Flossbach von Storch
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Non-performing loans in the euro periphery were not built in a day

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- Non-performing loans (NPL) in the Southern European countries have continued to grow relative to total loans since the great financial crisis.

- The bulk of the NPL stock is in the corporate sector, and more specifically, in construction and real estate activities. But difficulties affect also other sectors.

- Sluggish economic growth, a low rate of innovation, a weak business environment, and the common monetary policy of the ECB are responsible for the weakness of banks.

According to the ECB Banking Supervision's assessment of the bank stress test from July 2016, there is no reason to worry about the European banking system. In the press release announcing the results of the test, the ECB stated: "The results of EU-wide bank stress tests show that euro area banks improved their resilience and overall supervisory capital expectations will remain broadly stable compared to 2015…".[1]

Markets seem to take a different view. Both asset and bond prices for banks have fallen behind their counterparts in other industries. The *EURO Stoxx financials* has lost almost 60 points since 2007 compared to -22 points for the *EURO Stoxx broad* index. Although the bond price index *IBoxx Banks* gained in value in absolute terms – due to falling interest rates – it stood 14 points below the value for the *IBoxx overall* index in September 2016 (Figure 1).

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[1] Danièle Nouy, Chair of the ECB's Supervisory Board went further to assure that "[t]he results reflect the significant amount of capital raised and the additional balance sheet repairs by the banks over the past two years. (…)The banking sector today is more resilient and can much better absorb economic shocks than two years ago." See the press release of the ECB's Banking Supervision from July 29, 2016, available at:
https://www.bankingsupervision. europa.eu/press/ pr/date/ 2016/html/sr160729.en.html.

A similar opinion has been recently expressed by the ECB's chief economist, Peter Praet, in his speech at VII Financial Forum in Madrid on October 4, 2016. In the opening sentence, he stated: "The euro area banking system today is stronger than when it entered the financial crisis."

Figure 1. Bond (IBoxx overall and IBoxx banks) and shares (EURO Stoxx broad and EURO Stoxx financials) price indexes, 2007=100.
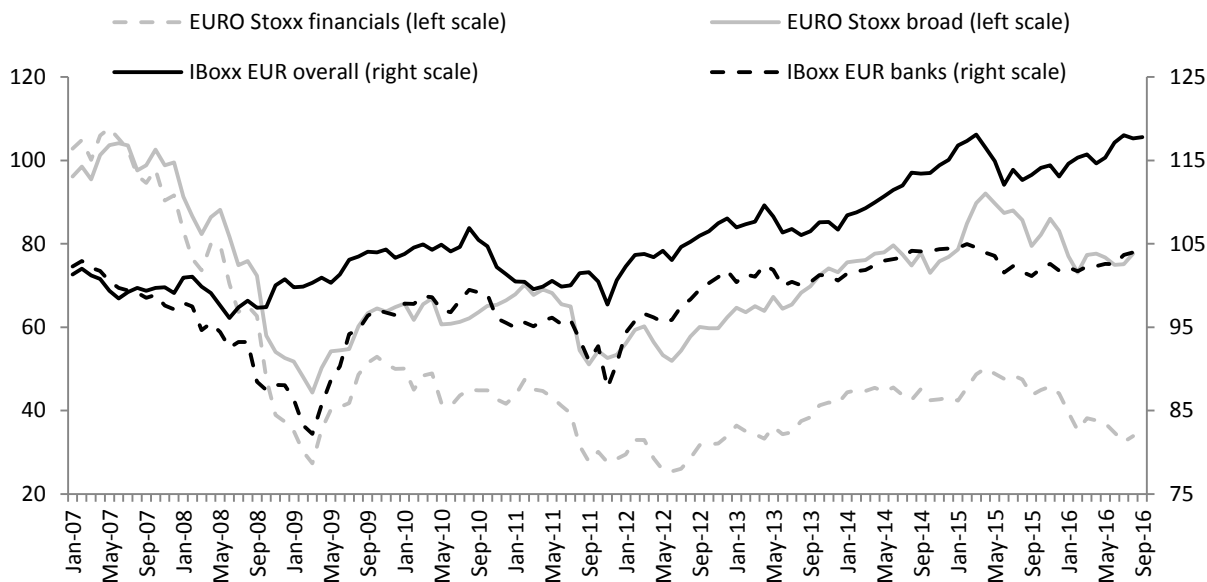
Source: Haver Analytics

These developments reflect investors' worries about the banking sector. Although problems have affected all European banks, they have been most serious in Southern European countries, particularly, Cyprus, Greece, Italy, Portugal and Spain.

However, this is not reflected in the Tier 1 capital ratios (so called CET1 capital levels), which are the main indicator used in the bank stress test of the ECB and of the European Banking Authority. In all five countries, these ratios increased rapidly to levels between 12 and 16% - well above 5.5% broadly considered as the minimum acceptable level by the European banking supervisory authorities (Figure 2).

Much of the evidence for banks losing ground lies in the continuous rise of non-performing loans (NPLs) on their books.[2] Measured as a ratio of total bank loans, NPLs increased remarkably in all Southern European countries (Figure 3). Only in the case of Spain the ratio has started falling since the end of 2013 thanks to improving GDP growth. But given the political uncertainty and unresolved structural problems, it is unsure how persistent the recent reduction of NPL ratios is going to be.

