

Wolff, Guntram B.

Research Report

Is recent bank stress really driven by the sovereign debt crisis?

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IS RECENT BANK STRESS REALLY DRIVEN BY THE SOVEREIGN DEBT CRISIS?

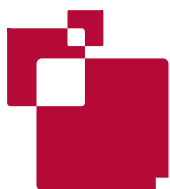
GUNTRAM B. WOLFF

Highlights

- Stress in the interbank market has increased dramatically since July and bank stock market valuation has fallen by 22 percent on average for 60 of the most important banks tested in the EBA stress tests.
- I find evidence that bank stock valuation is significantly and economically meaningfully affected by the bank's exposure to Greek debt. Greek banks are particularly affected. Holdings of debt of the other four periphery countries does not however appear to be a strong determinant of stock price movements. Policy announcements of 21 July of no haircut on any sovereign but Greece appear to be perceived as credible.
- The exposure to Greece cannot explain the general and large decline in euro area banks' market cap. Instead, a general confidence crisis of the euro area banking system, or more deeply the euro area construction, might be driving the fall in stock prices.
- The summit of 23 October should focus on restoring confidence in euro-area policymakers' ability and determination to put the euro area on a sound footing. Recapitalisation of banks can only be only one aspect. A credible solution to Greece and a way forward for the larger institutional set-up, including a federal fiscal back-stop of the banking system, are of at least equal importance.

Telephone
+32 2 227 4210
info@bruegel.org

www.bruegel.org



Guntram B. Wolff (guntram.wolff@bruegel.org) is Deputy Director of Bruegel. Excellent research assistance by Chiara Angeloni is gratefully acknowledged.

IS RECENT BANK STRESS REALLY DRIVEN BY THE SOVEREIGN DEBT CRISIS?

GUNTRAM WOLFF, OCTOBER 2011

STRESS IN THE INTERBANK MARKET has increased significantly since July (Figure 1). There is now a significant debate about why this is the case and what would be the best way to address it¹. Many have argued that the sovereign debt crisis is the most important driver of banking stress in the euro area. If that view is correct, then the right approach to solving Europe's banking problem is to solve the sovereign debt crisis. Recapitalising banks instead would be far too costly, in particular if one wanted to cater for a haircut in Italy.

In this policy contribution, I investigate to what extent the strong decline in bank market capitalization observed since July can be explained by the exposure to sovereign debt of the five different periphery countries. Stock prices of the 60 most important banks tested in the EBA stress tests have fallen on average by 22 percent with some banks losing as much as 80 percent of their market value. I relate the stock market fall of these 60 banks to the exposure of the specific bank to sovereign debt holdings of Greece, Portugal, Ireland, Spain and Italy.

Figure 1: Euribor-Eonia swap spread: unsecured overnight lending becomes more expensive



Source: Bruegel based on data from Datastream.

Euro-area banking systems are typically highly exposed to the sovereign of the country in which they are located. At the same time, the exposure to the periphery countries other than the home country is typically low. Table 1 shows the exposure of the German, French as well as the five periphery banking systems to the sovereigns of the five periphery countries. The data are taken from the EBA and measure the sovereign debt holdings of banks, including their branches and subsidiaries. The most important exception to the generally low cross-country exposure is the exposure of the French banking system to the Italian sovereign. As Table 1 shows, French banks hold €53 billion of Italian debt compared to €118 billion of French debt.

In a first attempt, I plot the average weekly change in the stock market index against the total exposure of sovereign holdings of all five periphery countries in percent of the banks' Tier 1 capital. Figure 2 shows that no strong correlation can be found. The graph also shows that many banks hold sovereign debt of the five periphery countries in excess of 100 percent of their Tier 1 capital.

