

Government Debt in Domestic Hands During a Crisis

When banks load up on their government's bonds, lending to firms and households can get crowded out. But when the sovereign debt market is in turmoil, such concentrations may play a surprising role.

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BY BURCU EYIGUNGOR

After adopting the euro in 2002, Greece, Ireland, Spain, and Portugal found that banks and investors in other euro area countries were more eager to buy their government bonds. This rise in foreign demand for the sovereign debt of these smaller, less economically robust countries on the periphery of Europe's common currency zone came as no surprise and was in fact intended. A major reason for adopting a single currency was to promote linkages among the national economies and banking systems of the member countries, thereby boosting trade and demand overall.¹ Indeed, the increased desire to invest in peripheral countries' bonds was a sign that markets had begun to view their risk at least partly as a function of the financial strength of the entire euro area (Figure 1), dominated by the major economies of Germany and France.

The rise in foreign demand for the bonds of the peripheral countries kept yields down even as inflation in these economies rose. And their governments, firms, and households took advantage of the resulting decline in borrowing costs, in some cases steeply increasing their national debt as a share of their national gross domestic product and raising their underlying risk of defaulting on their bonds.

The global financial crisis and recession that hit Europe in 2008 led to doubts as to whether heavily indebted euro area countries would be able to repay their bondholders. As doubts about the solvency of these countries increased, yields on their sovereign bonds went up, and the share held by foreign investors sharply reversed. Mirroring the sudden drop in the share held by foreign entities was a surge in the share held by domestic banks and investors.

Why did this reversal happen and why did it matter? Is it something to be discouraged through regulation? The drawback of relying more heavily on domestic investors for government funding is that when banks and other domestic savers increase their investment in their own government's bonds, they have less money to lend to and invest in private domestic enterprises and households. This reduced access to funding across the

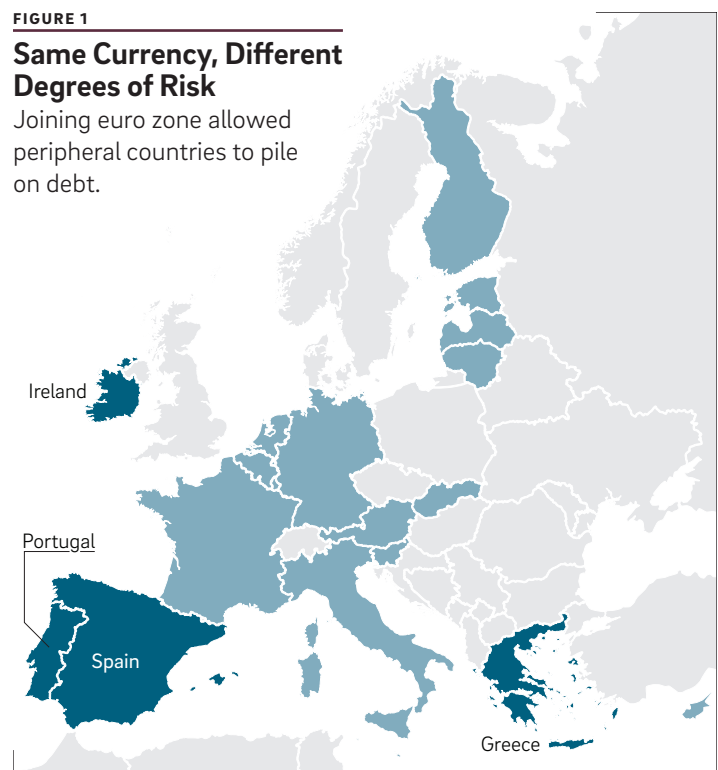
economy can curtail consumer spending and business investment in the country, making a recession even more severe. This channel suggests that the concentration of sovereign debt in the hands of domestic banks and savers is undesirable and may warrant greater capital requirements on sovereign holdings. However, I will show that there may be reason to believe that such concentrations during crises play a unique role in helping countries avoid sovereign default and its ruinous consequences.

To convey how this process of capital flight induces a reversal in sovereign bond ownership, I start with an overview of its connection with default risk.

FIGURE 1

Same Currency, Different Degrees of Risk

Joining euro zone allowed peripheral countries to pile on debt.