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[2] Since January 2015, a new harmonized definition of non-performing loans by the European Banking Authority is in force. They are defined as past due more than 90 days and/or unlikely to pay.
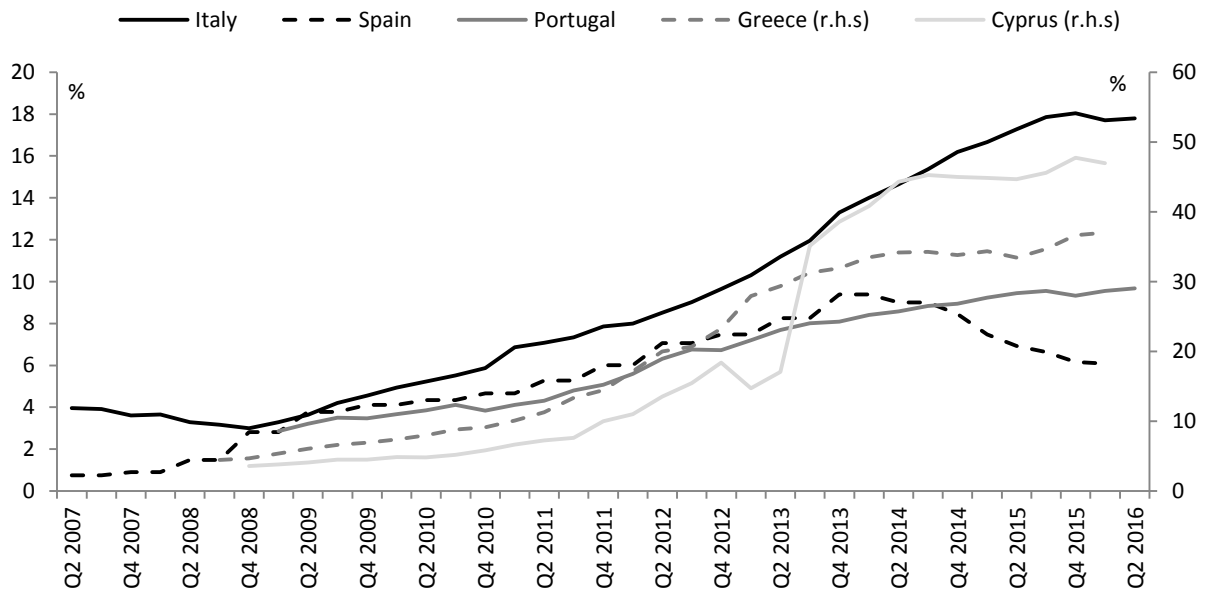
Figure 2. CET1 capital levels of banks in the Euro periphery.
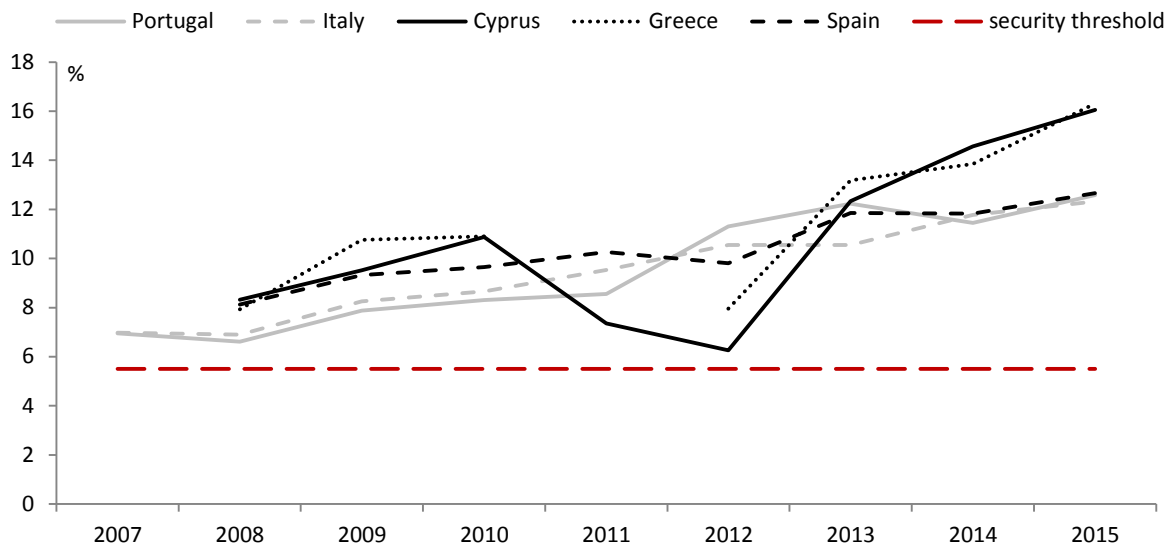
Source: Haver Analytics

Figure 3. Non-performing loans as a ratio of total loans.

Note: Due to better data availability, for Portugal, the ratios represent NPLs to the private non-financial sector (households and non-financial corporations), whereas for Italy, we use bad debts (which are the main subcategory of non-performing loans) to total loans ratios for financing economic activities (i.e. total across all branches of economic activities). Based on annual data, the NPL ratio for Italy stood at 16 % in 2015.

Source: Banco de Portugal, Thomson Reuters

A sectoral view on NPL ratios

Using data for Cyprus, Italy, Portugal and Spain,[3] a more detailed picture on the sectoral composition (in terms of economic sectors and of industries) of NPL can be drawn.

In all countries, a great proportion of NPLs has its origins in the private sector, with non-financial corporations dominating the numbers in absolute terms (Figure 4).