As this figure does not account for differences in the holding of the five different countries, I plot the exposure to Greece and to Italy separately. The Figure 3 suggests that exposure to Greece is a significant determinant of bank market

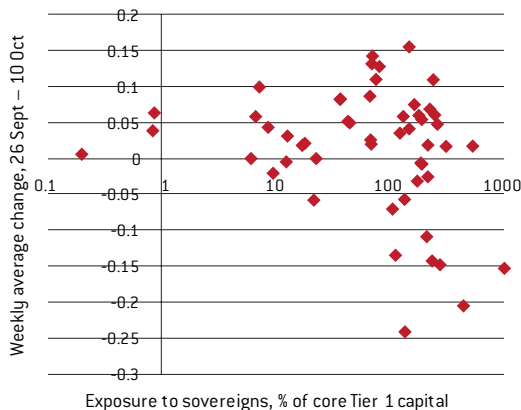
1. Roger Altman in the *Financial Times* (October 11, 2011) has called for a strong and ambitious bank recapitalisation strategy. Others, including Daniel Gros in his response to Altman, have argued that putting capital into banks would be wasted money as the current banking stress essentially results from stress related to sovereign bonds.

Table 1: Exposure of banks to sovereigns as tested in stress test

	GR	IE	PT	ES	IT
FR	10.1	2.1	4.8	14.6	53
DE	7.9	1	3.6	18.6	36.8
GR	54.4	0	0	0	0.1
IE	0	12.5	0.2	0.3	0.8
PT	1.4	0.5	19.6	0.3	1
ES	0.4	0.1	5.5	231.7	7.4
IT	1.4	0.2	0.4	3.2	164

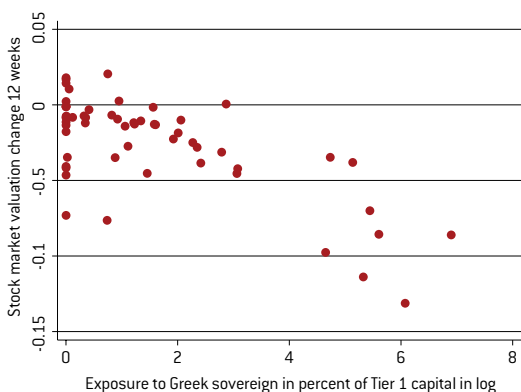
Source: Bruegel based on data from EBA, July 2011.

Figure 2: Change in stock market index to total exposure to five periphery countries in % of Tier 1 capital



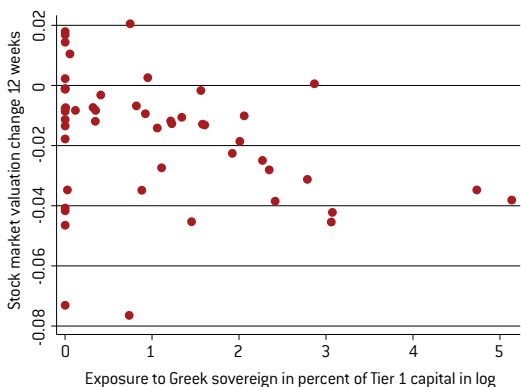
Source: Bruegel based on data from EBA, July 2011, and Datastream.

Figure 3: Change in stock market index to exposure to Greek sovereign debt in percent of Tier 1 capital



Source: Bruegel based on data from EBA, July 2011, and Datastream.

Figure 4: Change in stock market index to exposure to Greek sovereign debt in percent of Tier 1 capital, Greek banks excluded



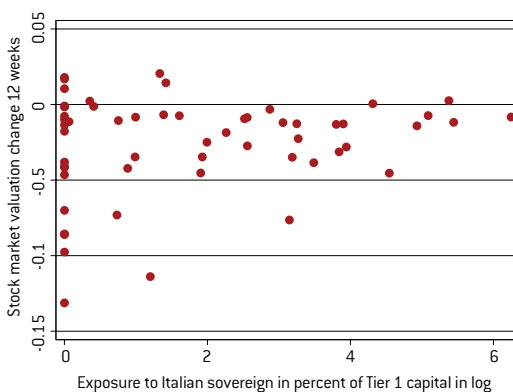
Source: Bruegel based on data from EBA, July 2011, and Datastream.

capitalisation. However, the negative correlation is driven by a small number of banks that hold very large amounts of Greek debt. These are the Greek banks themselves, and indeed the correlation is significantly weakened when one excludes the Greek banks from the sample (Figure 4).

