

# Finance at Center Stage: Some Lessons of the Euro Crisis

Maurice Obstfeld\*

*University of California, Berkeley, NBER, and CEPR*

10 May 2013

## Abstract

Because of recent economic crises, financial fragility has regained prominence in both the theory and practice of macroeconomic policy. Consistent with macroeconomic paradigms prevalent at the time, the original architecture of the euro zone assumed that safeguards against inflation and excessive government deficits would suffice to guarantee macroeconomic stability. Recent events, in both Europe and the industrial world at large, challenge this assumption. After reviewing the roots of the euro crisis in financial-market developments, this essay draws some conclusions for the reform of euro area institutions. The euro area is moving quickly to correct one flaw in the Maastricht treaty, the vesting of all financial supervisory functions with national authorities. However, the sheer size of bank balance sheets suggest that the euro area must also confront a financial/fiscal trilemma: countries in the euro zone can no longer enjoy all three of financial integration with other member states, financial stability, and fiscal independence, because the costs of banking rescues may now go beyond national fiscal capacities. Thus, plans to reform the euro zone architecture must combine centralized supervision with some centralized fiscal backstop to finance deposit insurance and bank resolution. This perspective also suggests a new argument for fiscal constraints in a monetary union.

JEL codes: E44, F36, G15, G21

\*I am grateful for comments from and discussions with Narcissa Balta, Nicolas Carnot, Francesca D'Auria, Ines Drumond, Pierre-Olivier Gourinchas, Omberline Gras, Alexandr Hobza, Robert Kuenzel, Philip Lane, Alienor Margerit, Richard Portes, Eric Ruscher, Dirk Schoenmaker, Jay Shambaugh, Michael Thiel, Cornelis Van Duin, Xavier Vives, and seminar participants at Princeton, Yale, and George Washington universities. André Sapir offered insightful discussant remarks on a first draft at the 2012 DG ECFIN annual research conference. I thank Philip Lane for helping me find the Irish house price data reported in the paper. Sandile Hlatshwayo provided dedicated research assistance. This paper was prepared for the European Commission (which holds its copyright) under contract number ECFIN/135/2012/627526. The Center for Equitable Growth and the Coleman Fung Risk Management Research Center at UC Berkeley supplied additional financial support. The views expressed herein are mine and do not necessarily reflect the official position of the European Commission. All errors are my sole responsibility.

## Nontechnical Summary

Finance and financial markets were at the heart of the global economic crisis that began in August 2007. Despite having subsided elsewhere by 2010, the global crisis left an ongoing legacy of turbulence in the euro zone. I argue that the euro zone's continuing turmoil, like that of the world economy in 2007-09, is rooted in financial vulnerabilities that EMU's architects did not envision when they set up its defenses. If the euro is to survive, EMU's institutions must evolve to overcome these vulnerabilities. The necessary changes will have profound effects on the future shape of EMU, effects significant enough to require changes in EU political arrangements alongside more technical financial reforms.

In the postwar period up until the global crisis, financial fragility played a limited role in the theory and practice of industrial-country macroeconomic policy. Recognition of that shortcoming has spurred a profound reassessment of the place of finance in macroeconomics generally, and specifically in our understanding of the macroeconomic dynamics of EMU. The financial dimension was arguably a secondary one in concerns about the initial architecture of EMU. Mirroring mainstream macroeconomic theory, most of the attention focused on monetary policy, fiscal policy, and structural reform in nonfinancial markets (especially labor markets). Commentary on EMU's performance during its first decade generally paid much less attention to financial factors than now seems warranted

Because of rapid growth in financial markets, several distinctive features of EMU have had consequences that were largely unforeseen before the single currency's

launch, or that turned out to be even more damaging than could have been predicted then. As I document below, the 2000s saw remarkable worldwide growth in capital flows and banking, both domestically and across borders, but it was especially strong within Europe, in part due to the increasing (and policy-driven) integration of euro zone financial markets. That development, however, undermined the ability of some member states credibly to backstop their national banking systems through purely fiscal means. I propose a new policy *trilemma* for currency unions like the euro zone: Once financial deepening reaches a certain level within the union, one cannot simultaneously maintain all three of (1) cross-border financial integration, (2) financial stability, and (3) national fiscal independence. This financial/fiscal trilemma lies at the heart of the euro zone crisis that began in 2009, and it provides a useful organizational structure for understanding the unexpected consequences of rapid financial market growth, as well as the reforms needed to preserve financial stability while also preserving a unified euro area financial market.

In this essay, I first document the buildup of financial vulnerabilities in the euro zone after 1999, with an emphasis on the evolution of banking-sector and national balance sheets. The essay then discusses the safeguard systems put in place before the launch of EMU and their inadequacy in the face of rapidly evolving global and euro zone financial markets. I next assess initiatives to remedy the safeguard system that failed after the euro's first ten years, stressing the close interdependence of financial-market, fiscal, and monetary reforms. New ideas, including ideas that the European Commission has already implemented or placed on the agenda for consideration, are considered.

## **I. Introduction**

Finance and financial markets were at the heart of the global economic crisis that began in August 2007. Despite having subsided elsewhere by 2010, the global crisis left an ongoing legacy of turbulence in the euro zone. My argument in this essay is that the euro zone's continuing turmoil, like that of the world economy in 2007-09, is rooted in financial vulnerabilities that EMU's architects did not envision when they set up its defenses. If the euro is to survive, EMU's institutions must evolve to overcome these vulnerabilities. The necessary changes will have profound effects on the future shape of EMU, effects significant enough to require changes in EU political arrangements alongside more technical financial reforms.

In the postwar period up until the global crisis, financial fragility played a limited role in the theory and practice of industrial-country macroeconomic policy. Recognition of that shortcoming has spurred a profound reassessment of the place of finance in macroeconomics generally, and specifically in our understanding of the macroeconomic dynamics of EMU. The financial dimension was arguably a secondary one in concerns about the initial architecture of EMU. Mirroring mainstream macroeconomic theory, most of the attention focused on monetary policy, fiscal policy, and structural reform in nonfinancial markets (especially labor markets). Under that thinking, a single currency and payments system would cement the integration of member countries' financial markets, yielding efficiency gains but not itself raising novel threats. Commentary on EMU's performance during its first decade generally paid much less attention to

financial factors than now seems warranted after the euro's transition from its relatively placid "latency period" into a stormy adolescence.

The European Commission's detailed survey *EMU@10*, appearing shortly after the onset of global financial-market unrest in August 2007, did discuss financial trends and flagged a number of relevant potential reforms.<sup>1</sup> The report noted (p. 191) that:

In contrast to the accelerating trend in cross-border banking in the euro area, supervisory arrangements remain rather static and predominantly national-based. The result is inefficiency in the framework for supervision and financial-crisis management, implying significant deadweight costs for the financial industry and a potentially inadequate response to contagion risks within an integrated financial system.

*EMU@10* went on to suggest a broadening of the EU's surveillance system for the euro area to include financial variables such as bank credit and asset prices (p. 260). The report also called for further promotion of area financial integration through convergence in regulatory and supervisory approaches, as well as "improved cross-border arrangements for prudential supervision, crisis management and crisis resolution" (p. 269). But the report gave little hint of the far-reaching implications (fiscal and otherwise) of adequately addressing financial-market vulnerabilities, nor of the potential costs of failing to do so.