At the industry level, construction and real estate appear among those industries with the highest NPL ratios. Especially in Spain, this is clearly the consequence of subdued housing investment during the deepening of the great financial crisis. However, also other, more traditional industries, like textiles, wood manufacturing and motor vehicle manufacturing in Italy, agriculture in Cyprus and hotels and restaurants in Spain are heavily affected (Figure 5). This suggests that the problem is of truly systemic nature.

**Figure 4. Non-performing loans over total loans by sector.**
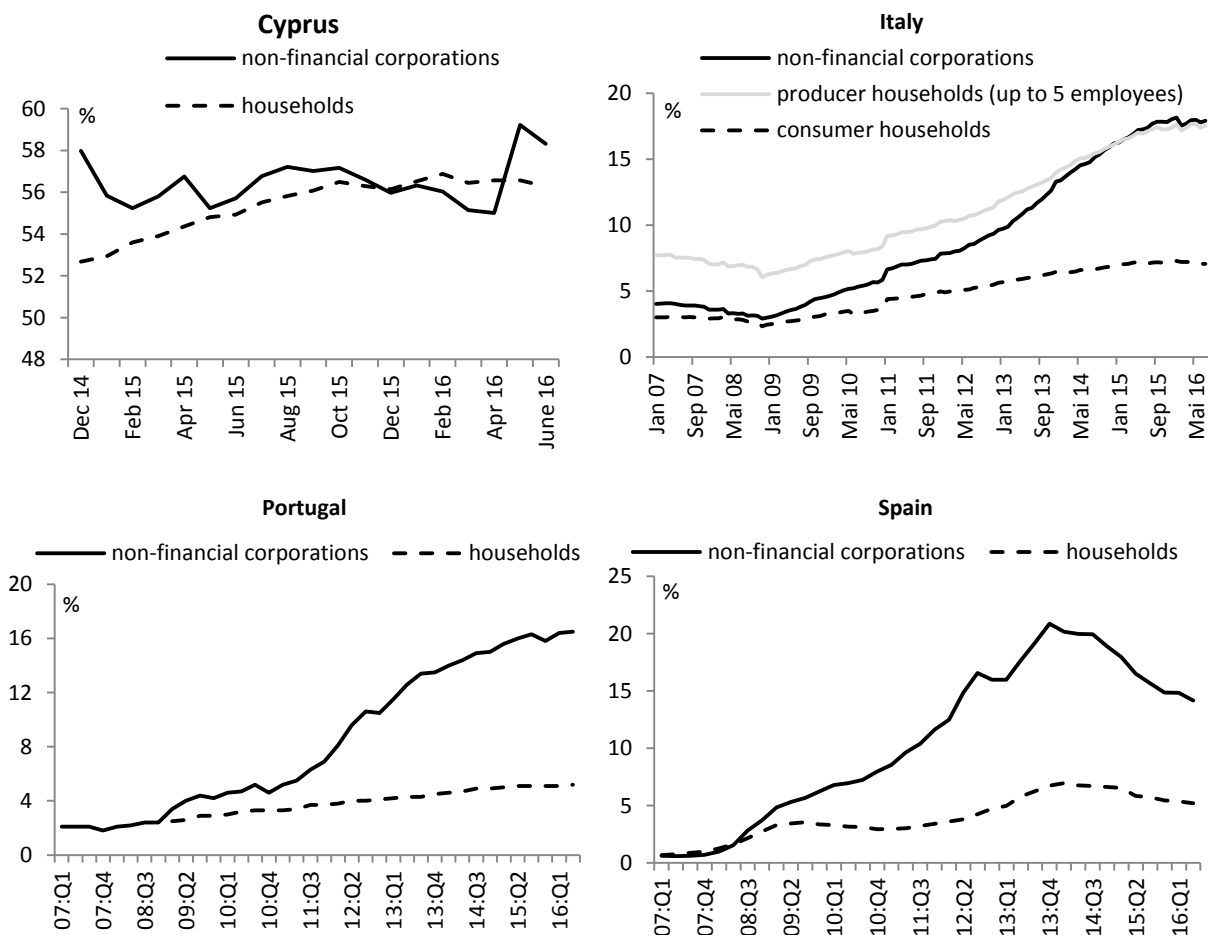
Note: In all figures, the ratios are expressed as shares in total loans. For Cyprus, comparable data prior to December 2014 are not available. In Italy, we show data for bad debts, as data for non-performing loans by sector are not available.

Source: Central Bank of Cyprus, Banca d'Italia, Banco de España, Banco de Portugal

