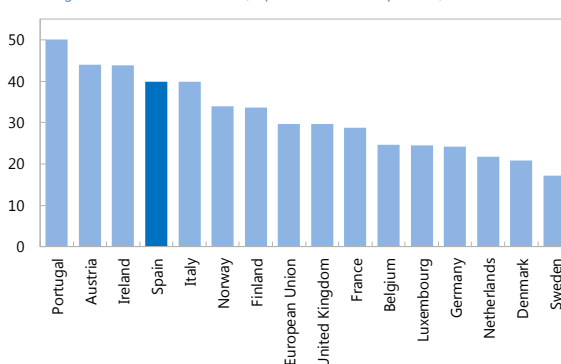
(In percent of risk weighted assets)

**Capital Adequacy and Leverage, December 2015**

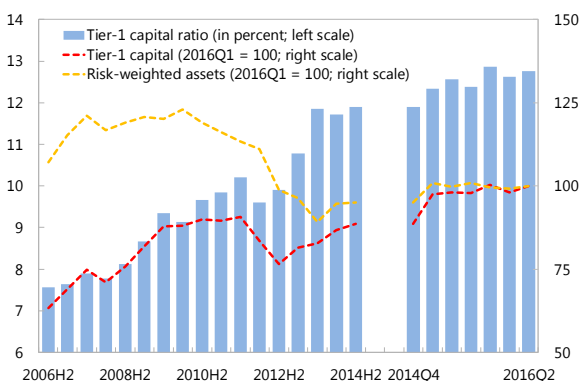
Capital based on transitional definition

**Risk Weight Intensity, June 2015**

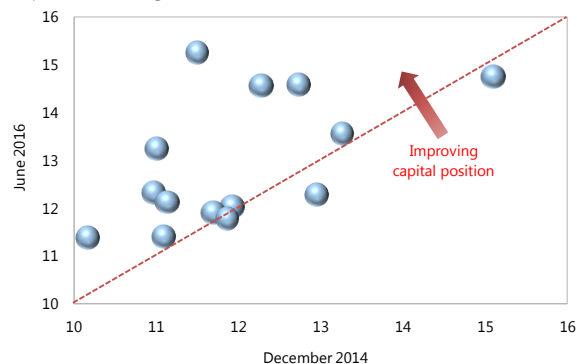
Risk weighted assets for credit risk (in percent of total exposures)



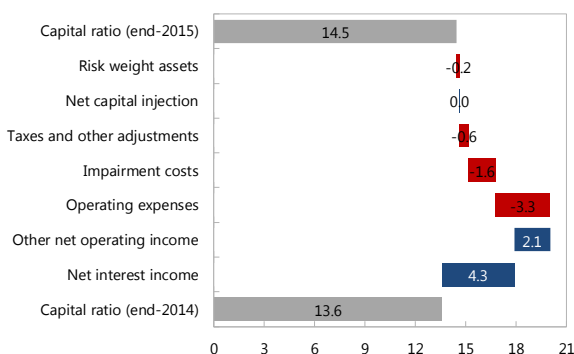
Sources: EBA, 2015 and 2016 Transparency Exercises; ECB, Consolidated Banking Data; and IMF staff estimates.

Figure 10. Spain: Capital Adequacy**Capital of Spanish Banks, 2006-16 ¹****Common Equity Tier-1 Capital, 2014-16 ²**

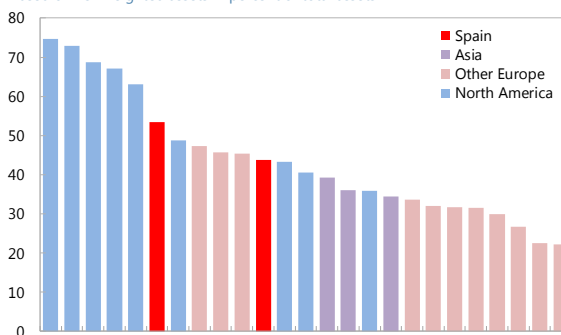
(In percent of risk weighted assets; based on transitional definition)

**Contributing Factors to Capital of Spanish Banks, 2015**

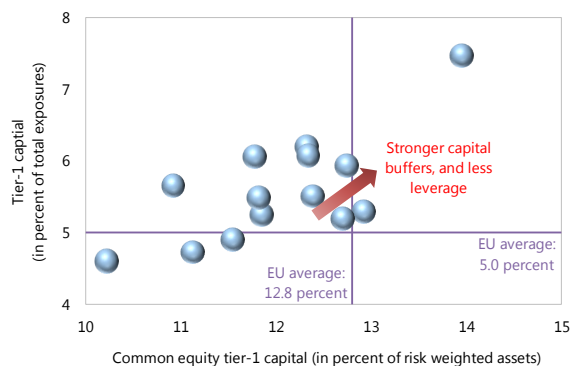
(In percent of risk weighted assets)

**Risk Weight Intensity of Global Systemically Important Banks in Advanced Economies, 2015 ³**

Based on risk weighted assets in percent of total assets

**Capital Adequacy and Leverage, June 2015 ²**

Based on transitional definition



Sources: EBA, 2015 Transparency Exercise and 2016 Stress Testing Exercise; ECB, Consolidated Banking Data; IMF, Financial Soundness Indicators database; SNL; and IMF staff estimates.