Because of rapid growth in financial markets, several distinctive features of EMU have had consequences that were largely unforeseen before the single currency's launch, or that turned out to be even more damaging than could have been predicted then. As I document below, the 2000s saw remarkable worldwide growth in capital flows and banking, both domestically and across borders, but it was especially strong

---

<sup>1</sup> European Commission (2008).

within Europe, in part due to the increasing (and policy-driven) integration of euro zone financial markets. That development, however, undermined the ability of some member states credibly to backstop their national banking systems through purely fiscal means. Within the euro zone, national banking systems are if anything more interdependent than they are outside, yet the key functions of bank regulation and resolution and of fiscal policy remained national even in the absence of national discretion over last-resort lending, money creation, and the exchange rate. These features magnified private- and public-sector financial fragility within the euro zone.<sup>2</sup>

I propose a new policy *trilemma* for currency unions like the euro zone: Once financial deepening reaches a certain level within the union, one cannot simultaneously maintain all three of (1) cross-border financial integration, (2) financial stability, and (3) national fiscal independence. For example if countries forgo the options of financial repression and capital controls, they simply cannot credibly backstop their financial systems without the certainty of external fiscal support, either directly (from partner-country treasuries) or indirectly (through monetary financing from the union-wide central bank). Indeed, a country reliant mainly on its own fiscal resources will likely sacrifice financial integration as well as stability, as is true in the euro area today, because markets will then assess financial risks along national lines. Alternatively, withdrawing from the single financial market might allow a country with limited fiscal space to control and insulate its financial sector enough to minimize fragility. This financial/fiscal trilemma lies at the heart of the euro zone crisis that began in 2009, and

---

<sup>2</sup> Sapir (2011) likewise stresses the fiscal consequences of national financial supervision in the euro zone in the absence of national monetary policy. See also Pisani-Ferry and Wolff (2012).

it provides a useful organizational structure for understanding the unexpected consequences of rapid financial market growth, as well as the reforms needed to preserve financial stability while also preserving a unified euro area financial market.<sup>3</sup>

I organize the rest of this essay as follows. Section II documents the buildup of financial vulnerabilities in the euro zone after 1999, with an emphasis on the evolution of banking-sector and national balance sheets. Section III discusses the safeguard systems put in place before the launch of EMU and their inadequacy in the face of rapidly evolving global and euro zone financial markets. Both *ex ante* defenses and *ex post* policy interventions are considered. The section next discusses initiatives to remedy the safeguard system that failed after the euro's first ten years, stressing the close interdependence of financial-market, fiscal, and monetary reforms. New ideas, including ideas that the European Commission has already implemented or placed on the agenda for consideration, are considered. Section IV concludes.<sup>4</sup>

---

<sup>3</sup> Countries with independent currencies can in principle turn to money creation to support their financial systems in times of stress. Nevertheless, such support, which amounts to monetary financing of the public debt, could destabilize the general price level. Thus, such countries face a *quadrilemma*: they must sacrifice at least one of integration with world capital markets, financial stability, fiscal independence, and price-level stability. Having an extra "horn" from which to choose gives countries with their own currencies a tangible advantage in terms of flexibility. (Of course, one is still just choosing one from among more modes of impalement, but some may be relatively less painful in the short run.) Pisani-Ferry (2012) suggests an alternative trilemma based on no monetary financing, lack of centralized fiscal functions, and national banking systems.

<sup>4</sup> This essay concentrates on longer-term design features of EMU rather than on specific measures to hasten an exit from the current crisis. Clearly, however, institutional reforms (or their absence) can have a first-order effect on crisis dynamics through market participants' expectations. For a survey focused on the need to restore growth and competitiveness, see Shambaugh (2012).

## **II. Financial Market Growth and Gathering Hazards**

Even before the start of Stage 3 of EMU, financial markets in the prospective members displayed an increasing coherence driven by both the imminent locking of exchange rates and EU market integration measures. The process accelerated after 1 January, 1999. At the same time, financial deepening continued at a rapid pace among industrial (and also emerging) economies globally, but particularly in the euro zone.

The concurrent progress of financial integration and financial-sector growth worked in four main ways to undermine financial and macroeconomic stability. First, the financial/fiscal trilemma mentioned in the introduction to this essay came into play. Banking system balance sheets, in a high degree drawing on foreign finance, became large enough to challenge the capacities of a number of national governments to deploy credible fiscal guarantees. In turn, this development gave rise to the now well appreciated “doom loop” linking the solvency of banks and that of the sovereign. Second, sovereign yields and other interest rates in different euro zone economies converged to levels that afforded little differentiation between countries with strong public finances and others that were much more vulnerable. Third, banks from the northern euro zone diverted their portfolios toward peripheral assets (including sovereign debt), concentrating rather than diversifying risks. Fourth, lower nominal interest rates and easy credit access helped to boost demand and inflation and to depress real interest rates, with destabilizing effects, in peripheral euro zone economies. Domestic credit expanded rapidly compared to historical levels. While the precise effects differed across the individual economies, some of them had housing



booms (with an attendant rise in nontradable construction investment) and some had high government borrowing, both contributing to large current account deficits and implying large increases in net as well as gross external liabilities. I take up these four problem areas in turn.<sup>5</sup>

1. *The scale of banks' balance sheets.* State support of the banking and financial system in times of crisis has long been a prominent feature of the environment in which markets match saving with investment and facilitate asset trade (Alessandri and Haldane 2011). The expectation of governmental support from either the central bank or fiscal authority enhances stability, but may also promote excessive risk-taking if not restrained by prudential supervision and regulation.

In the euro zone, however, bank assets grew to be very large by the late 2000s. Figure 1 shows the rapid growth of banking assets relative to GDP in several euro zone countries, notably Ireland, Netherlands, Belgium, France, Austria, and Spain. In all cases bank assets were several multiples of GDP by 2009. These figures are based on bank residence and must be interpreted with considerable caution in cases (such as Ireland's) in which a country hosts a large amount of foreign intermediation unlikely to receive sovereign support.<sup>6</sup> Nonetheless, banking systems of this size, if embroiled in a generalized crisis, are likely to strain the state's fiscal rescue powers. The dramatic increase over time in European bank concentration has magnified the systemic

---

<sup>5</sup> My account's emphasis on the primacy of financial factors is consistent with Rey (2012). Rey also stresses the prior damage to many European banks' balance sheets from investments in US asset-backed securities. See, for example, Acharya and Schnabl (2010). Another useful account of the background to the euro crisis is Lane (2012).

<sup>6</sup> For Ireland, a more relevant ratio for 2009 is probably closer to 300 percent of GDP. Because of differences in coverage across countries, the banking series reported by the OECD are not always mutually comparable, so caution is warranted in making inferences from these data.

importance of several individual institutions. In some cases (such as BNP Paribas, ING Bank, and Banco Santander), the consolidated assets of *individual* banks are near or above home-country GDP.<sup>7</sup>

When fiscal resources are limited relative to the potential problems at hand, however, and the option of unlimited money financing is unavailable, the credibility of government support becomes questionable. The credibility deficit, in turn, makes the financial system more fragile, thereby raising the probability of a crisis requiring official intervention. This further weakens the sovereign's market borrowing terms, which in turn further undermines private-sector financial stability, and so on.