The Big Shift in Sovereign Bondholders

The extent of the reversal in bond ownership in each country was closely connected to the severity of the increase in its sovereign default risk. The bond market's view of each country's risk is plainly visible in its sovereign yield spread, calculated for a European country as the difference between the interest rate it pays on its bonds and the rate on German bonds, which investors consider essentially free of risk, by virtue of the strength of the German economy. The wider the difference, or spread, in a country's yield, the stronger the perception among investors that the government is at risk of defaulting on payments to its bondholders. From the vantage point of investors, the spread represents the return they require to compensate them for the risk they are taking, sometimes called a risk premium. To economists and policymakers, spreads signal whether default risk is easing, stable, or escalating to the point that the issuing country may soon be unable to pay its creditors. That would lock it out of the sovereign debt market and dry up a major source of government funds—even possibly trigger financial contagion as banks and other holders of the country's bonds struggle to absorb the losses on their investment.

Tracing the spreads on the peripheral countries' bonds illustrates how their default risk evolved (Figure 2). Spreads spiked in the depths of the global financial crisis following Lehman Brothers' default in September 2008, came down shortly after that, but rose again in October 2009 when Greece's fiscal condition was revealed to be much worse than officially reported. Soon afterward, anxiety about the sustainability of Greek

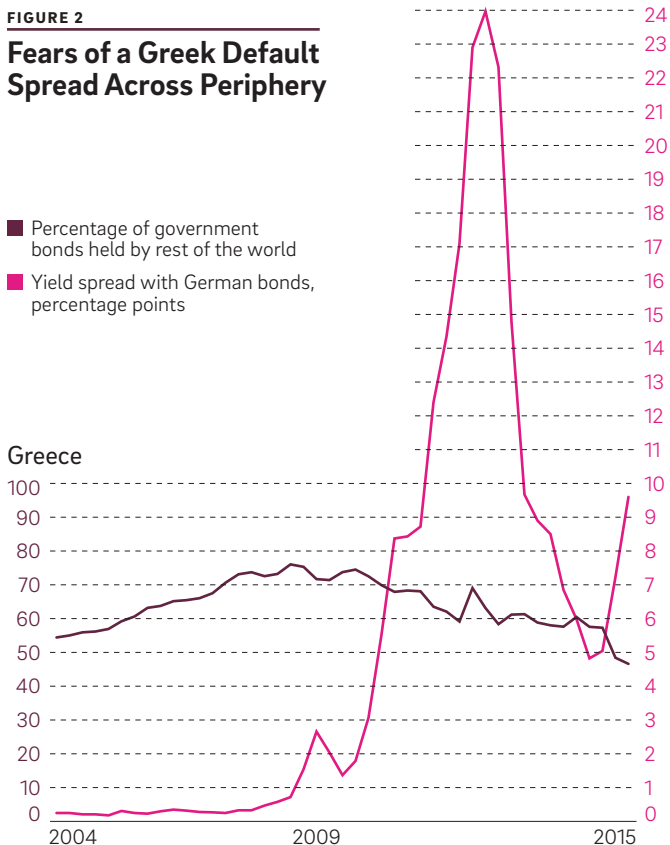
government debt spilled over to other countries in the euro area periphery, and spreads on all of them went up.

Following the introduction of the euro, the foreign-owned share of each country's government securities went up until 2007, when early rumblings of the financial crisis were being felt in the form of rising defaults on securities backed by subprime mortgages. Governments that markets considered at high risk of defaulting on their bonds during the crisis—Greece, Ireland, Portugal, and Spain—experienced sharp declines in the share of their bonds held by foreigners. And despite the narrowing in spreads over the past few years, the foreign-held share still has not fully recovered. From peak to trough, the share in the hands of foreigners fell 35 percentage points for Portugal, 40 percentage points for Ireland, and 20 percentage points for Spain. The share of German, U.S., and Japanese bonds held by foreigners continued to increase throughout the period (Figure 3).²