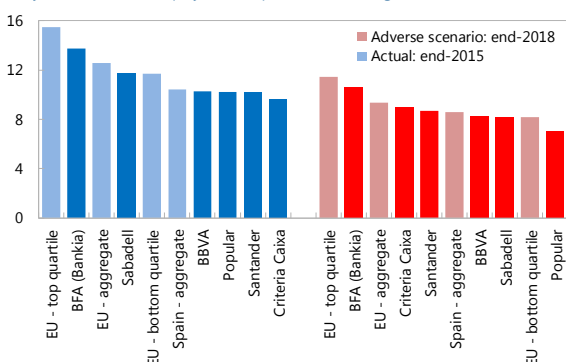
1/ Due to data availability, the chart shows semi-annual data through 2014 and quarterly data since then.

2/ Based on 14 significant Spanish banks.

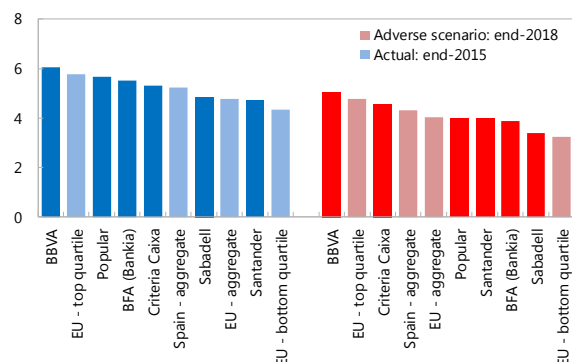
3/ Based on entities that have been identified as global systemically important banks since 2012.

Figure 11. Selected European Economies: EBA Stress Tests and Sovereign-Banking Linkages**Capital Adequacy in an Adverse Scenario, 2015-18 ¹**

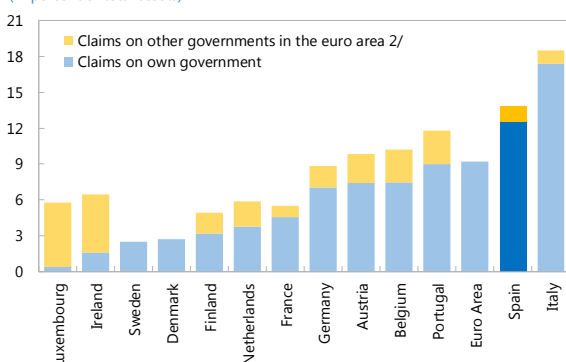
Fully-loaded common equity tier-1 in percent of risk weighted assets

**Leverage in an Adverse Scenario, 2015-18 ¹**

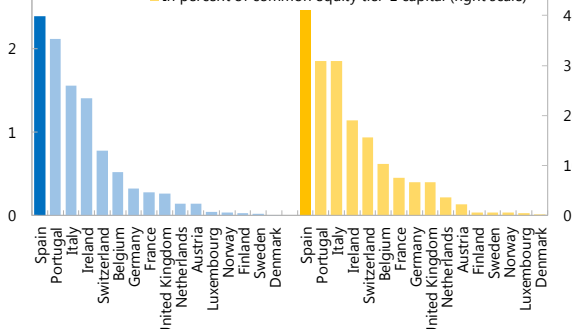
Fully-loaded tier-1 capital in percent of total exposures

**Depository Institutions: Claims on Government, June 2016**

(In percent of total assets)

**Deferred Tax Assets, December 2015 ²**

In percent of total assets (left scale)
 In percent of common equity tier-1 capital (right scale)



Sources: EBA, 2015 Transparency Exercise and 2016 Stressing Exercise; IMF, International Financial Statistics; SNL; and IMF staff estimates.

1/ Based on the EBA's 2016 Stress Testing Exercise. The end-2018 levels of capital and leverage ratios are driven by the end-2015 levels (starting point), estimated pre-loss income during 2016-18, and estimated credit and market losses during 2016-18. These two charts thus show how the adverse scenario may affect banks, taking initial buffers and expected profits into account. Meanwhile, the chart in Figure 8 only illustrates estimated credit loss to highlight credit risk.

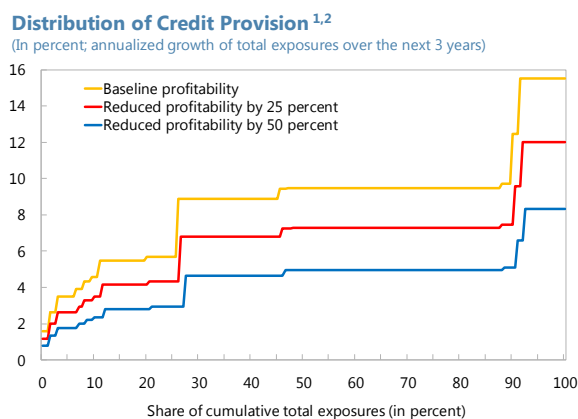
2/ Based on banks with total assets larger than €30 billion in each jurisdiction.