When the government then takes on more debt in the process of intervening, this therefore has two distinct negative effects that work to offset any resulting benefits. First, market actors revise downward their assessments of government solvency, creating losses for sovereign debt holders (including banks) and weakening their balance sheets. Second, market actors appreciate that the government has even fewer resources left to carry out additional rescues that might become necessary in the future.<sup>8</sup> The result may be a continuation and even worsening of the initial crisis, in an

---

<sup>7</sup> In emerging markets where the typical state's debt-issuing capacity has been much more limited than in richer industrial countries, many past crises (from Latin America to Asia to Russia) have turned on the connections between banking crisis, sovereign debt distress, and currency instability. Díaz-Alejandro (1985) provides a classic exposition. Until 2008, however, few noticed that rich countries had become quite vulnerable to "emerging market" crises.

<sup>8</sup> Most commentators have emphasized only the first of these effects, but the second can be quite important in practice too, especially when the initial intervention is inadequate. Acharya, Drechsler, and Schnabl (2011) develop a theoretical model that clearly highlights both channels. To see that they are indeed distinct, consider two thought experiments. Even if banks hold no sovereign debt, an extensive bailout would tax sovereign solvency and thereby weaken the credibility of the sovereign's financial-sector guarantees. Conversely, even if the government could credibly foreswear bailouts, a banking system that holds its sovereign debt will be weakened when that debt is downgraded by markets. This

accelerating downward spiral, as described in the preceding paragraph. This “doom loop” has been at work in several countries during the current euro crisis.

What statistical evidence supports these hypotheses? Demirgüç-Kunt and Huizinga (2010) study an international sample of banks over 2007-08 and show that bank stock prices fall and CDS prices rise when the fiscal balance worsens. In light of their attempts to control for common causative factors, they interpret the evidence as showing that fiscal weakness creates expectations of greater losses for bank shareholders and creditors. For the euro zone starting in 2007, Mody and Sandri (2012) provide supportive evidence on the joint dynamics of sovereign spreads and measures of banks’ financial health. They argue that contemporaneous feedback between sovereign spreads and measures of euro-zone bank solvency emerged after the Anglo-Irish Bank nationalization of January 2009. By then, markets had already observed the banking problems of both Iceland and Switzerland, where some individual banks’ balance sheets exceeded all of GDP.<sup>9</sup> Acharya, Drechsler, and Schnabl (2011) uncover similar patterns in the relationship between euro zone bank and sovereign CDS. As De Grauwe (2012), has underlined, one factor making the doom loop especially virulent in the euro area is the unavailability at the member-state level of monetary financing that might allow countries with their own central banks to sidestep insolvency.

The fragility of banks and other institutions that supply liquidity by borrowing short and lending long is a staple in the microeconomic literature. As the crisis showed,

---

second scenario is the focus of recent theoretical papers by Bolton and Jeanne (2011) and Gennaioli, Martin, and Rossi (2012).

<sup>9</sup> A grim joke circulating in the spring of 2009: “What’s the difference between Ireland and Iceland? One letter and six months.” This prediction was in fact off by a year: the Irish troika program was signed in November 2010.

not only retail depositors, but wholesale creditors as well, can run if they see a possibility of loss. Analogously, sovereign debt crises can be self-fulfilling as borrowing rates rise in expectation of default, thereby making default more likely. The potential pressure the market can exert at any point is greater, the shorter the maturity of public debt and the higher the deficit; or, looked at another way, debt maturity and the deficit's size determine the pace of the crisis. Early models include Calvo (1998), Giavazzi and Pagano (1990), and Obstfeld (1994). De Grauwe (2012) applies the reasoning to the euro zone crisis. Because of the financial-fiscal interactions just described, however, the range of conditions in which self-fulfilling and mutually reinforcing banking and debt crises are possible may be quite broad. Furthermore, a banking crisis, by forcing the government to issue more debt on the market, will speed the pass-through of market default expectations to the government's interest bill. In the euro area, the absence of monetary financing for government deficits may raise the chances of self-fulfilling debt crises.

In a financially integrated world economy, an inevitable consequence of rapidly expanding national banking systems was a parallel growth in cross-border banking transactions. The resulting rapid expansion in countries' gross foreign liabilities and assets was heavily bank-driven. Figure 2 illustrates the proliferation of gross foreign assets and liabilities for several countries and for the euro zone as a whole. Such large gross positions, which encompass debt or debt-like liabilities that often amount to a multiple of GDP, create the risk of a sudden foreign liquidity withdrawal leading to a balance-sheet crisis. True, a country may hold large stocks of liquid foreign assets as

well, but the owners of the assets may well differ from those of the liabilities, leaving the latter unable to repay. Government intervention to backstop private liabilities in a crisis effectively pools national liquidity by transferring resources across different citizens. Since current taxation capacity is limited, however, the government is likely to pull some of the resources from future citizens through debt issuance. If intervention needs are large enough and fiscal space limited, the solvency of the sovereign itself may come into question. In the case of cross-border claims, moreover, the home government's options for transferring resources from creditors to debtors is more limited than when the debt contract is between two residents. The two main options are some form of outright default and, for countries that control their own currencies and can use it to denominate their foreign debt, currency depreciation.

Of course, causality also flowed from international financial integration to banking sector size, since access to a large (and growing) outside world vastly expands the scope for balance-sheet expansion.

The growth in banking and financial globalization during the 2000s was a worldwide phenomenon, spurred by relatively accommodative monetary policies and ample global liquidity, asset appreciation that eased collateral constraints on borrowers, progressive financial deregulation, and the generally stable macro environment of the "Great Moderation." Within Europe, EMU provided a further impetus by creating a larger integrated financial market under a single currency and by promoting expectations of faster peripheral income convergence.

2. *Convergence of sovereign yields.* As Stage 3 of EMU approached, sovereign yields converged on Germany's borrowing rate from widely disparate levels. Greece's entry to the euro in 2001 likewise brought its yields very close to German levels. Figure 3 illustrates this convergence for 10-year bond yields, as well as showing the increasingly sharp divergence starting after the Lehman Brothers collapse (September 15, 2008). Only then did markets begin to differentiate clearly among different sovereign debtors. The summary statistics in Table 1 show how little daylight there was between euro zone sovereign yields prior to Lehman.

A common claim is that markets were insufficiently discriminating in the euro's first decade, but became excessively so afterward. One can explain both phenomena parsimoniously by the following simple story. Notwithstanding the no-bailout provisions in the Maastricht Treaty, markets expected some sort of rescue for individual sovereigns in trouble prior to 2009. But then, the scope of euro zone problems became clear: reduced growth prospects for area economies in general and a massive deterioration in the fiscal positions of not one but several member states. Once markets understood the financial and political obstacles to adequate rescue funding and the degree of support by some political leaders for sovereign restructuring, the door opened to bad equilibria, activating the "doom loop" in earnest.

Rigorous testing of this account is challenging, but one rough and ready way to judge the appropriateness of euro zone spreads before 2009 is to compare them to those between Canadian provincial and federal bonds. In a detailed study covering 1981-2000, Booth, Georgopoulos, and Hejazi (2007) estimate that other things equal, a

province's spread rises by 0.54 basis points when its debt-GDP ratio rises by 1 percent and by 2.4 basis points when its deficit rises by 1 percent of GDP. Applying these factors to the debts and deficits of euro zone countries relative to those of Germany, one can get an idea of how Eurozone spreads have compared to those implied by the Canadian "model."