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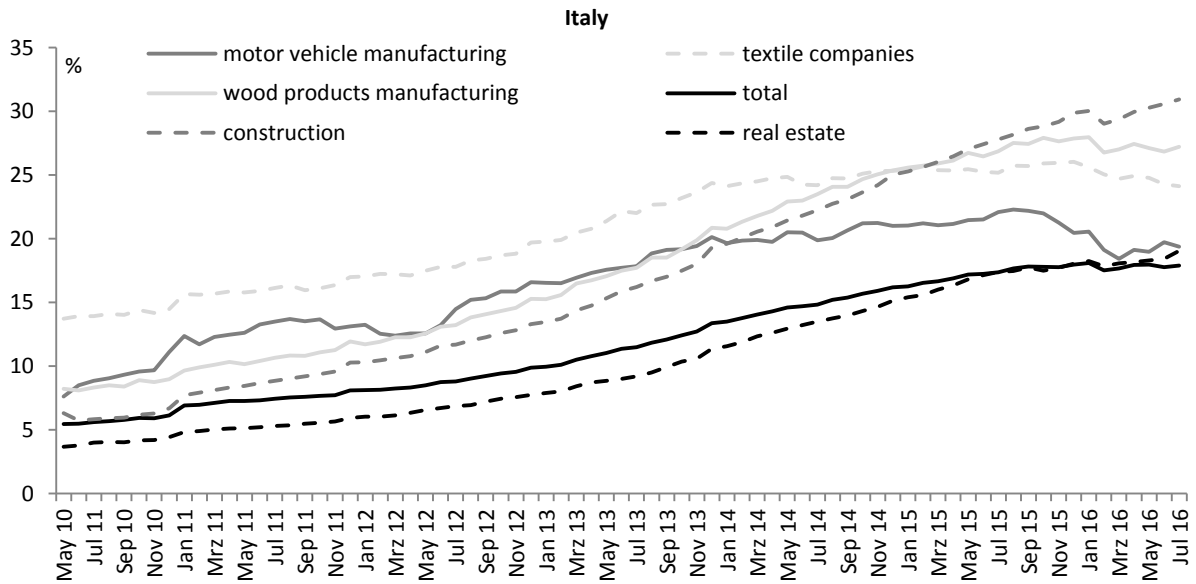[3] Comparable data for Greece are not available.

Figure 5. Non-performing loans over total loans across industries.
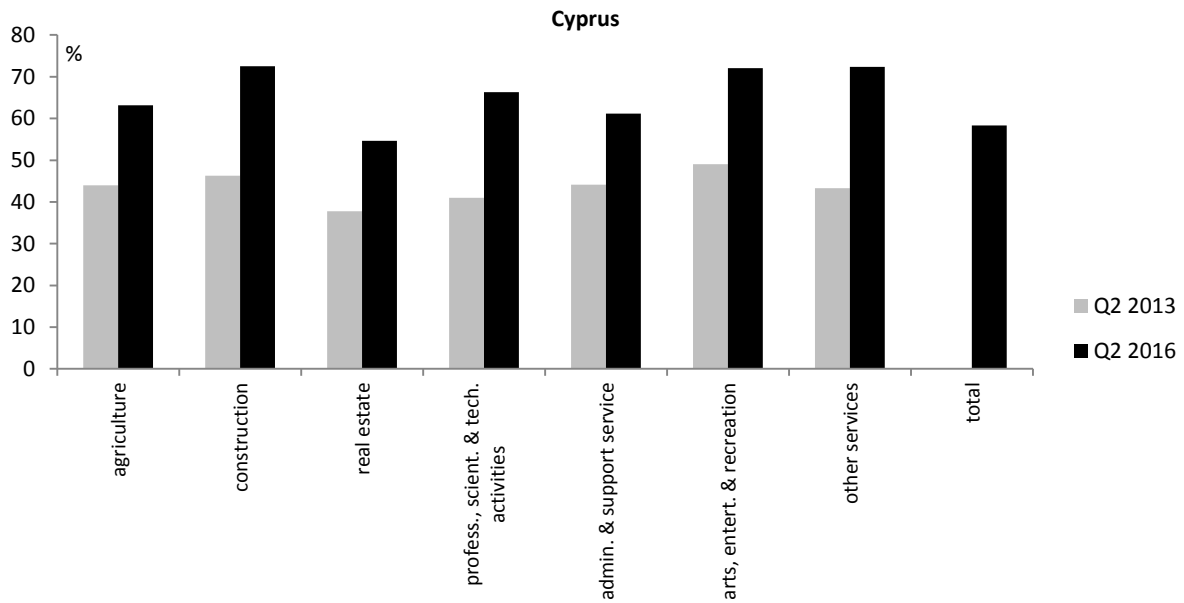
Cyprus

Note: Data older than Q2 2013 are not available.
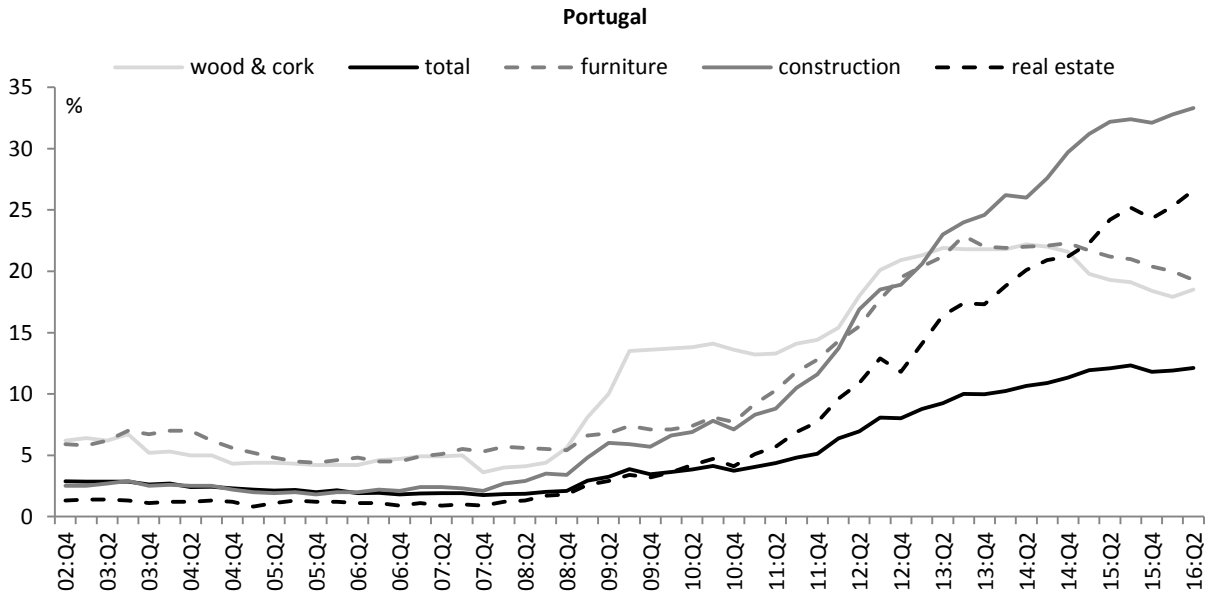
Source: Central Bank of Cyprus