F. Capacity to Support Growth over the Medium Term

25. Spanish corporates and households have continued to deleverage. This has resulted in a decline in the debt-to-GDP ratios by 49 and 18 percentage points, respectively, from the peaks. Banks' lending has continued to fall, as amortization has outpaced new lending. The demand for credit has remained weak for various reasons, including debt overhangs and NPLs in some corporate segments (namely, construction and real estate), as well as still depressed disposable income levels, high unemployment, concentrated indebtedness among low-income households, and general need to further build up financial wealth (traditionally well below European peers). Once credit demand picks up over the medium term, would banks have sufficient capital position to expand their balance sheets and finance the economic expansion?

26. The banking system's current capital position and previous year profitability are sufficient to meet an increase in credit demand in the medium term. Previous year's profits could support system-wide credit growth of about 6.5–8.5 percent per year if banks used their annual profits to fulfill the regulatory capital requirement, keeping the capital ratio unchanged (Figure 12).¹² The baseline estimation is based on banks' profits during 2015H1, but profitability has declined since then. The estimation under the assumption of reduced profitability thus seems more relevant to reflect the current situation. In particular, in case profits would drop by 25 percent over the next three years, the system-wide capacity to provide additional credit would still be at 6.5 percent per year, above nominal GDP growth projected through 2021.¹³ This would drop to 4.4 percent annually should profits halve compared to the 2015H1 level. Some banks would have less room for credit expansion than others in these scenarios.

Figure 12. Spain: Credit Provision Under Different Scenarios



Sources: EBA, 2015 Transparency Exercise; and IMF staff estimates.

1/ The amount of credit that could be provided is estimated based on the premise that banks use additional profits to expand balance sheets. Assumes that (i) baseline profits are based on the 2015H1 level adjusted for additional credit; and (ii) no additional cleanup efforts in the baseline, with no additional provisions; (iii) no additional efforts to build up capital buffers; and (iv) the dividend payout ratio is at 25 percent and the tax rate at 25 percent.

2/ For sensitivity analysis, reduced profitability assumes declining profits by 25 and 50 percent over 2016–18 relative to the 2015H1 level.

G. Conclusions and Policy Implications

27. The banking system has gained further strength amid new challenges. Due to better asset quality, stronger capital and funding positions, and reduced debt overhangs, the system is closer to putting most of the crisis legacies behind it. However, banks have progressed at different speeds, and overall NPLs and foreclosed assets remain sizeable, though much lower than in some European banking systems. At the same time, like other European banking system, Spain's banks face challenges arising from the low interest rate environment and new regulatory initiatives. The

¹² The estimation only focuses on the availability of capital to support the provision of credit, as capital is more likely to be a binding factor over the medium term. Funding should not be an issue given that banks could obtain funding from the ECB under the new Targeted Long-term Refinancing Operations (TLTRO-II).

¹³ IMF staff projects credit to grow about 1 percent annually over the next three years.

spillover from a less favorable macroeconomic environment in some economies where Spanish banks have a strong footprint would be limited to potentially lower profits and weaker contributions to the parents' capital buffers.

28. Adjusting to profitability pressures is a key challenge, especially in the current macro-financial environment. Similar to other European economies, banks' profitability in Spain is currently well below the pre-crisis level, with the return on equity lower than the cost of capital. Profitability has fallen in the past year, as for banking business in Spain reduced net interest and other income has been offset by falling impairment costs. The more difficult domestic and global operating conditions, in particular in a low interest rate environment, will put pressure on banks' cost structure and business models. Achieving greater efficiency, in particular since Spanish banks still rely on a larger branch network than do European peers, further reducing operating expenses, and raising non-interest income will be central to addressing the profitability challenge.

29. Efforts to reduce the level of impaired assets on banks' balance sheets should continue. Even though the reduction in NPLs has generally proceeded well, though at different speeds across banks, efforts should continue to ensure banks' adequate provisioning and encourage the fuller use of the enhanced insolvency regime. Following bank-specific time-bound, realistic and ambitious NPL reduction plans as foreseen in the ECB Guidance to Banks on NPLs is therefore a welcome tool in the Spanish banking system's final stretch to fully put the crisis legacies behind. This process could also benefit from the insolvency reform, which supports more efficient debt restructuring and gives a "fresh start" to individuals. However, the use of the latter has been relatively limited so far. A stock taking exercise of the framework's functioning would thus be beneficial as certain design changes could likely help the deleveraging process.