Figure 4 shows these hypothetical spreads based on conventional fiscal measures alone. The underlying deficit and gross debt figures (both for the general government) are revised estimates as of October 2012, and not the estimates current at the time, which were in some cases very different.

Apart from Spain and Ireland, the hypothetical spreads are not too different during the mid-2000s from those that actually prevailed in bond markets. For Ireland and Spain, these notional spreads are negative and somewhat below actual market spreads, a reflection of the apparently strong fiscal positions of those countries if one ignores the risks posed by their financing booms.<sup>10</sup>

Do spreads that are generally line with Canadian experience indicate a sufficient allowance for the risk of sovereign default? Euro zone countries have more extensive taxation power than subnational provinces, suggesting a superior ability to service debt. On the other hand, Canadian provinces generally have much lower debt and deficit levels compared with European countries, and one might expect default risk to be a convex nonlinear function of debts and deficits – to rise ever more sharply as higher

---

<sup>10</sup> Evidently markets did pay some attention to the fiscal risks posed by the banks. For 10-year euro sovereign yields from January 1999 to February 2009, Gerlach, Schulz, and Wolff (2010) find evidence of effects due to banking sector size, as well as fiscal variables. The paper also includes a brief survey of other work on European sovereign yields.

levels are reached. Furthermore, Canadian provinces reside within a fiscal union that routinely makes large transfers among its members (Obstfeld and Peri 1998). Indeed the 1982 Canada Act, section 36(2), states explicitly that “Parliament and the government of Canada are committed to the principle of making equalization payments to ensure that provincial governments have sufficient revenues to provide reasonably comparable levels of public services at reasonably comparable levels of taxation.” While Canadian federal officials would certainly disavow bailout intentions – and Alberta province did default in 1936 when the Dominion withheld a bridging loan – there is no statutory or constitutional prohibition on bailouts by the central authorities. This makes bailout disavowals less than fully credible.

It thus seems plausible that on balance, the spreads of peripheral euro zone countries against Germany should have been substantially wider than they were if promises of no bailout had been entirely credible and consistent with complementary elements in the infrastructure of the euro.

At least two such infrastructural elements were in fact *inconsistent* with the no-bailout pledge, contributing further to yield compression. Buitert and Sibert (2005) argued that the ECB’s practice of applying an identical haircut to all euro zone sovereign bonds offered for collateral, regardless of country credit rating or fiscal position, artificially supported the bond prices of the more vulnerable sovereigns.<sup>11</sup> In addition, under EU Capital Requirements Directives, sovereign debts of euro zone member states

---

<sup>11</sup> Buitert and Sibert also argued strongly that in the light of treaty commitments and international experience, explicit bailout expectations were unlikely to be an element explaining sovereign yield compression. Subsequent events have not been kind to this leg of their argument. They also criticized as excessive the haircuts the ECB applied to longer-term sovereign bonds.



carried a zero risk weight for purposes of calculating regulatory capital. This rule not only affected prices, it encouraged euro zone banks to load up on sovereign bonds, accentuating the doom loop. Aside from the immediate distortions caused by these policies, they signaled that sovereign default was not on the table and would somehow be prevented by policymakers.

*3. Portfolio rebalancing in favor of peripheral borrowers.* The dramatic convergence of the vulnerable peripherals' sovereign yields reflected a shift in global portfolio demand toward assets of those countries. That shift was greatest for non-peripheral euro zone investors, who benefited from the complete elimination of exchange risk as well as legislative and technical harmonization between national financial and payments systems. Evidence of changes in asset quantities is consistent with this pattern of demand shifts.

There can be no doubt of a dramatic shift in the portfolios of euro zone residents away from home assets and in favor of the assets of euro zone partner countries. Kalemli-Ozcan (2009) et al. document that in 1997, roughly 12 percent of the long-term debt securities and equities issued by euro area residents were held by residents of other euro area countries (excluding central banks). By 2006, the proportions had risen to roughly 58 and 29 percent, respectively. In contrast, holdings of euro zone long-term bonds and stocks by nonresidents, were both under 5 percent of the total in 1997 and still remained under 10 percent in 2006, despite some increase. In principle, higher intra-EMU asset holdings could have derived from two sources: a reduction in home bias in favor of EMU partner countries (trade creation, in the sense of Viner 1950) or a

reduction in holdings of extra-EU securities (trade diversion). While the first source yields benefits in terms of diversification, the second potentially carries costs, so the net effect on welfare is theoretically ambiguous. In practice, it appears that euro zone countries continued to diversify outside the euro zone after 1999, in line with global trends, but perhaps less broadly than they might have done in the absence of EMU.<sup>12</sup>

More direct evidence comes from examining the foreign asset positions of banks. Figure 5 shows the foreign claims of northern euro zone banks on peripheral countries, expressed as a share of each source country's total foreign banking claims. (The data are from the BIS Consolidated Banking Statistics, on an immediate borrower basis.) With the exception of Austria (whose banks focused on central and eastern Europe), the countries shown sharply increased their portfolio shares devoted to peripheral lending after 1999. A closer look at the data reveals that the higher portfolio shares are primarily due to additional lending to Ireland and Spain, both of which were experiencing massive real estate booms.

Banks from the US, the UK, Japan, and Switzerland also increased their foreign lending shares to the peripheral euro zone, these data show, albeit usually less dramatically. Much of their lending also went to Ireland and Spain, although some went to Italy and Swiss banks lent heavily to Greece. US, Japanese, and Swiss banks, although not UK banks, diverted foreign lending toward northern Europe as well as to the periphery, and no doubt some of those funds continued from the north on to Ireland

---

<sup>12</sup> For further evidence see Lane (2006), Lane and Milesi-Ferretti (2007b), Coeurdacier and Martin (2009), De Santis and Gérard (2009), and Waysand, Ross, and de Guzman (2010).

and Spain. Such intermediation may have contributed to the growth of some banking systems in the north (recall Figure 1).

These ocular results are consistent with econometric evidence on bank behavior. In a study based on BIS consolidated banking statistics, Spiegel (2009a, 2009b) shows that after entering EMU, Greece and Portugal shifted their foreign bank borrowing toward euro zone partners and away from lenders outside the currency union. Kalemli-Ozcan, Papaioannou, and Peydró (2010) use the locational BIS data set covering banks in 20 countries, 1978-2007, to study determinants of the sum of assets and liabilities (as well as gross asset flows) between country pairs. They find a significant positive effect of joint euro zone membership, mainly due to the elimination of currency risk. But they also document an important positive effect from implementing the EU's Financial Services Action Plan. Using a more limited data set of 10 OECD countries, Blank and Buch (2007) had earlier demonstrated a positive effect of the euro on bilateral bank assets and liabilities.

As I discuss in the next subsection below, peripheral countries ran large current account deficits after the euro's introduction. Chen, Milesi-Ferretti, and Tressel (2013) observe that over the years 2001-2008, the entire cumulated net borrowing of euro zone deficit countries is approximately matched by an increase in exposure of euro zone surplus countries to peripheral debt instruments, including bank loans. Inward and outward gross financial flows, both within and across EMU's borders, exceeded these net flows, yet bank lending clearly played a key role in financing the large peripheral current account deficits of the 2000s.