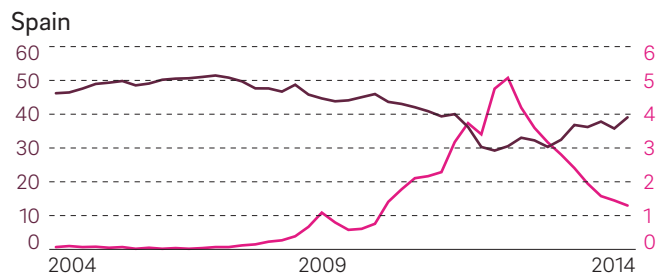
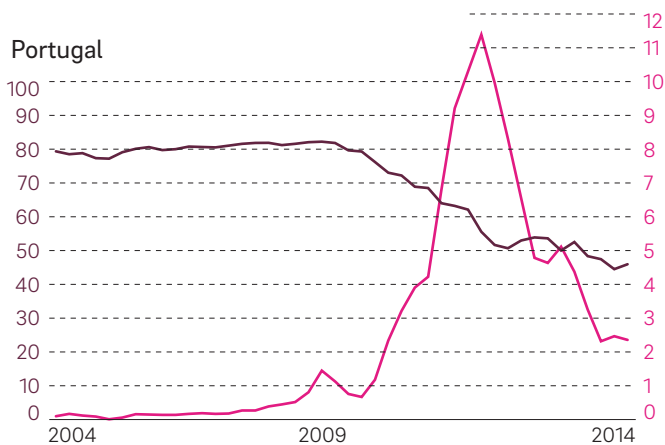
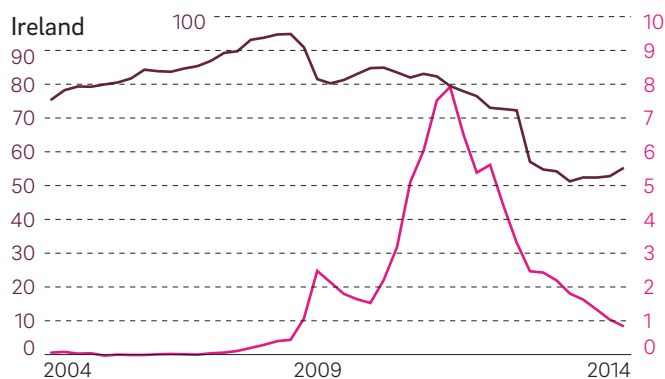
Why would the spike in default risk cause sovereign bond ownership to reverse? To explore that connection, we can start by considering the roots of the crisis and the European Central Bank's response.

FIGURE 2

Fears of a Greek Default Spread Across Periphery



Sources: Haver Analytics, DG II; Eurostat; Merler and Pisani-Ferry (2012).



Evolution of the Crisis

The main reason behind the crisis in the euro area periphery can be traced back to the decline in real interest rates in these countries after the introduction of the euro. After adopting the single currency, euro area countries continued to have wildly different inflation rates (Figure 4). After January 2001, when Greece was also admitted to the union, the inflation rate in the peripheral countries was sometimes more than 3 percentage points higher than what prevailed in Germany. From 2001 to 2007, the average inflation rate was around 1.5 percentage points higher in the peripheral countries relative to Germany.

In general, when the inflation rate is high, one would expect monetary policy to be tightened. That is, a country's central bank will usually raise nominal interest rates in an effort to raise real interest rates. Higher real interest rates make it more expensive to borrow money, prompting people and businesses to save more and spend less, which in turn dampens inflation by cooling

See *Real Versus Nominal Interest Rates.*

demand for goods and services. But because they use a common currency, the countries belonging to the euro zone are subject to a common monetary policy, set by the European Central Bank (ECB). So increasing the policy interest rate for only the peripheral countries was not possible. And because their inflation rates were higher, their real interest rates were lower than real rates in Germany and France.

The lower real interest rates in these countries made borrowing cheaper, leading to an increase in domestic spending and wider current account deficits. In Ireland and Spain, the private sector indulged in high levels of debt. In Portugal and Greece, it was the public sector that loaded up on debt.

Greece and Portugal

Coming into the Lehman Brothers default in September 2008, Greece already had substantial imbalances: a high ratio of sovereign debt to gross domestic product and a wide trade deficit. As the financial crisis unfolded, the Greek government's budget deficit widened to 16 percent of the country's GDP, and its sovereign debt

Real Versus Nominal Interest Rates

The real interest rate is equal to the nominal interest rate minus the inflation rate. The nominal interest rate represents how many extra euros one gets next period after saving some euros this period. But to know the real return, we need to take into account that the extra euro we get tomorrow might not buy anything extra if the inflation rate is high.