30. Continued efforts to strengthen banks' capital and funding positions will enhance the system's resilience to shocks and the capacity to support growth over the medium run. It remains important to encourage banks to increase high-quality capital through retained earnings. Bolstering banks' capital would be prudent to safeguard financial stability and ensure adequate capital in light of new regulatory initiatives. Additional capital would also help ensure sufficient credit provision to financially-sound corporates and households as credit demand picks up. In addition, banks may need to adjust their liability structures to fulfill new regulatory requirements, such as Minimum Requirements for Own Funds and Eligible Liabilities (MREL) and Net Stable Funding Ratio (NSFR).

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FISCAL NON-COMPLIANCE AMONG SPANISH REGIONS¹

A. Background and Framework

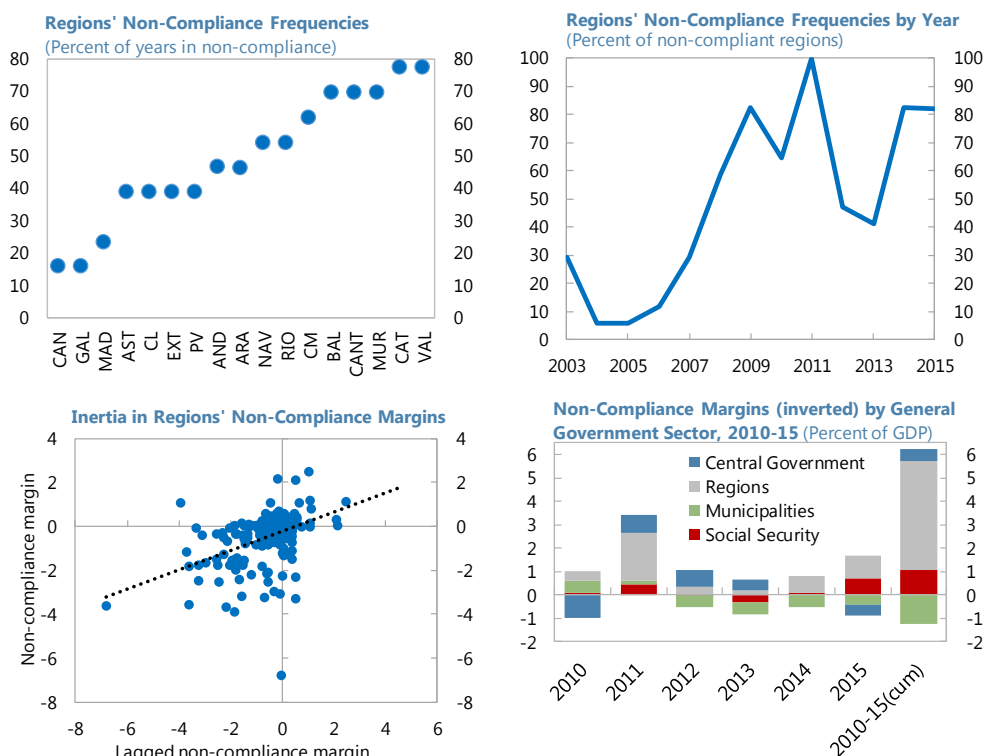
1. Weak compliance among regional governments has hampered Spain's fiscal consolidation efforts. Spain's regional governments have been subject to annual nominal budget balance targets over the last two decades under different rule-based fiscal frameworks. However, fiscal compliance was weak, varied markedly across regions (Figure 1), and has been identified as one of the main risks to the fiscal consolidation process going forward (AIReF, 2016). Non-compliance increased following Europe's sovereign debt crisis, accounting for the bulk of the general government target deviation set in Spain's Stability Program. For this note, fiscal non-compliance is defined as the inability to remain within the limits set under these targets (Lledó, 2015). The note gauges how frequently regions missed the target, by how much, and what factors contributed to non-compliance based on a conceptual framework developed in Delgado-Téllez and others (forthcoming, Box 1).

B. What Explains Involuntary Non-Compliance by the Regions?

2. Common-shocks and adjustment needs seem to have contributed to involuntary fiscal non-compliance among Spain's regions. Non-compliance frequencies have clearly moved in tandem with nominal GDP growth forecast errors (Figure 2) and so did compliance margins, as supported by positive and statistically significant estimates under various estimated models (Table 1). On the other hand, idiosyncratic shocks did not show a systematic impact. Fiscal non-compliance has displayed some inertial patterns in the form of positive auto-correlated margins, possibly reflecting budget rigidities owing to incremental budget processes or multi-year expenditure commitments. Fiscal non-compliance also increased with the required adjustment effort—proxied by differences between the fiscal deficit target in year t and $t-1$. Adjustment efforts have been quite heterogeneous across regions given that fiscal deficit targets, despite the existence of different starting fiscal positions, have been set uniformly across regions in most years. As expected, adjustment efforts are found to have a negative and statistically significant impact on fiscal compliance margins in most specifications in Table 1.

¹ Prepared by Victor Lledó based on Delgado-Téllez, Lledó, and Perez (forthcoming).