As far as northern euro-zone banks were concerned, the result of their portfolio shifts into deficit-country loans was a greater concentration of exposure to the periphery, especially to the two peripheral countries experiencing the most extreme housing booms. Not only was each individual bank less diversified: more correlated exposures also increased the potential contagion of panic from bank to bank. Northern European banks thus became more vulnerable on the eve of the crisis.

4. *Demand growth and current account imbalances.* Such geographical risk concentration might have been justifiable had the *expected return* on investments in peripheral EMU countries risen. Speaking generically, saving fell and investment rose in peripheral euro zone economies, generating current account deficits that were persistent and in some cases very large; see Figure 6. In the basic intertemporal theory of the current account, higher expected economic growth generates a deficit due to lower saving (as consumers spend ahead of time some of the expected future income gains) and higher investment (as capital flows in to take advantage of rising factor productivity). This benign view of peripheral current accounts, if valid, could have indicated higher expected returns to investment, perhaps rationalizing an intra-EMU portfolio shift toward peripheral assets.

The sheer size some of the deficits in Figure 6 raised the worry that they might prove unsustainable and subject to rapid, disruptive compression if market confidence should wane. Would the return to sustainability be smooth and benign? This question is asked whenever historically large current account deficits emerge in the wake of major economic and political reforms.

Blanchard and Giavazzi (2002) offered an early and optimistic assessment. They argued that the large peripheral deficits reflected primarily the efficient downhill flow of capital from rich to poor countries, predicted by basic growth theory but conspicuously absent in the world outside Europe. As a further mitigating factor, they claimed, EMU (along with single-market reforms) had raised substitution elasticities between member-country products. This evolution made imbalances naturally larger, and it implied as well that the adjustment from a big deficit down to a more sustainable balance could be accomplished without a big real appreciation – not exactly Krugman’s (1991) “immaculate transfer,” but closer than what would have been possible before EMU and the single market. Thus, as in long-standing national monetary unions, the current account imbalances of euro zone regions should not be a first-order concern. Abiad, Leigh, and Mody (2009) elaborated on the theme that financial integration encouraged equilibrium convergence within EMU, and argued that increasing asset diversification within Europe could blunt any risks from large deficits.<sup>13</sup>

With hindsight, the deficits were not sustainable by private markets: the countries on EMUs periphery have effectively been subject to massive private capital flow reversals, sometimes referred to as “sudden stops” (Merler and Pisani-Ferry 2012).<sup>14</sup> Researchers indeed documented a positive relationship between current account deficits and income growth in the 2000s, but much of this was due to high

---

<sup>13</sup> See also Schmitz and von Hagen (2011). European Commission (2008) generally subscribed to the optimistic convergence view, while singling out Portugal as an exception, although in some earlier writings the Commission did raise wider concerns. See, for example, the “Editorial” preface to DG ECFIN’s *Quarterly Report on the Euro Area 5* (December 2006).

<sup>14</sup> Early on, in a comment on Blanchard and Giavazzi (2002), Gourinchas (2002) raised the possibility of sudden stops that might cause sovereign defaults.

demand driving output, rather than to higher productivity growth attracting inflows (Giavazzi and Spaventa 2011). While the dynamics of demand growth differed from country to country, a unifying theme seems to be the effects of lower interest rates and vastly expanded access to credit, with rapid growth in the latter often found to be a precursor of financial crisis (Gourinchas and Obstfeld 2012). These demand drivers added to the fragility of EMU financial markets by increasing private and public debt loads and inflating asset-price bubbles.

In the 2000s, housing booms and accompanying surges in housing investment emerged in numerous countries around the world including two at the heart of the current euro zone crisis, Ireland and Spain. Rising property prices and demand reinforced each other, in a destabilizing loop.<sup>15</sup> The root cause of the worldwide housing boom remains controversial, and institutional details differ from country to country, but there is general agreement that a contributing factor was the generally low level of global real interest rates that prevailed throughout much of the 2000s up to the world crisis. In some euro area countries the appreciation of home prices went much further even than in the United States (the epicenter of the 2007-09 phase of the global crisis), as shown in Figure 7.

Because of relatively higher inflation, real interest rates were especially low in the peripheral euro zone as illustrated in Figure 8. The figure shows ten-year ex post real rates (bond rates less actual CPI inflation), expressed relative to the corresponding

---

<sup>15</sup> Portugal did not have a big housing boom and both its output and productivity growth slowed sharply by 2001-2002. Nonetheless, its current account and fiscal deficits grew, leading to sustainability and adjustment concerns even before the onset of the global crisis in 2007. See Blanchard (2007a). Portugal did experience a boom in household mortgage credit, but puzzlingly, only moderate house-price appreciation accompanied it (Figure 7).

German rates. Figure 9 shows how peripherals lost overall price competitiveness (based on GDP deflators) after (and indeed before) euro entry, while Germany gained.

What caused inflation rates to be higher than in Germany? One hypothesis is Balassa-Samuelson effects. Caused by relatively rapid productivity growth in the tradable sectors of the peripherals as they converged to higher income levels, such effects would have boosted inflation primarily in nontradables. This interpretation is implausible in light of the evolution of manufacturing unit labor costs.<sup>16</sup>

A more persuasive explanation is that the sharp convergence of peripheral interest rates itself, documented above, reflected a dramatic increase in credit supply (including a possible easing of credit constraints) that spurred aggregate spending and lifted price levels.<sup>17</sup> Faster inflation, by pushing peripheral real interest rates below German levels, gave a further fillip to spending, as in the well-known Walters critique of monetary union (Walters 1990). Saving fell and investment rose, the latter occurring especially where lower interest rates supported housing booms, as in Ireland and Spain (Figure 7). By raising net worth and easing collateral constraints on borrowing, housing appreciation further enhanced the availability of credit, and thereby further encouraged consumption. Fagan and Gaspar's (2007) dynamic model illustrates the effects of lower interest rates on consumption and the real exchange rate, while Adam, Kuang, and Marcet (2011) focus on the housing market. Lane and Pels (2012) offer evidence that overoptimistic forecasts of future output growth may also have played a role.

---

<sup>16</sup> See Wyplosz (2012) for other evidence on the Balassa-Samuelson hypothesis.

<sup>17</sup> This is also the interpretation of Gaulier and Vicard (2012) and Wyplosz (2012).

Driven by both demand and supply side changes, domestic credit expanded rapidly in the peripheral countries, as shown in Figure 10. Consistent with the preceding account, an important component of domestic credit growth appears to have been correlated with international debt inflows, notably banking inflows (Lane and McQuade 2012). In Greece and Portugal, unlike Ireland and Spain, a main driver of demand was a big negative fiscal balance, with public borrowing encouraged by favorable terms. The strength of domestic demand growth in the peripheral countries permitted growing current account deficits despite ongoing real appreciation, and indeed drove the appreciation.<sup>18</sup>

During the borrowing boom, much of increased investment went into the nontradable sector, notably construction, storing up external repayment problems down the road (Giavazzi and Spaventa 2011; Lane and Pels 2012). Because the scope for productivity gain, technological catch-up, and positive production externalities is believed to be lower in nontradables than in manufacturing, diversion of resources into nontradables both limited future growth of aggregate output and constricted the tradable resources available to service external debt.<sup>19</sup> The painful eventual adjustment still lay in the future: an adjustment in which spending falls to a level consistent with servicing a sharply higher net foreign debt, while internal devaluation accommodates

---

<sup>18</sup> For a related assessment of the roles of housing appreciation and credit expansion in generating the euro area current account imbalances of the mid-2000s, see DG ECFIN, *Quarterly Report on the Euro Area* 9 (March 2012). On the dynamics of the Walters effect, see Mongelli and Wyplosz (2009) and Allsopp and Vines (2010).