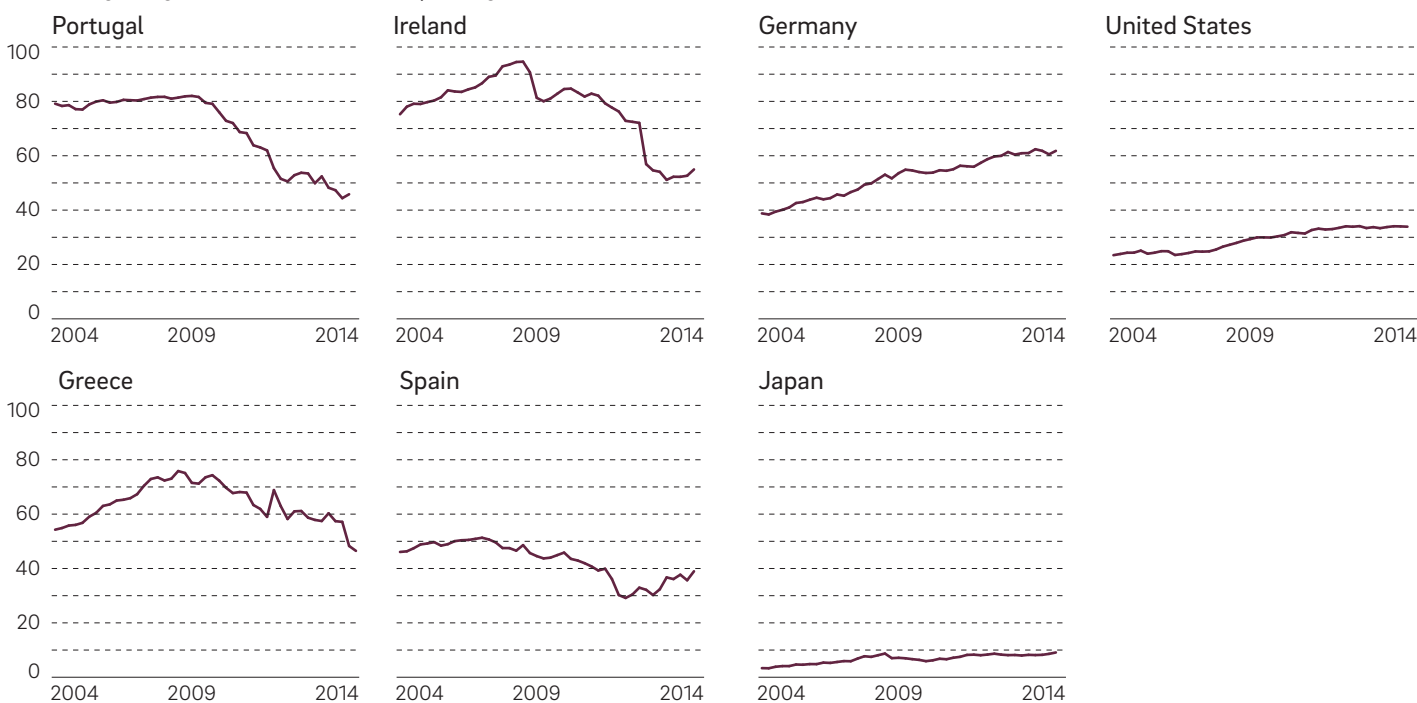
For example, if the nominal interest rate is 10 percent and the inflation rate is 10 percent, too, the real interest rate is 0 percent. Although we get 10 percent more euros next period for each euro we had saved, prices are also 10 percent higher next period, so the saved euros buy the same amount of goods next period.

Economic theory would suggest that individuals should look at real interest rates to decide how much to save or borrow. In general, if someone can get many more units of goods tomorrow by forgoing one unit of goods today, she will be persuaded to save more.

FIGURE 3

Foreign-Owned Share Kept Rising in Larger Economies

Percentage of government debt held by foreign investors, 2004–2014.



Source: Haver Analytics, DG II; Eurostat; Merler and Pisani-Ferry (2012); Arslanalp and Tsuda (2012).

climbed to 130 percent of GDP, the highest ratio for any European Union country. Greek banks, which held a big portion of Greece's sovereign bonds, were experiencing large withdrawals, as a Greek government default, which looked more likely by the day, would wipe out their equity and cause them to default as well.

By April 2010, Greek government bonds were downgraded to junk status and their spread widened to 5 percentage points, which was deemed unsustainable, closing the private lending market to Greece. In May 2010, the so-called troika of international monetary institutions—the European Commission, ECB, and International Monetary Fund—bailed out Greece. Similar to Greece, but to a lesser extent, Portugal suffered from a bloated government sector and received a bailout in May 2011.

Ireland and Spain

In Ireland and Spain, by contrast, most of the borrowing during the boom years occurred in the private sector. With low real rates, property prices went up, and the construction sector boomed. Higher property prices also increased government tax revenue, and their government budgets were, in fact, in surplus until 2007.

For both countries, the crisis was

triggered by a decline in property values. Similar to what happened in the U.S., house price declines led to a sharp increase in default rates for mortgage borrowers. When borrowers default, lenders take ownership of the collateral backing the loans, which in the case of a mortgage is the house itself. But now these properties had much less value than the amount of the loans themselves. This fall in the value of bank assets in many cases led to a depletion of their equity. Both countries' governments chose to rescue their banking sectors, sharply increasing their debt-to-GDP ratios. Even without the burden of the banking sector rescue, their government budgets were in bad shape. The crash in the construction sector and resulting unemployment worsened fiscal deficits by raising outlays for unemployment benefits and other social support while lowering revenue from income taxes.