In turn, exposure to Italian banks does not appear to be a significant determinant of bank stocks valuation and this holds no matter whether one was to include or to exclude Italian banks (Figure 5 and Figure 6).

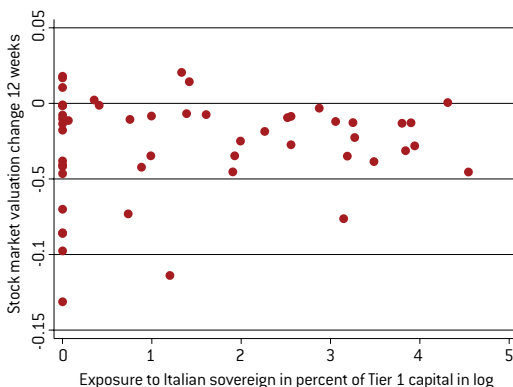
These partial correlations suggest that stock market valuation of banks has basically not been affected by their exposure to Italian sovereign debt, while the exposure to Greek sovereign bonds

Figure 5: Change in stock market index to exposure to Italian sovereign debt in percent of Tier 1 capital



Source: Bruegel based on data from EBA, July 2011, and Datastream.

Figure 6: Change in stock market index to exposure to Italian sovereign debt in percent of Tier 1 capital, Italian banks excluded



Source: Bruegel based on data from EBA, July 2011, and Datastream.

has played a role, even though this role is mostly an issue for the Greek banks themselves. To shed further light on the issue and check the robustness of this result, I perform a regression analysis. This allows simultaneous testing of the exposure to all five periphery countries, at the same time controlling for the Tier 1 capital ratio and the size of the bank as well as the location of the bank.

The results of the regression analysis confirm (Table 2) and refine the findings. First, I find a significant effect of the exposure to Greek sovereign debt (Column A). The effect is also economically sizeable. Having an exposure to Greece amounting to full tier 1 capital can explain up to half of the loss in market value. This effect, however, is to some extent driven by the performance of Greek banks. Including country dummies that control for the average stock market performance of the banks located in the respective country removes the significance of the Greek exposure. But even core euro-area banks have somewhat suffered, in particular when they were heavily exposed to Greece. This result appears to be completely in line with expectations. A bank holding 100 percent worth of tier 1 capital of Greek bonds should experience a significant loss in its market value after

the announcement of a significant haircut on the Greek debt.

Second, I find only very limited evidence that exposure to Spain and Ireland is a determinant of stock market valuation of banks. When I control for the average performance of stocks per country with country dummies, I however find a small effect (Column B). This effect appears to be driven by the neighbouring countries, particularly Portugal and Italy, and disappears when one excludes the periphery banks themselves.

Third, when I exclude banks from the five periphery countries altogether, I basically no longer find any significant effect (Column C). This suggests that banks in non-periphery EU countries are not terribly affected by their exposure to the five periphery sovereigns. This message again needs to be made more precise. The absence of effect only holds when one controls for the location of the bank. In other words, bank exposure to sovereigns matters when one does not control for the location of the bank (compare also to column D). In particular, French banks have suffered from their exposure to Italy as the negative effect on Italian exposure disappears when one controls for the average French performance with a French