Italy

Note: We show data for bad debts, as data for non-performing loans by industry are not available.
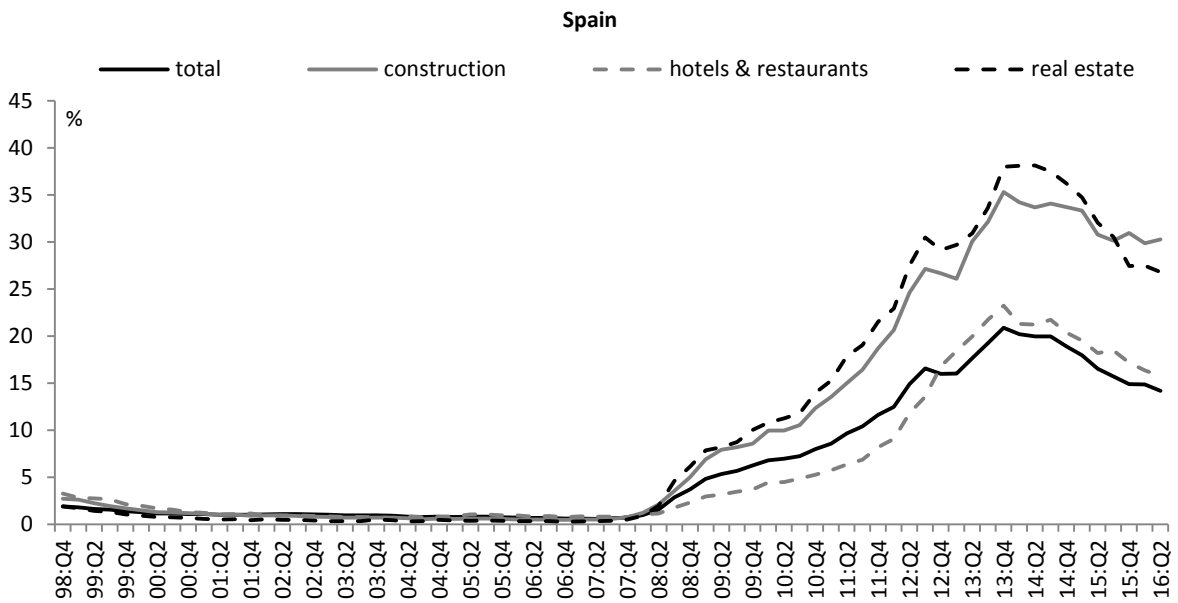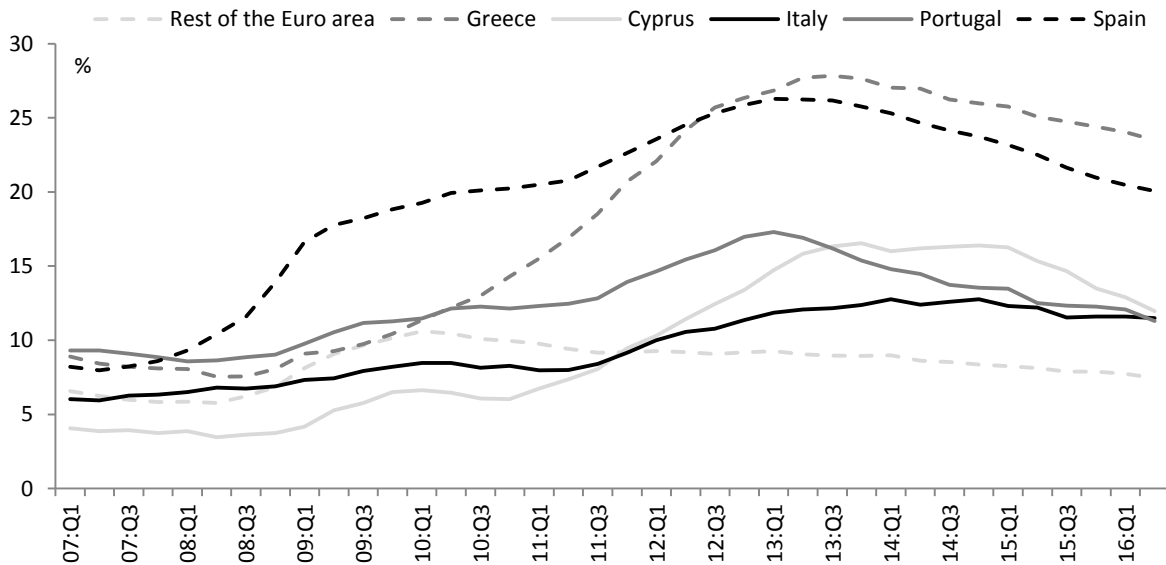
Source: Banca d'Italia

Figure 5 cont.