Figure 1. Spain: Regions' Non-Compliance with Fiscal Deficit Targets (2013–15)

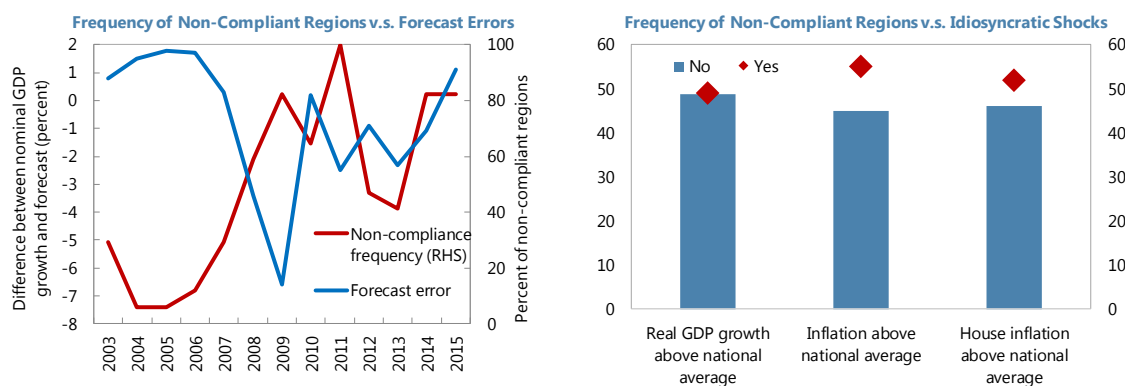


Sources: Ministry of Finance, and Delgado-Téllez and others (forthcoming).

Note: Non-compliance events are defined as cases of negative deviations between budget balance outturns and budget balance targets for a given region and year. Non-compliance frequencies are defined as the percentage of non-compliance cases to the total number of cases within a specific group (e.g. region, year). Non-compliance margins defined as differences between fiscal targets and outcomes, with positive margins indicating compliance and negative margins, non-compliance. Non-compliance margins are reverted in the bottom right chart to facilitate readability – i.e. positive (negative) bars indicated the size of the non-compliance (compliance) margin.

CAN=Canary Islands, GAL=Galicia, MAD=Madrid, AST=Asturias, CL= Castilla and Leon; EXT=Extremadura, AND= Andalusia, ARA= Aragon, BASC =Basque Country, NAV=Navarra, RIO=Rioja; CLM=Castilla La Mancha, BAL = Balearic Island, CANT=Cantabria, MUR=Murcia, CAT=Catalonia, and VAL = Valencia.

Figure 2. Spain: Involuntary Fiscal Non-Compliance and Shocks



Sources: Ministry of Finance, and Delgado and others (forthcoming).

Note: Common shocks are proxied by observed deviations between nominal (national) GDP growth outturns and forecasts set in annual budget laws (growth forecast errors). Idiosyncratic shocks do not seem to play a role in determining fiscal non-compliance (measured by differences between regions' real GDP growth, CPI and house price inflation and corresponding national average).

Box 1. Potential Factors Explaining Non-Compliance: A Framework

Fiscal non-compliance can be voluntary or involuntary. Fiscal non-compliance is voluntary when the non-compliant government has the capacity, but not the incentives to comply with a fiscal target. Fiscal non-compliance is involuntary when the converse holds (Figure). A government has the (fiscal) capacity to meet the target if it has sufficient resources or instruments to keep the budgetary outcomes within the target. A government has the incentives to meet the target when the costs of non-complying with the target outweigh the non-compliance benefits. Fiscal non-compliance equilibria could be the result of a sequential process, whereby the central government (CG) moves first and sets an ex-ante feasible fiscal target for the regional government (RG). RG then decides whether to comply or not with the fiscal target and CG to enforce it or not. In the final stage, the process is hit by a shock affecting RG's fiscal capacity to meet the fiscal target (i.e., the ex-post feasibility of the target).

Fiscal Non-Compliance Typology		
	Capacity	Incentives
Voluntary	Yes	No
Involuntary	No	Yes

Voluntary fiscal non-compliance occurs when the RG is not willing to comply with the budget balance target even when the target is ex-post feasible. This may be driven by bailout and overspending incentives. *Bailouts incentives* will, on turn, depend on factors expected to increase the central government's non-bailout costs such as regions' (i) economic size ("too big or too small to fail", Wildasin, 1997, Inman, 2003); (ii) political influence ("too connected to fail"; Porto and Sanguinetti, 2001; Grossman, 1994; Bolton and Roland, 1997); and (iii) lack of fiscal autonomy ("too dependent to fail"; Von Hagen and Eichengreen, 1996). Overspending incentives, on the other hand, may increase as a result of weak fiscal rules and insufficient market discipline (Ter-Minassian, 2015).