<sup>19</sup> The lower growth potential resulting from factor use in nontradables is an important theme in commentary on growth in developing countries (Rodrik 2012) as well as in discussion of macro adjustment in richer countries (Blanchard 2007b). A recent theoretical contribution that focuses on external effects in manufacturing is Benigno and Fornaro (2013).



the implied foreign export surplus by both discouraging imports and moving productive resources into the tradable goods sector.

Of course, if the bulk of recent investment has gone into construction rather than exports and the housing sector collapses, as in Ireland and Spain, the process of export expansion in the return to external balance will be slower and require a steeper medium-term downward adjustment of wages. Thus, after a housing boom fueled by large current account deficits, the prior pattern of investment makes the unwinding process under sticky wages and a rigid exchange rate all the more difficult.

In summary: Easy credit conditions following the start of EMU – due to financial integration and optimistic risk and growth assessments within Europe, and supported by global liquidity conditions – led to excessive borrowing and asset price bubbles. Bubbles arose not only in housing, but in the sovereign debts of Greece and perhaps other countries.<sup>20</sup> In the process, banks throughout the euro zone became more exposed to the risks of collapse in peripheral economies, including sovereign risks. Having access to ample external funding on attractive terms, these banks had become big enough to jeopardize the public finances of some countries were a bailout to be needed. This development activated the financial/fiscal policy trilemma for the euro zone: in today's global financial environment, financial integration and stand-alone national fiscal policy are not compatible with financial stability.

For a time, buoyant demand growth masked weaknesses in private and public balance sheets alike. The temporarily favorable conditions at the end of the “Great

---

<sup>20</sup> At a par valuation Greek debt was arguably trading above its fundamental value, equal to the present value of plausible expected future payments from the government of Greece.

Moderation” allowed peripheral countries to delay politically inconvenient but needed structural reforms. This changed as the world economy began to slow in 2007.

### **III. Safeguards, Old and New**

The 1992 treaty of Maastricht reflected the conventional macroeconomist’s view of EMU’s goals and risks. The treaty therefore mandated safeguards targeted to achieve monetary and fiscal objectives, with scant attention to the ways in which financial policies and financial markets might undermine “sound” macro management as then usually defined, or render the normal tools and safeguards ineffective. This section discusses the incompleteness of the original safeguards and then outlines areas in which the euro area’s policy architecture needs to evolve.

#### ***The Original EMU Architecture: Focus on Monetary and Fiscal Policies***

As it happened, the growth of national and global financial markets (notably international banking) accelerated early in the 1990s. Coincident with that process was the entrance of China and the former Soviet bloc into the global marketplace. Partly as a result, most of EMU’s first decade was passed in a singularly benign global environment. That experience posed little challenge to the view that the Maastricht safeguards, while not completely effective, had allowed EMU to skirt the biggest potential challenges identified before its 1999 launch. Events contradicting that optimistic narrative, however, came with increasing frequency starting in September 2008.

Broadly speaking, the design of the Maastricht safeguards aimed to achieve two main objectives:

- price stability
- solvency of national public sectors without external bailouts or inflation-driven devaluation of public debts.

The institutional pillars supporting these goals were the entry preconditions for the single currency, the statute of the European System of Central Banks and of the ECB, the Excessive Deficits Procedure (as implemented through the Stability and Growth Pact), and the Maastricht treaty's no-bailout clause.

The *entry preconditions* for the single currency require that in the year before examination for admission, inflation and long-term nominal interest rates be sufficiently and sustainably low relative to other EU members; that the exchange rate has remained within normal ERM fluctuation margins for two years before the examination; and that public deficits and debt respect the reference limits of 3 and 60 percent of GDP, respectively. (Much higher debt levels can be tolerated – and have been in cases including Italy and Greece – if it is judged that “the ratio is sufficiently diminishing and approaching the reference value at a satisfactory pace.”) In addition, a candidate country must have a central bank statute consistent with that of the ESCB and ECB.

The rationales for these preconditions have been much debated, with some economists asking why it is necessary for policy convergence to occur *before* EMU entry. One school of thought held that the preconditions provide an external incentive for much-needed institutional and structural reforms, without which entrenched political

stake holders would block progress. Another view saw the tests as a means of imposing a “stability culture” that would enable countries to adhere to a union in which monetary policy followed the precedents established by the German Bundesbank.

In the event, the inflation requirement may be useful in anchoring price expectations ahead of euro entry, but the deficit and debt preconditions have been interpreted loosely, have been satisfied often with the help of one-off accounting tricks, and have provided little or no independent assurance of continuing fiscal consolidation once the admission test is over.

Even aside from their very partial coverage of potential sources of policy divergence – there is no criterion regarding the quality or independence of financial-sector oversight – the convergence criteria do not constrain national policy after EMU entry and thus are helpful as safeguards only to the extent that the investments governments make in satisfying them have durable payoffs. However, the treaty of Maastricht contained constraints that operate directly after EMU entry.

The most far-reaching of these, of course, sets up the ESCB and ECB to control EMU’s monetary policy. The central bank is made independent (in both the instrument and target sense) with a primary mandate to ensure “price stability.” In practice, this goal has been interpreted as a rate close to, but below, 2 percent per year.

As a further guarantee, Article 21 of the central bank statute prohibits the direct acquisition of sovereign debt from the issuer, and thus the direct monetary financing of national fiscal deficits. As was widely recognized from the start, and has become a point of contention in the current crisis, there is no explicit ban on acquiring sovereign debt in

secondary markets, nor is there a prohibition on collateral rules that encourage private banks to finance public deficits with funds borrowed from the ECB and collateralized with sovereign bonds.

The central bank's statute also calls on it to "promote the smooth operation of payments systems." Article 22 states that "The ECB and national central banks may provide facilities, and the ECB may make regulations, to ensure efficient and sound clearing and payment systems within the Union and with other countries." Much of the preparatory work of the European Monetary Institute during Stage 2 of EMU was devoted to linking the national payments systems through TARGET (which has been replaced by TARGET2). Regarding prudential supervision, Article 25 allows the ECB to "offer advice and be consulted by" EU or competent national bodies, while Article 127(6) of the TFEU sets up a procedure through which the Council of the European Union may confer upon the ECB "specific tasks" relating to supervision. However, as discussed below, the treaty left supervision to national bodies. Ensuring a smooth transmission of monetary policy throughout the euro area was the prime motivation for the ECB's oversight of the payments system.

Figure 11 illustrates the ECB's inflation record. For the euro area as a whole, HCPI inflation through 2008 was above the 2 percent upper bound in every year. This outcome reflected a German inflation rate generally between 1 and 2 percent, together with a rate in other countries that was therefore somewhat higher than overall average inflation. Going forward, as peripheral countries will probably experience significant deflation in order to gain competitiveness, Germany's inflation rate may have to be

persistently above 2 percent unless the ECB targets a lower rate for the overall euro area. This legacy of the pre-crisis years (one of several) moves EMU into uncharted water, and may test the ECB's political independence in the future.