In another respect, the evolution of the boom and bust in Ireland and Spain was dissimilar to the U.S. experience in that the increase in their government budget deficits and debt levels led to a crisis of confidence in the sovereign bond market, and doubts about their ability to meet obligations increased.³ By the end of 2010, Irish banks were facing large withdrawals, and guarantees by the Irish government,

which itself had fiscal credibility problems, were not helping much. Ireland came to a bailout agreement with the troika in November 2010. Spain's crisis was more drawn out, and in June 2012, its financial sector also received a support package from the European Stability Mechanism, as the spread on Spanish government bonds had reached 5 percentage points.

So, regardless of whether their crisis started in the government or private sector, both pairs of countries were in trouble in the end. The problems of the governments of Greece and Portugal had pushed their banking systems into crisis territory, given the large amounts of government debt their banks were holding. The banking crises in Ireland and Spain had turned into sovereign debt crises as their governments chose to guarantee their banks' obligations. Especially regarding Ireland, whose banks' obligations were mostly to foreigners, it was widely debated whether the government had done the right thing.

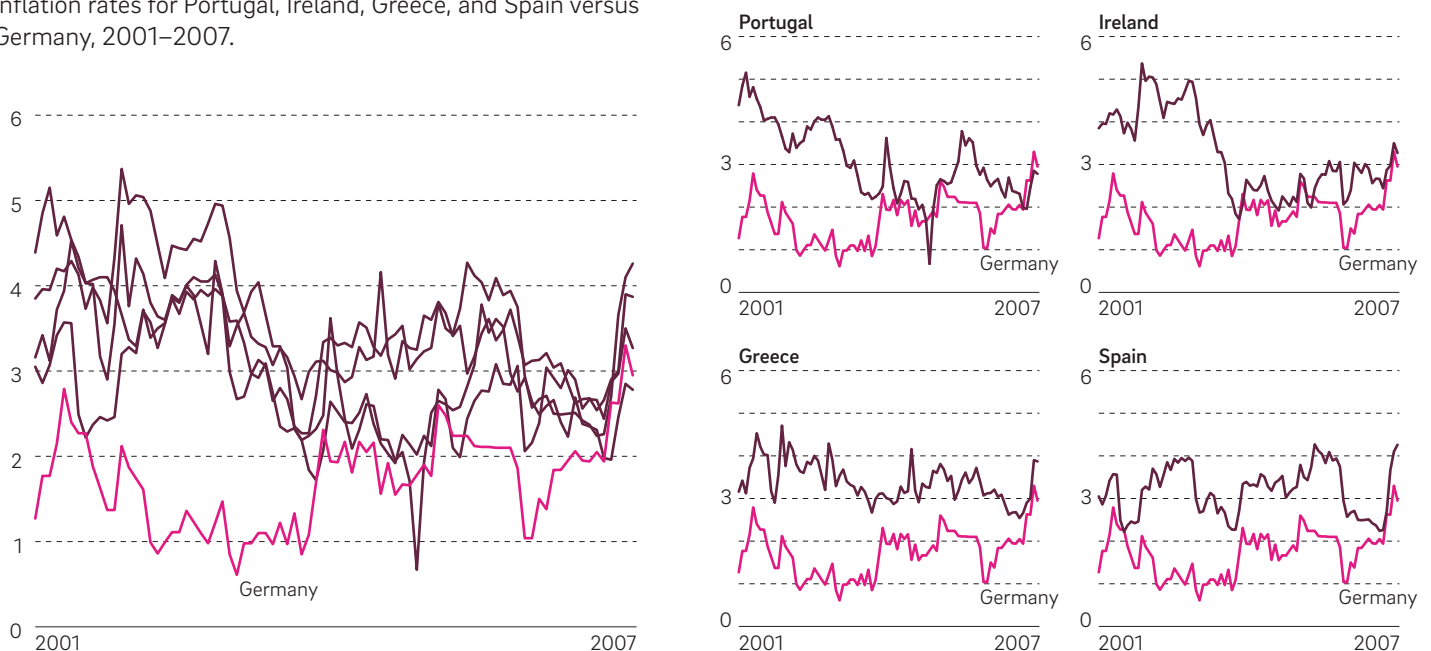
How Did the ECB Respond?

As the crisis worsened, the ECB had to continually ease its conditions for providing banks with liquidity to help those in the peripheral countries deal with the large withdrawals they were facing.

FIGURE 4

After Adopting Euro, Inflation Stayed Higher in Peripheral Countries

Inflation rates for Portugal, Ireland, Greece, and Spain versus Germany, 2001–2007.