Table 2: Regression results

	(A)	(B)	(C)	(D)	(E)
Tier 1 capital ratio	-0.00351 0.97	-0.199 1.22	-0.29 1.44	-0.00417** 2.12	-0.00393* 2.03
Log(risk weighted assets)	3.98e-006 0	-0.00452 1.16	-0.00502 1.33	-0.000313 0.15	0.000475 -0.23
GREECE	-0.000128*** 4.95	-1.2e-005 0.43	-0.000375 0.8	-0.000169* 1.87	-0.000166* 1.87
IRELAND	-0.00023 1.58	-0.00120** 2.69	-0.00117 0.6	2.75e-005 -0.02	1.67e-005 -0.01
PORTUGAL	-5.83e-005 0.56	-6.94e-005 0.37	-0.000632 0.34	0.000822 -0.52	6.59e-005 -0.04
SPAIN	3.99e-005 -0.69	-0.000159** 2.13	0.000721 -1.32	0.000368 -0.66	0.000663 -1
ITALY	2.95e-005 -0.66	-7.42e-007 0.01	8.15e-006 -0.02	-0.000397* 1.95	-0.000309 1.49
Cons	-0.0186 1.26	1.576 -1.18	2.311 -1.42	-0.012 1.26	-0.0149 1.56
Country dummies	No	Yes	Yes	No	FR and DE only
N	57	57	32	32	32

Note: t statistics in parentheses. Asterisks indicate statistical significance at the ***1 percent, **5 percent or *10 percent level

country dummy. The other banks in the EU do not appear to have suffered from their exposure to Italian banks.

These regressions are based on gross exposure to sovereign debt. Many banks, however, have already hedged their exposure by insuring their sovereign debt holdings. I therefore re-estimated the same regressions with the net banking book sovereign exposure. The regression results turn out to be even weaker, with virtually no significant effect of this net exposure on banks' stock market price. I am therefore confident that the main message of the absence of any strong effect from sovereign bond holdings on banks' stock market valuation – with the exception of Greece – holds. A number of caveats are, however, in order. The current analysis does not take account of the network of exposure of banks to other banks that in turn depends on sovereign debt. We also do not have a measure of the available liquidity in banks, which arguably may influence stock market valuation in times of market stress. Finally, the exposure to sovereign debt measures is the exposure at the end of 2010, the cut-off date for the EBA stress tests. Banks in the meantime may however already have changed their exposure but it is also true that market participants do not have more widely disclosed information of banks' exposure to sovereign debt than the ones published in July by the EBA.

RESULTS AND CONCLUSIONS

In this paper, I have explored to what extent the holding of sovereign bonds of Italy, Spain, Portugal, Ireland and Greece can explain the recent decline in stock market valuation of 60 EU banks. More detailed analysis is needed but three results stand out. First, exposure to Greek sovereign debt has been a significant determinant of stock market valuation for banks, in particular those located in Greece. Second, exposure to Spanish

and Irish sovereign debt matters to some banks located in the euro-area periphery countries but core euro-area banks' stock prices do not appear to have been affected by their holdings of Spanish and Irish debt. Third, there is only very weak evidence that exposure of core euro-area banks to Italian debt has been a decisive variable for their stock market valuation.

The results entail important conclusions for the current bank recapitalisation debate. First, the recent massive decline in market capitalisation of banks does not appear to be driven primarily by the banks' holdings of sovereign bonds. It would therefore be wrong to conceive the bank recapitalisation as a way to prepare banks for losses on their sovereign debt only. On the contrary, investors appear to accept the basic story of July 21 that only Greek bonds will face a haircut while all other bonds will be serviced. It is of great importance to avoid a situation where investors believe that euro-area leaders are preparing for losses on other euro-area sovereigns. Second, there is nevertheless a significant loss in market trust in banks in the euro area. Sizeable bank recapitalisation could be one way of restoring trust in the euro-area banks. However, it also appears plausible that this will not be enough. A number of factors could explain the recent mistrust of euro-area banks. Markets might now perceive the general business model as no longer viable given a re-assessment of the risks. Also, the regulatory framework has so far rested on the assumption that sovereign debt is risk free. A re-assessment of this may lead to a complete overhaul of the balance-sheet composition of banks. Finally, there now appears to be a general crisis of trust on the part of some international investors over the viability of the euro area as a whole. Euro-area leaders should thus map out a credible strategy for the institutional changes needed to render the euro-area set-up viable. This will be the best way of solving the crisis of the euro area and its banks.

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