Involuntary fiscal non-compliance occurs when the RG is willing and ex-ante capable to comply, but does not have the capacity to do so, as ex-post the target is no longer feasible. This pattern becomes more likely in times of fiscal stress, defined as periods with large negative fiscal shocks. Fiscal stress times are also periods when CGs are subject to strong (domestic or supranational) pressure to ensure fiscal consolidation targets at the general government level are met. In decentralized economies, this implies ambitious but feasible fiscal consolidation targets at the RG level, as consolidation efforts are often shared across governments levels and sub-sectors. Implementing such consolidation plans have been shown to be less likely the larger they are (Beetsma and others, 2009). In the case of RGs, this may be the result of ambitious but feasible center-imposed fiscal targets turned unfeasible once a negative fiscal shock materializes.

Alternative hypotheses for voluntary and involuntary compliance have been tested for Spain by looking at the frequencies and margins of non-compliance events. The empirical analysis covers Spain's autonomous regions during the period 2002–15¹ using a dynamic panel regression. Estimates are derived using Arellano-Bond first-difference General Method of Moments estimator in order to allow for possible inertial patterns in non-compliance as well as the endogeneity of dependent variables.

¹ The econometric analysis excludes the Basque Country, where lower government levels rather than regional governments are responsible for the provision of public services, but not for the compliance with fiscal targets.

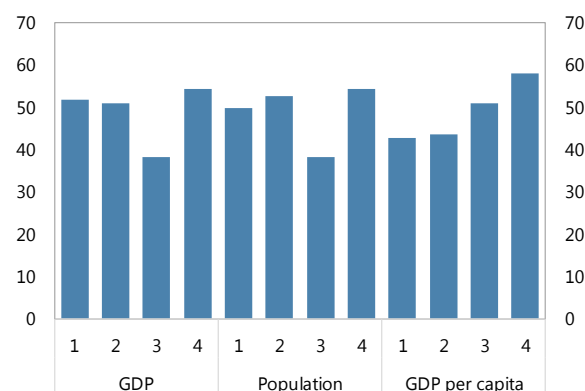
C. What Factors Have Impacted Voluntary Non-Compliance by the Regions?

3. Region's size, fiscal autonomy, and politics influence voluntary fiscal non-compliance. The impact of regions' size is not clear-cut though: non-compliance frequencies tend to be higher

among larger regions, while margins do not deliver conclusive results (Figure 3, Table 1, models 3 to 5). Fiscal non-compliance frequencies tend to be larger among regions with more limited autonomy to raise their own revenues. Fiscal non-compliance frequencies increase and compliance margins decrease among regions showing less autonomy to cut their own spending, and, larger vertical fiscal imbalances (Figure 4, Table 1, models 6 and 7).² Fiscal non-compliance frequencies, however, are not necessarily larger among regions in the top expenditure and VFI quartiles (i.e. regions with greater social mandates and less own resources to fund them). As conjectured, fiscal non-compliance frequencies seem to increase during national and regional election years, among regions politically aligned with the center, with strong pro-autonomy preferences, and large parliamentary representations (Figure 5). That said, apart from election years, region's political alignment, pro-autonomy inclinations, and parliamentary representation did not appear to affect fiscal compliance margins in a statistically significant and systematic way (Table 1, models 11–13).

Figure 3. Spain: Regions' Size and Non-Compliance with Fiscal Deficit Targets

(Frequency of non-compliance cases over 2003–15 by quartiles)

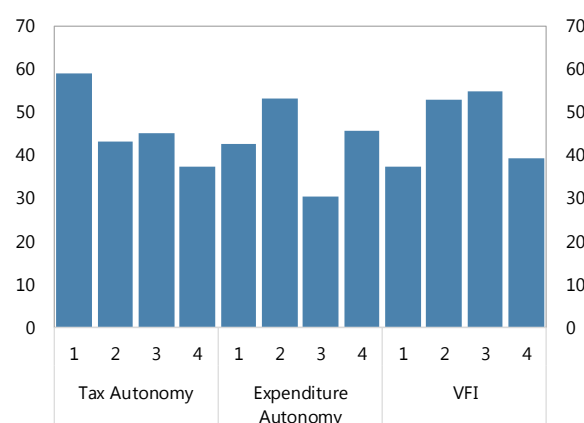


Sources: Ministry of Finance, National Institute of Statistics.

Note: Regions' size is measured according to the weight of a region's population, GDP, and GDP per capita in their corresponding national figures.