Refinancing Facility

During the crisis, the ECB cut its main bank refinancing rate by more than 3 percentage points. This is the rate it charges euro area banks to use its refinancing facility to meet their short-term liquidity needs. In return, banks must post collateral. However, during the depths of the crisis, many banks had trouble providing adequate amounts of acceptable collateral. Credit ratings on their assets had been downgraded as their domestic economies melted down, making their assets ineligible under the central bank's criteria. So the ECB repeatedly eased its collateral requirements by lowering the minimum acceptable credit rating on posted assets (Figure 5). For example, when Greek, Irish, and Portuguese government bond ratings fell below investment grade, the ECB relaxed the investment grade requirement for these countries' bonds at various times, mostly after they signed their respective bailout agreements.

As the crisis deepened and peripheral country banks faced large withdrawals, the ECB further loosened its refinancing operations. One step was to increase the maturity of its loans to banks, first to six months and then to 12. In 2011, it launched two very long-term refinancing operations, extending loan maturities to three years.

Emergency Liquidity Assistance

The final recourse for liquidity for banks that lacked adequate collateral was their own national central banks, which themselves borrowed the money from the ECB. Under its emergency liquidity assistance (ELA) facility, the national central banks could, at their own risk, provide liquidity to their domestic banks in return for collateral that the ECB could not accept. This work-around meant that if the bank could not pay back the loan and the value of the collateral did not cover the amount, the national central bank—and so the government itself—would be liable to the ECB for the loss. This accommodation was a way to continue to provide liquidity but spared the ECB from possible losses. In reality, this arrangement was inadequate. In all countries suffering from the crisis, the government was in as much financial trouble as the banks. (Remember that even where the crises originated in the banking sector, as in Ireland and Spain, bailouts of the banking sector put the government's solvency in doubt as well). In any case, banks tried to avoid the ELA when they could, as its interest rates were higher than the ECB's direct refinancing rates.

How might some of these policies have helped bonds issued by peripheral euro zone governments to become concentrated in the portfolios of banks headquartered in those countries?

Why Domestic Holdings Increased

There are two ways in which banks might have increased their holdings of their government's bonds: through capital injections or direct purchases. In the first channel, governments injected their own securities into domestic banks that were undercapitalized, and the bank in turn posted these securities as collateral with either the ECB or their national central bank in return for euros to meet the heightened demand for withdrawals. In the second—and maybe more puzzling—channel, domestic banks bought their government's bonds at primary auctions or in the secondary market. Why would a domestic bank want to do this?

During the crisis, banks whose solvency was being doubted were facing runs. If they already held their government's bonds, they could usually provide them as collateral to get liquidity from the ECB. Banks could also bundle their private sector loans into asset-backed securities or issue covered bonds that were guaranteed by their private sector loans, in order to pledge them as collateral, as individual loans to the private sector did not qualify as collateral for ECB funding. However, the haircuts—or reductions off their face value for collateral purposes—imposed on these securities were higher relative to sovereign bonds. During the crisis, banks naturally preferred to hold assets that they could pledge to the ECB as collateral with minimal haircuts.

In addition, under Basel II, which was the regulatory framework in place during the crisis, banks had to hold more capital for the assets on their books that were deemed more risky.⁴ Euro area countries' sovereign debt denominated in their domestic currency was assumed to have zero risk, while the normal risk calculation had to be made for private sector loans. One effect of this assumption that domestic sovereign bonds were risk-free was that, during the crisis, when banks were having problems meeting their capital requirements, sovereign debt became more appealing relative to domestic private sector loans, which would have required banks to hold more capital against them. While the switch away from private sector loans might be understandable, it is not clear why banks would want to increase their holding of domestic sovereign bonds per se.

When a bank received some cash, it could use it to meet its liquidity demands in one of three ways: One, it could pay the cash directly to claimants who are calling their loans or withdrawing their deposits. Two, it could buy sovereign bonds from a country with a higher credit rating, say, Germany, to use as collateral with the ECB in return for euros. Or three, it could buy its government's bonds to use as collateral to get euros from the ECB to pay claimants.

The question that remains is: When the bank has a choice, why would it choose the third option?

Limited Liability of Banks in Crisis Countries

A reasonable explanation that has been offered is that if a bank's government does default, the bank will become severely undercapitalized, and its fate would be up to the relevant authorities.⁵ Given that there is not much the bank can do to affect the outcome when its government defaults, the best it can hope for is to restore public confidence in the bank as long as its government does not default. Confidence is best achieved by increasing its profits to help it recapitalize.