Regarding national fiscal policies, the Maastricht treaty established potential penalties (culminating in fines) for member states that persistently, and after Commission notification, depart from the maximal reference values for public deficits. Reference values for debt as well as deficits are defined precisely in the Protocol on the Excessive Deficits Procedure (EDP), but basically refer to a 3 percent general government deficit to GDP ratio, and a 60 percent ratio of gross general government public debt to GDP. The EU clarified implementation of the EDP in 1997 through the stability and growth pact (SGP). The SGP called for fiscal positions to be balanced or in surplus over the medium term in normal times, with small and temporary breaches of the 3 percent deficit limit in cases of sufficiently severe recession. To limit moral hazard further and (hopefully) to promote market discipline on sovereign borrowers, the Maastricht treaty also contains an explicit no bail-out clause, according to which the community is not liable for, and should not assume, the debts of member governments. (However, deviations are possible in exceptional circumstances.)

Figure 12 illustrates the record on public debts, which now widely exceed the 60 percent of GDP benchmark. The high debts indicate another legacy issue that will influence the near-term evolution of EMU. In relatively creditworthy countries (such as Germany), historically high sovereign debts dampen public willingness to make big financial commitments to euro area solidarity. At the same time, the even worse fiscal

plight of the more vulnerable economies makes it harder to see future risks as being symmetric as between them and the stronger countries. Voters in the latter country group therefore view crisis-inspired financial initiatives as implying, not mutually beneficial risk-sharing arrangements, but a stream of one-way transfers at their expense for the foreseeable future. Realistically, this factor sharply constrains the scale and nature of likely reforms in EMU's architecture.

Eichengreen and Wyplosz (1998) offer a comprehensive summary of the potential adverse scenarios motivating the demand that all EMU members maintain fiscal discipline. A primary rationale was the fear that a proliferation of high deficits and debt among EMU would create pressures for the ECB to follow inflationary policies aimed at debt mitigation. Starting with Begg et al. (1991), several authors offered the most convincing story for how this might occur. It was based on the general point, not necessarily hinging on an inflation threat, that sovereign debt problems in one country might spill over to banks in others, sparking a contagious crisis of banks and the payments system.<sup>21</sup> This in itself creates an externality from deficits and debt that implies a Prisoner's Dilemma in fiscal policy (albeit one that to some degree also applies among countries that do not share a common currency). Eichengreen and Wyplosz (1998) ran through a detailed scenario in which sovereign default fears impair bank capital, leading to depositor runs. They concluded: "To prevent the collapse of Europe's banking and financial system, the ECB buys up the bonds of the government in distress. As the costs are being borne by the residents of the EMU zone as a whole rather than

---

<sup>21</sup> See, for example, Kenen (1995), Eichengreen and Wyplosz (1998), and Obstfeld (1998).

the citizens of the responsible country, governments have an incentive to run riskier policies in the first place, and investors have less reason to apply market discipline” (p. 71). They recommended that the best approach to this problem would be higher capital requirements and tighter supervision for banks, rather than fiscal restraints. Begg et al. (1991) suggested regulations to preclude or minimize bank holdings of sovereign debt issued by EMU members.

Such measures proved practically and politically difficult to implement. Moreover, no one foresaw that banking systems would grow big enough to imperil national solvency, or that a substantial number of countries might be suffering through simultaneous and mutually reinforcing sovereign debt crises. Nor was it anticipated that, with the policy interest rate near the zero lower bound, discretionary fiscal policy at the national level might appear as a potentially more useful stabilization tool than it did before 2008. Recent experience has thus given more weight to concerns that national fiscal problems might be explosive and contagious, while suggesting at the same time a greater payoff from leaving more scope for countercyclical fiscal response.

The recent crisis has, moreover, added a further argument for ex ante fiscal discipline: A country that does not maintain enough fiscal space to contribute to financial rescue resources, whether for itself or for the collective, imposes a cost on other EMU countries by weakening the collective firewall against financial instability.

Given that the most persuasive reasons to fear unrestrained national deficits and debts rest on the financial stability threat, is all the more remarkable that the Maastricht treaty left the task of banking supervision and bank crisis management



largely in national hands. In addition, the lender of last resort (LLR) function of the ECB is not discussed in the treaty. As noted above, the treaty mentions the vaguer remit to “promote the smooth operation of payments systems” but does not explicitly charge the ECB to lend in a liquidity crisis, on collateral that would be good in normal conditions, as per the classical Bagehot prescription.

Of course, in the current crisis the ECB has found it necessary to acquire the role of LLR on the fly, not only with respect to the EMU banking system but, effectively, with respect to sovereign borrowers as well. ECB long-term refinancing operations for banks both relieved liquidity squeezes and indirectly supported banks’ purchases of sovereign local debts, at the cost of accentuating one aspect of the bank-sovereign doom loop. The ECB’s securities market program of sovereign debt purchases and its offer of outright monetary transactions (OMT) to limit sovereign yields have directly supported prices, though the ECB’s justification for intervention is to ensure the efficacy of monetary policy transmission throughout EMU financial markets.

The decentralized system of bank supervision and resolution has proved woefully inadequate to an environment with big banking and high interconnectedness among national banking systems as well as between banking systems and sovereigns. The framework clashes with Schoenmaker’s (2013) trilemma of financial policy, according to which financial openness, financial stability, and national autonomy over financial policies cannot all coexist. That a decentralized regulation regime was nonetheless chosen in 1992 is understandable in political if not economic terms, however, since (as is discussed further below), centralized powers of regulation and

resolution inevitably imply some degree of centralized fiscal capacity – precisely the ground upon which the Maastricht treaty’s authors did not wish to tread. Likewise, an LLR role for the ECB also implies the possibility of collective losses through its balance sheet, and in the crisis, debt mutualization has inevitably crept in through this open back door. It has also potentially come in through TARGET2 imbalances, in the event of one or more member’s departure from the euro zone.<sup>22</sup> An explicit ECB LLR role, moreover, might have been seen to dilute the primacy of the inflation mandate.

Begg et al. (1991) provided an early cogent critique of the regulatory gap in the treaty, focusing usefully on the possible costs of EMU-wide supervision via regulatory college versus a true unitary authority. Begg et al. (1998) provided a sequel on the eve of EMU’s Stage Three. Several authors predicted that the ECB would inevitably find itself obliged to exercise LLR functions (Folkerts-Landau and Garber 1994; Prati and Schinasi 1999; Goodhart 2000).<sup>23</sup> EU authorities recognized after 1999 that financial markets were evolving quickly and they attempted to build up financial defenses, but these efforts, while valuable, did not fundamentally alter the structure created by the Maastricht treaty and this left the system vulnerable to crisis after 2007.<sup>24</sup> The extraordinary EU and ECB responses to the crisis illustrate how weak that structure was.

---

<sup>22</sup> Lending under Emergency Liquidity Assistance is supposed to force the national central bank, and hence the sovereign, to bear the resulting credit risks, but the import of this allocation becomes uncertain when the sovereign itself is in danger of insolvency.