Portugal

Source: Banco de Portugal

Spain

Source: Banco de España

Figure 6. Unemployment rates.

Note: Rest of the euro area include: Austria, Belgium, Estonia, Finland, France, Germany, Ireland, Latvia, Lithuania, Luxemburg, Malta, Netherlands, Slovakia and Slovenia.

Source: Haver Analytics

Economic underperformance of Southern Europe

Problems with servicing debt and the substantial accumulation of non-performing loans by banks in Southern Europe do not reflect a single factor but a mix of different circumstances. Most importantly, rigid labor markets, weak business environments and, as a consequence of this, a weak economy are among the most severe problems.
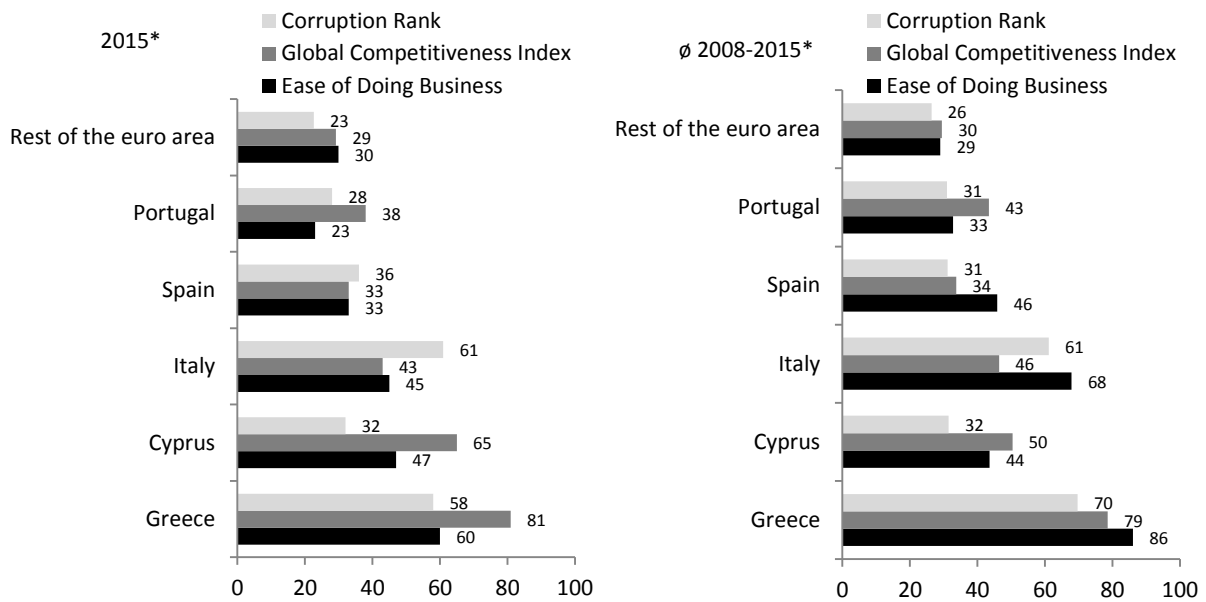
Labor market rigidities, notably barriers to hiring and firing, are at the root of the problems, leading to persistently high unemployment rates (Figure 6). Unemployment rates are almost three percentage points higher in Portugal, Italy and Cyprus than in the rest of the euro area. They exceed this benchmark by 13 percentage points in Spain and 16 percentage points in Greece. If labor market rigidities were lower, unemployment would be lower as well.

However, structural problems reside also elsewhere. According to different measures of the strength of the business environment, all five economies are weaker than the average of the rest of the euro area (Figure 7). Although almost all indicators considered in Figure 7 – corruption, competitiveness and ease of doing business – improved in recent years, the improvements were not strong enough to eliminate or substantially reduce non-performing loans accumulated in earlier years.

The evidence for this is in Figure 8 which shows a negative relationship between the real GDP growth and the NPL ratio: a one percentage point decrease in the GDP growth rate was associated with a 1.7 percentage points increase in the NPL ratio on average for Southern Europe in the period 2008-2015.

Figure 7. Business environment, corruption and competitiveness.

2015*

□ Corruption Rank
■ Global Competitiveness Index
■ Ease of Doing Business

Rest of the euro area — 23 / 29 / 30
Portugal — 28 / 38 / 23
Spain — 36 / 33 / 33
Italy — 61 / 43 / 45
Cyprus — 32 / 65 / 47
Greece — 58 / 81 / 60

ø 2008-2015*

□ Corruption Rank
■ Global Competitiveness Index
■ Ease of Doing Business

Rest of the euro area — 26 / 30 / 29
Portugal — 31 / 43 / 33
Spain — 31 / 34 / 46
Italy — 61 / 46 / 68
Cyprus — 32 / 50 / 44
Greece — 70 / 79 / 86

Note: * For the Global Competitiveness Index the last available observation is for 2016. Rest of the euro area include: Austria, Belgium, Estonia, Finland, France, Germany, Ireland, Latvia, Lithuania, Luxemburg, Malta, Netherlands, Slovakia and Slovenia. The Corruption Index ranks countries by their perceived levels of corruption, as determined by expert assessments and opinion surveys. The Corruption Rank indicates the country's position relative to the other countries from 0 (the lowest corruption) and 100. The Global Competitiveness Index assesses the set of institutions, policies and factors influencing competitiveness conditions. It ranges from 0 (the highest competitiveness score) to 100. The ease of doing business is calculated based on several indicators influencing the country's business environment. The country ranking ranges between 1 (the most supportive business environment) and 190.