Among the three alternatives, the third option gives the bank the highest profits, as long as the government does not default. The bank purchases its government's bonds at a discount, as their low prices and high yields reflect a substantial probability of default. That is, if the government does not default, the bond pays a high interest rate. So, a euro area bank can post the bond as collateral to get a low interest rate loan from the ECB, and if its government does not default, it gets paid the high return on the bond, which is more than enough to pay back the

ECB. It earns the difference between the yield on the sovereign bond and the ECB refinancing rate as its profit. These profits are valuable in recapitalizing the bank so it can cover the losses it has incurred on loans that have gone bad and in regaining public confidence.

Why would, say, a German bank not be as attracted to the high returns on Irish bonds? If the Irish government were to default, the shareholders of a German bank holding Irish debt would not shut down and its shareholders would not be wiped out, so the German bank would have to register this investment as a substantial loss on its books. But an undercapitalized Irish bank will go bankrupt if the Irish government defaults regardless of the relatively small change in the quantity of Irish bonds on its books. And once the bank is bankrupt, shareholder value will be zero regardless of the losses incurred.

Pressure by Authorities

Another possibility is that the governments of these countries push domestic banks to hold more of their bonds by either overt

pressure or indirectly through regulations or other channels. One channel through which such financial repression might be happening in euro area countries with wide spreads is bank governance. As evidence for this channel, there was a positive relationship between government representation on the boards of banks in these countries and an increase in their government bond holdings during 2011-2013.⁶

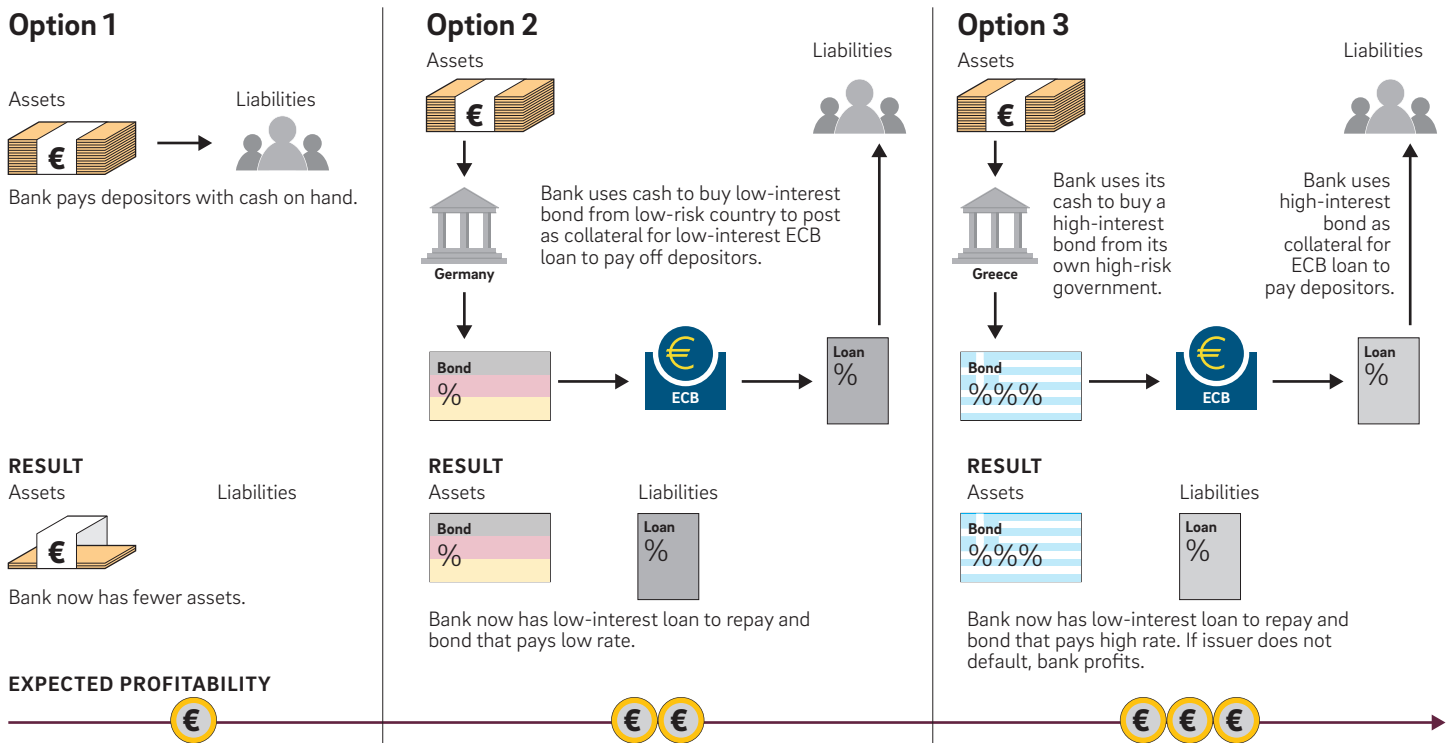
Keeping Their Government Afloat

Another motivation for domestic banks to increase their holdings might be to keep their government afloat. When investor confidence in the government's ability to pay its bondholders ebbs, governments may need help rolling over their maturing debt. Entities such as the troika might take on this task, but such negotiations usually take a long time. Domestic banks already hold large amounts of their governments' debt, and the domestic firms and households to whom they have lent money would be harmed by their governments' default. Collectively,

FIGURE 5

Why Would a Bank Buy Its Troubled Government's Bonds?