Figure 4. Spain: Regions' Fiscal Autonomy and Non-Compliance with Fiscal Deficit Targets 1/

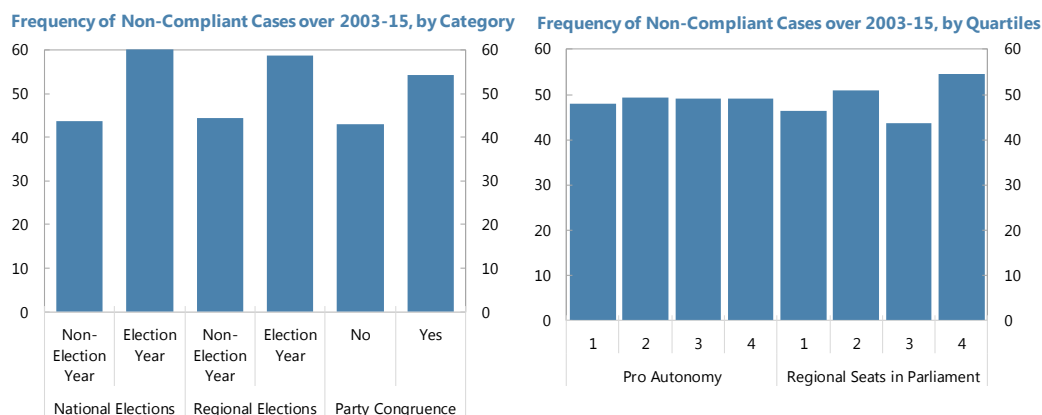
(Frequency of non-compliance cases over 2003–14 by quartiles)



Sources: Ministry of Finance, and Delgado and others (forthcoming).

Note: Tax autonomy is defined as the ratio between RGs own revenue to total tax revenues. Expenditure autonomy is measured by regions' share of general government spending on essential services. The larger the share, the larger are expenditure responsibilities and the smaller are expenditure.

² Vertical fiscal imbalances are defined as $[1 - \text{Own Revenue}/\text{Own Spending}]$. Own revenue (spending) corresponds to region's total revenue (spending) minus transfers received by the central government and other public entities (transfer paid to the central government and other public entities).

Figure 5. Spain: Politics and Regions' Non-Compliance with Fiscal Deficit Targets

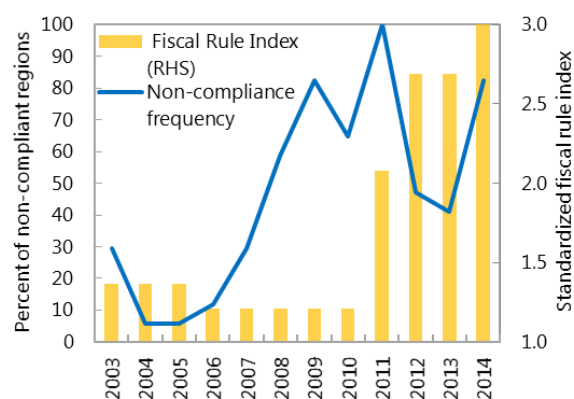
Source: Delgado-Téllez and others (forthcoming).

Note: Party congruence assigned Yes (No) if regional government led by same (different) party or government coalition leading central government. Pro-autonomy refers to the percent of members of regional parliaments from regional/pro-autonomy parties. Regional seats in national parliament refers to the number of seats in the lower house allocated to each region.

4. Stronger fiscal rules have not necessarily helped improve fiscal compliance, while the impact of financial markets has been ambiguous. Subnational fiscal rules in Spain have been significantly strengthened in the aftermath of the Euro Area sovereign debt crisis with the adoption of formal monitoring and enforcement procedures (Figure 6). However, such procedures have not been fully implemented, undermining fiscal compliance (Lledó, 2015). Regression results seem to reinforce this point. Stronger fiscal rules do not show any direct impact on fiscal compliance margins directly. Instead, they seem to have an indirect impact on compliance margins by helping reduce inertial patterns (Table 1, models 8 and 9). Financial markets seem to affect fiscal non-compliance through two different channels. On the one hand, fiscal non-compliance becomes less prevalent among regions that are more reliant on market-issued securities than on often softer bank loans, as regions internalized the impact of fiscal non-compliance on credit ratings and market-financing costs (Figure 7). On the other hand, fiscal non-compliance frequencies were larger among regions with lower (poorer) credit ratings and facing higher implicit interest rates, which seems to provide some support to the idea that financial markets weakened fiscal compliance by raising the financing costs of regions that were not perceived as creditworthy.³ Regression analysis of fiscal compliance corroborate the disciplinary effect of financial markets by showing fiscal non-compliance to decline among regions facing larger financing costs (Table 1, model 10).

³ Although one cannot rule out the possibility of reverse causality with fiscal non-compliance leading to poorer credit ratings.

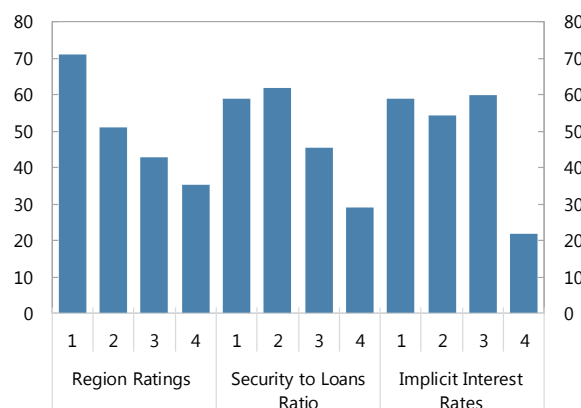
Figure 6. Spain: Fiscal Non-Compliance and Fiscal Rules



Sources: Ministry of Finance and European Commission.