Source: World Bank, World Economic Forum, Transparency International

Figure 8. Scatter plot of real GDP growth in relation to the NPL ratio for Cyprus, Greece, Portugal, Italy and Spain, 2008-2015.
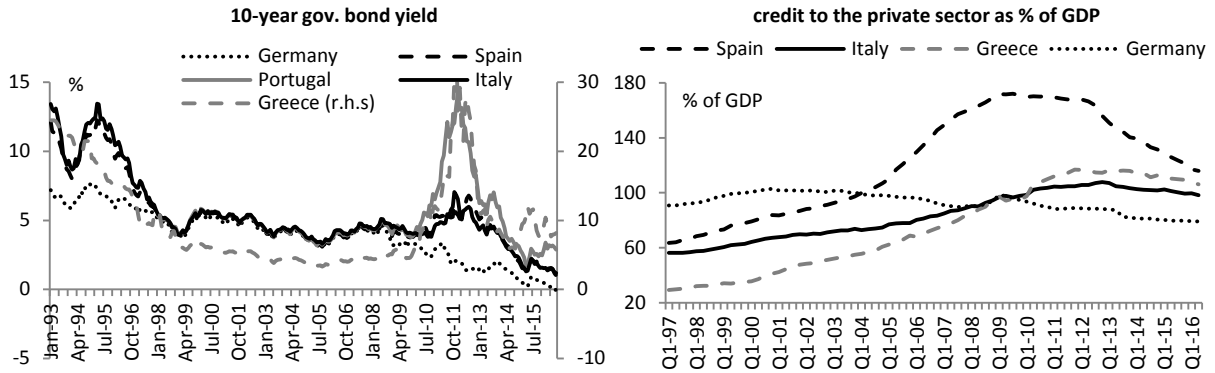

$y = -1.69x + 10.83$

$R^2 = 0,3189$
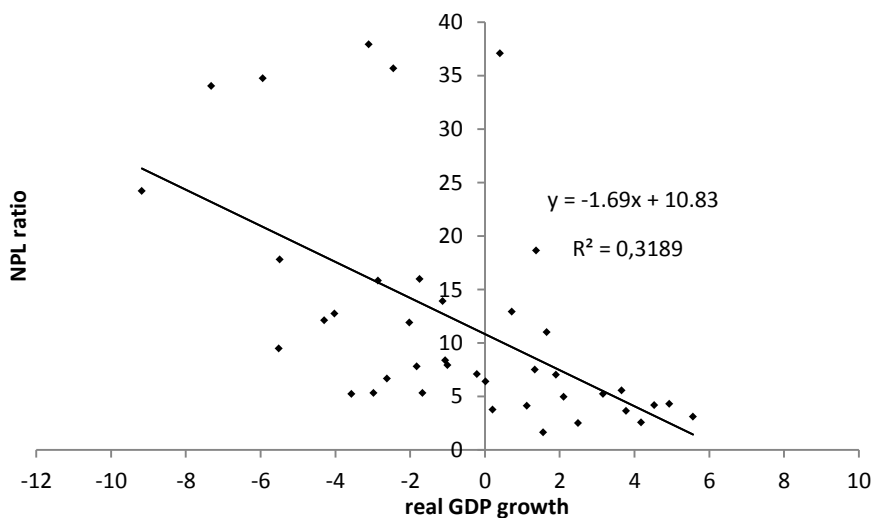
Note: GDP growth rates are two years lagged.

Source: Own elaboration based on Haver Analytics

Figure 9. Long term interest rates (left panel) and credit to the private sector as percentage of GPD (right panel) in Southern Europe and Germany.

Source: Haver Analytics

Although much of the economic underperformance comes from country-specific factors, there are reasons to believe that the particular institutional setting of the European Monetary Union (EMU) and the common monetary policy of the ECB played a crucial role in exacerbating the dynamics of NPL accumulation. Figure 9 shows how the commitment to participate in the EMU in the years prior to 1999 and – after the establishment of the euro – the common monetary policy drove interest rates down across the Southern European economies and how it contributed to the accelerated credit growth thereafter.

An econometric assessment

To deepen the above discussion, we perform an econometric analysis on panel data for Italy and Spain, for the first quarter of 1999 to the second quarter of 2016.[4] Applying the dynamic OLS estimation technique, the following empirical model is estimated:

$$y_{it} = \alpha + \beta x_{it} + \mu_i + \omega_{it} \qquad (1)$$

where y_{it} is the dependent variable, given by the ratio of non-performing loans in country i at time t, α is a constant term, x_{it} is a vector of country-specific explanatory variables, β the vector of coefficients to be estimated, μ_i is a country fixed effect and ω_{it} a composite error term that has the following form:

$$\omega_{it} = \sum_{-p}^{+p} b_{1p} \Delta x_{it-p} + \varepsilon_{it}. \qquad (2)$$

The first term in equation 2 is composed of p leads and lags of first-differenced explanatory variables, while the second term is the usual random error.[5]

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[4] This is the longest period possible to construct with the available data. Our data come from Haver Analytics.