One reason a bank facing a run might choose Option 3 is to try to shore up confidence by boosting profits.



domestic banks would have a lot to lose from a sovereign default and their support might be large enough to keep their government solvent for at least a short time, especially if they have access to ECB lending facilities. Without domestic entities stepping in to prop up demand during a selloff by foreigners, the spreads on government bonds would increase further, as dwindling demand would drive down their price and compel the government to pay higher interest rates on new issues. That would make rolling over its existing debt more costly and make default more likely. In this way, domestic banks act as lenders of last resort to their own government, buying its bonds with the money they have borrowed from the ECB.

Is This Concentration Good or Bad?


Economists who view the concentration of sovereign bonds in domestic banks as a negative emphasize that it crowds out private domestic investment. Indeed, a bank for which capital is scarce and that holds more of its own government's debt will have a harder time lending to domestic entities. To be clear, this mechanism might always be at work for any government's debt, but in times of crisis, the sudden shift is toward domestic government debt. In addition, many households and small businesses rely on the domestic banking sector for loans. For example, as sovereign default risk rose in the peripheral euro area countries, net loans to nonfinancial corporations as a share of their GDP declined rapidly.⁷

It is hard to know whether such declines in private sector loans are demand driven or supply driven. That is, do firms themselves want to borrow less because of a lack of investment opportunities during a recession, or are banks less willing to lend to private firms because they would rather hold their government's bonds? The cause matters: When business lending drops because banks are reluctant to lend, GDP drops more than it would have had the banks not been burdened by government debt.

Yet, in times of capital flight, the only entities willing to lend to the government might be domestic banks. If one focuses on the fact that without them the government might have to default, such concentration seems more benevolent. Even if loading up on government bonds makes domestic banks less willing to make business loans, domestic firms might not mind so much if the alternative is government default. In turn, a greater concentration of its debt in domestic hands might make a government—at least a democratic government—less willing to default if it would disproportionately hurt the country's own banks, households, and firms versus foreign ones. And a government that is less willing to default could see its yield spread ease, possibly enough that it could resume funding its operations through the sovereign debt market.⁸

Conclusion

The concentration of sovereign debt in domestic entities during a crisis leaves banks with less money to lend to domestic firms and households, which makes an ongoing recession worse. One remedy could be to diminish banks' incentives to load up on their countries' debt: Under current regulations, banks can treat their holdings of euro area sovereign bonds as cash for regulatory purposes, and no capital needs to be held against them. The rules could arguably be changed such that as spreads on sovereign bonds increase, banks would need to hold more capital against them, just as they have to do for loans on their books to domestic firms and households.

But one needs to proceed with caution when trying to deal with the symptoms and not the disease. When banks are loading up on their own government's debt, that is usually also the time when foreigners do not want to buy them. During these times, government bond purchases by domestic entities might be crucial to prevent the government from defaulting on its debt until a political agreement is reached. 

Notes

1 One risk that the single currency dispensed with was the exchange rate risk between countries' currencies, thus allowing further integration.

2 Unfortunately, no data are available that would tell us what happened during debt crises in various developing countries outside the euro area.

3 A leading explanation for why the U.S. experience differed is that the U.S. has its own national monetary policy and would not have let interest rates rise sharply. The presumption was that, if foreigners began selling off their U.S. Treasury bonds, the U.S. central bank—the Federal Reserve—would step in and print money to absorb the excess supply of bonds, which would have prevented a spike in interest rates. This implicit guarantee prevented a selloff by foreigners.

4 The Bank for International Settlements provides an overview of the regulations in place under Basel II at <http://www.bis.org/publ/bcbsca.htm>.

5 See the work by Igor Livshits and Koen Schoors.

6 See the findings by Bo Becker and Victoria Ivashina.

7 Boz, D'Erasmus, and Durdu note this correlation.

8 See the papers by Tamon Asonuma, Said Bakhache, and Heiko Hesse and by Varadarajan Chari, Alessandro Dovis, and Patrick Kehoe.

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