Note: Standardized fiscal rule index is computed by the European Commission. It is the weighted average of the fiscal rule strength index over all rules in force at any given years. Weights are given by the coverage of general government finances for a given rule.

Figure 7. Spain: Financial Markets and Regions' Non-Compliance with Fiscal Targets
(Frequency of non-compliance cases over 2003–15 by quartiles)



Sources: Ministry of Finance and Delgado-Téllez and others (forthcoming)

Note: Region ratings based on a numerical scale from 0 to 21 derived from Fitch, Standard and Poor, and Moody region ratings. The lower the ratings, the poorer the creditworthiness. Security to loans ratio defined as ratio of regions' public debt in government securities to banking loans. Implicit interest rates estimated as region's interest payments in percent of end-of-year region public debt stock.

D. Policy Issues for Discussion

5. A list of issues warranting further policy discussion and analysis includes (i) the need to improve macro-fiscal forecasting at the central and subnational level to minimize unanticipated common shocks; (ii) an assessment on whether and, if so, how reforms on regions financing system and spending mandates, including minimum spending standards, may increase fiscal autonomy and reduce vertical fiscal imbalances; (iii) adoption of differentiated regional fiscal targets to improve the feasibility of fiscal adjustment plans, without undermining incentives to implement such plans in the first place; and (iv) rules-based automatic enforcement mechanisms to ensure fiscal compliance during election years and, especially in good times.

Table 1. Spain: First-Difference GMM Estimates of Fiscal Compliance Margins

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Lagged compliance margin	0.74*	1.09**	0.76*	0.83*	0.76	0.70***	0.37	0.91**	2.42***	0.31*	0.73*	0.49	0.24
Growth forecast errors	0.09*	0.04	0.09	0.10*	0.10*	0.12***	0.04	0.09	0.06	0.05	0.09	0.12***	0.04
Region-National growth differential	-2.09*	-2.67*	-2.16*	-2.13	-2.00	-0.73	-0.60	-2.32*	-1.82*	-0.36	-2.17*	-1.19	0.24
Region-National inflation differential	-0.36	-2.08	-0.39	-1.10	-1.28	-1.27	-2.41**	-1.23	-1.68	-2.83*	0.86	-1.29	-1.19
Fiscal Target Adjustment	-0.80**	-1.13**	-0.81**	-0.94**	-0.85*	-0.35	-0.82***	-1.02**	-0.99***	-0.51***	-0.68*	-0.52	-0.49
Execution minus budgetary transfers (in regional GDP)		-0.48											
Region weight in national population			3.86										
Region weight in national GDP				7.12									
Region weight in national per capita GDP					0.36								
Tax autonomy						0.03							
Social spending share in regional government spending						-0.33**							
Investment share in total regional spending						-0.24***							
Vertical fiscal imbalances							-0.15***						-0.13**
Fiscal Rule Index								0.05	0.02				0.01
Fiscal Rule Index X Lagged compliance margin									-0.06**				
Region Ratings													
Lagged Annual Change Region Ratings										-0.09			
Lagged Annual Change in Implicit interest rates										1.03***			
Ratio of security to loans										0.00			0.19
National election dummy											-0.60***		
Regional election dummy												-0.36*	-0.50*
Party congruence dummy												0.40	-0.41***
Pro-autonomy party share												-0.03	0.02
Regions' seats in national parliament												-0.31	-0.86
Number of observations	176	160	176	176	176	160	160	160	160	145	176	176	144
Number of regions	16	16	16	16	16	16	16	16	16	15	16	16	16
Number of instruments	16	15	16	16	16	15	15	15	15	15	17	17	14
Hansen	0.60	0.80	0.44	0.87	0.66	0.28	0.37	0.82	0.65	0.14	0.68	0.15	0.05
m1	0.12	0.11	0.13	0.15	0.23	0.02	0.09	0.10	0.06	0.14	0.12	0.20	0.00
m2	0.39	0.61	0.43	0.49	0.42	0.48	0.61	0.66	0.77	0.16	0.28	0.22	0.67

Note: Dependent variable is the difference between regions' fiscal deficit outturns and fiscal deficit targets. The larger this difference is, the larger is the fiscal compliance margin. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Instrument set in all models includes the second and third lag of the explanatory variables. Hansen is the p-value of the test of the over-identifying restrictions (see Hansen, 1982), which is asymptotically distributed chi square under the null hypothesis that these moment conditions are valid. A p-value equal or higher than 0.05 indicates that the instrument set is valid, which is confirmed under all models. m1 and m2 are the p-values of serial correlation tests of order 1 and 2, respectively, using residuals in first differences. The null hypothesis under both m1 and m2 tests is that there is no correlation between variables in the instrument set and the residuals. Observed p-values higher than 0.05 under the m2 test for all models indicates that there is no correlation with the instrument set defined in second lags.

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