[5] Dynamic OLS method was introduced by James Stock and Mark Watson ["A simple estimator of cointegrating vectors in higher order of integrated systems." *Econometrica* 61(4), 783-820, July 1993.] to account for possible endogeneity deriving from the influence of short-term dynamic factors of explanatory variables. They explicitly correct for this in the composite error term, as shown in equation 1. The application of the method requires the variables to be non-stationary and cointegrated – the condition that we tested for and confirmed in our sample.

Among the explanatory variables, we control for the level of long-term interest rates, as represented by yields on 10-year government bonds. This variable should reflect the credit conditions in the respective economies. Moreover, given that these conditions are influenced by interest rates set by the ECB, we can relate the stock of NPLs to the common monetary policy in the euro area.[6]

We also include the unemployment rate, as unemployment makes debt servicing harder for households. Moreover, increasing unemployment may signal diminishing production, which consequently leads to decreasing revenues and increasing corporate debt burdens. We also control for productivity: the higher productivity the easier it is to generate economic value and repay debt. Finally, we include two variables reflecting developments in capital markets, a stock market price index and a housing price index. The former accounts for general financial market conditions, but additionally it is an indicator of bank asset quality: declining stock prices can exercise a negative impact on bank asset quality. The latter reflects the value of assets frequently used as collateral for credit: rising housing prices mean an increasing value of collateral and thus a decreasing stock of non-performing loans. Finally, to account for possible cyclical influences, in one specification, we include the real GDP growth rate.[7]

It is reasonable to assume that the influence of economic factors on the stock of NPLs is not immediate but requires time, before a loan becomes eventually non-performing. For this reason, we consider in separate specifications explanatory variables that are two-, three- and four-year lagged. This permits us also to better assess the timing of influence of such factors on NPLs.

The table below summarizes the results of the regressions. They show a strong and significant role played by the credit conditions and – through the credit channel – by monetary policy of the ECB. A one percentage point decline in long-term interest rates led to 1 – 1.8 percentage points increase in the NPL ratios, depending on the time dimension. The strongest influence is seen after two years and it diminishes as time goes by. A similarly strong effect, but in the opposite direction, is found for the unemployment rate, meaning that increasing unemployment leads to the accumulation of the NPL stock. Both rising productivity and housing prices contribute to the reduction of NPLs on the banks' books. Finally, for the stock market price index we do not find any significant effect.

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[6] For evidence regarding the influence of monetary policy on long-term interest rates, see Agnieszka Gehringer and Thomas Mayer (2015), Understanding low interest rates, Flossbach von Storch Research Institute, Economic Policy Note Nr. 23/10/2015.
[7] Most of these control variables are considered as a standard in previous empirical analyses, for instance, Roland Beck, Petr Jakubil and Anamaria Piloiu (2013), Non-performin loans: What matters in addition to the economic cycle? ECB Working Paper Nr. 1515, or Dimitrios P. Louzis, Angelos T. Vouldis and Vasilios L. Metaxas (2010), Macroeconomic and bank-specific determinants of non-performing loans in Greece: A comparative study of mortgage, business and consumer loan portfolios. Bank of Greece Working Paper Nr. 118.

Table Dynamic OLS estimates of equation 1.

	(1)	(2)	(3)	(4)
10-year gov. bond	-1.810***	-1.476***	-1.290***	-1.052**
	(0.233)	(0.256)	(0.260)	(0.335)
Unemployment rate	1.491***	1.252***	1.432***	1.357***
	(0.128)	(0.119)	(0.134)	(0.146)
Productivity	-0.443**	-0.526***	-0.375**	-0.323*
	(0.171)	(0.153)	(0.164)	(0.171)
Stock market price index	-0.016	-0.011	-0.010	0.028
	(0.039)	(0.035)	(0.033)	(0.041)
Housing price index	-0.128**	-0.277***	-0.212***	-0.277***
	(0.057)	(0.056)	(0.057)	(0.060)
GDP growth rate	--	0.691**	--	--
		(0.257)		
N. obs.	88	88	84	80
R-squared adj.	0.943	0.956	0.949	0.944
UR test	-3.698***	-3.767***	-4.201***	-4.976***
	[0.000]	[0.000]	[0.000]	[0.000]

Note: Dependent variable is the ratio of non-performing loans (or their sub-category of bad debts for Italy) to total loans. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level. Robust standard errors are in parenthesis. The last row reports the test statistic and, in squared parenthesis, its p-values of the Im-Pesaran-Shin panel unit root test of the residual term from the respective estimations. The null hypothesis of the test assumes the presence of a unit root in all panels. All specifications include country fixed effects. Column (1) reports results from the estimations with explanatory variables two years lagged, column (2) the same as column (1), but including the GDP growth rate to account for the business cycle, column (3) with three years lagged explanatory variables and column (4) with four years explanatory variables.

A solid banking system?

European banks are in a state of emergency. The view of the European banking supervisors and monetary policy makers that the euro area banking system is stronger today than at the beginning of the financial crisis gives a false sense of security.

From the analysis of Southern European countries, two main conclusions emerge. First, NPL stocks are not only high but also broad-based, involving different economic sectors. Second, the accumulation of NPLs was a long-lasting process, reflecting poor economic growth and supply-side rigidities. Based on estimations for Italy and Spain, we find evidence that both low productivity and high unemployment were at the roots of the NPL accumulation. But the common monetary policy also played a crucial role. By depressing interest rates, it boosted the demand for credit, which often resulted in unsound borrowing. This paved the way for the accumulation of non-performing loans.

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