<sup>23</sup> Another early discussion, by one of the authors of Begg et al. (1991), is Vives (1992). Just before the launch of EMU, Lane (1998) proposed that Ireland set up a dedicated fiscal reserve fund both to act as a last-resort lender and, in cases of bank insolvency, to finance bank reorganization. Fifteen years on, such suggestions no longer seem feasible at the national level.

<sup>24</sup> On the EU’s financial stability preparations after 1999, see “The EU Arrangements for Financial Crisis Management,” *ECB Monthly Bulletin*, February 2007.

In summary: The Maastricht treaty put in place mechanisms meant to ensure monetary and fiscal stability. It left EMU poorly equipped, however, to ensure *financial* discipline. But since financial indiscipline may well lead to first-order disruptions of both monetary and fiscal discipline – disruptions that are unfortunately *optimal* for policymakers to facilitate after the fact of a serious crisis – the purely macroeconomic defenses in the Maastricht treaty proved to be a Maginot line (this time built by Germany) that was inevitably circumvented. By 1940, the nature of ground warfare had changed from what it had been; by 2008, the nature of financial markets had changed.

### ***Constructing a More Resilient System***

The financial system has been the most salient weak point in EMU's defenses, and the creation of a "banking union" has rightly become one of two starting points for institutional innovation. The second set of immediate institutional initiatives focuses on national fiscal health. It consists of strengthening the SGP through the "six-pack" and proposed "two-pack" arrangements and the fiscal compact, on the one hand, and of the ESM, on the other hand, in case sovereign debt problems nonetheless arise. However, fiscal defenses cannot be secure unless a complete and effective banking union is in place, and the latter requires a degree of fiscal unification not yet envisioned by political leaders. Conversely, financial stability requires a foundation of sound public finance.

One can envision the preceding initial drives on banking union and fiscal stability as embedded within a long-term and comprehensive plan leading eventually to

measures requiring a significantly greater degree of political union to ensure democratic legitimacy and accountability. The Commission sketched such a plan in its November 2012 paper, “A Blueprint for a Deep and Genuine Economic and Monetary Union” (European Commission 2012). That plan sets out a three-stage process. It begins with elements of banking union, enhanced fiscal policy coordination, and a fiscal instrument for encouraging structural reform in member states; moves on to deeper integration measures, some of which would require Treaty changes; and culminates in an “autonomous euro area budget” capable of common bond issuance, along with complementary redesign of political institutions. (The subsequent “Report of the Four Presidents,” also sets out a three-stage process, albeit one that differs somewhat in timing and details, if not in the essential end point. See Van Rompuy 2012.) Below, I focus mainly on the closely interlinked issues of banking union and fiscal coordination.

## Banking Union

On 29 June 2012, euro area heads of state and government issued a summit statement announcing that the Commission would present proposals to create a Single Supervisory Mechanism under Article 127(6) of the Lisbon Treaty. They further stated that, once the euro area SSM was in place, the ESM “could, following a regular decision, have the

power to recapitalize banks *directly*.”<sup>25</sup> Their stated motivation for these measures was “to break the vicious circle between banks and sovereigns.”

Following up on this invitation, the Commission issued a 10-page report on 12 September 2012 outlining a route to banking union, with the specific proposal for a Council regulation “conferring specific tasks on the ECB concerning policies relating to the prudential supervision of credit institutions.”<sup>26</sup> The Commission report states that “The establishment of the single supervisory mechanism is a crucial and significant first step.” However, it also points to the eventual need for “a common system of deposit guarantees and integrated crisis management framework” (p. 6), and foresees a future proposal for a Single Resolution Mechanism (SRM). Both European Commission (2012) and Van Rompuy (2012) rightly identify the SRM as well as the SSM as crucial near-term objectives.

In December 2012, the Council set forth the outlines of the SSM, according to which a supervisory board within the ECB has ultimate responsibility but works in cooperation with national regulatory authorities, exercising its most direct influence over designated systemically important financial institutions but with oversight rights over all institutions.<sup>27</sup> The target date for implementation of the SSM is March 2014, at which time direct bank recapitalization would be allowed through the ESM in accordance with the European Council decision of 29 June 2012. Direct recapitalization would not be available for “legacy” banking problems, however.

---

<sup>25</sup> Emphasis added. See:

[http://www.consilium.europa.eu/uedocs/cms\\_data/docs/pressdata/en/ec/131359.pdf](http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/131359.pdf)

<sup>26</sup> See: [http://ec.europa.eu/internal\\_market/finances/docs/committees/reform/20120912-com-2012-510\\_en.pdf](http://ec.europa.eu/internal_market/finances/docs/committees/reform/20120912-com-2012-510_en.pdf)

<sup>27</sup> See: <http://register.consilium.europa.eu/pdf/en/12/st17/st17812.en12.pdf>

The SSM fills the longstanding gap left by the Maastricht treaty in leaving the regulation and supervision of banks to national authorities despite an integrated financial market sharing a common payments system and currency. This gap opened the door to coordination failures that have worsened the current banking crisis in several ways. The European Council called for prompt completion of work on the further projects of deposit insurance and an SRM, both of which are necessary complements to the SSM in order “to break the vicious circle between banks and sovereigns.” However, the design and financing of these enterprises remains unclear, with the current intention apparently being to rely heavily on fees from the financial industry, including ex post fees after crises. Some officials have proposed that extensive contributions be required from national fiscal resources before collective resources come into play. While in principle ESM financing would also be available for bank recapitalization in the future, the exact definition of “legacy” problems remains to be worked out based on proposals from the Commission. Inadequate financing, with the balance filled in large measure from national resources, might leave the doom loop in place.

Pisani-Ferry, Sapir, Véron, and Wolff (2012) and Véron (2012) supply comprehensive considerations of the details of a more complete banking union architecture. Here I focus on a few salient points most closely related to the interactions between financial and fiscal policy.

A major theme is that the SSM alone is a necessary but not sufficient component of a banking union architecture that is capable of breaking the doom loop. Given the size of bank balance sheets, only a joint guarantee (including deposit insurance) by the

collective of euro area sovereigns can provide a credible fiscal backstop (the financial/fiscal trilemma). Furthermore, as noted above, reliance on national fiscal backstops actually promotes segmentation of financial markets by country (so that in the absence of a substantial shared backstop, neither stability nor integration can be attained). At the same time, effective centralized regulation and supervision is essential both to minimize taxpayer costs and to limit the moral hazard that could infect regulation by individual countries in the presence of collective fiscal guarantees.<sup>28</sup>

A necessary component of banking discipline is the credible threat that failing banks will be reorganized.<sup>29</sup> Following through on that threat, however, requires predictable resolution procedures that are immune to capture by purely national interests. Also needed are euro area fiscal resources for bank reorganization and recapitalization (indicated in the 29 June 2012 summit suggestion on the possibility of ESM funding). Thus, the Council has rightly recommended prompt establishment of the SRM. As Goodhart (2004) persuasively argues, however, national treasuries will not willingly provide resources in support of resolution decisions made at the community level. The SRM will have a hard time imposing its edicts if it has to go hat in hand to national treasuries. It is not clear whether fees on financial institutions, even if levied ex post, would provide an adequate fiscal backstop in the case of major contagious crises

---

<sup>28</sup> Schoenmaker's (2013) trilemma points out that if countries desire financial openness and financial stability, they cannot make decisions over financial policy, including decisions on the injection of public funds into failing banks, from their own purely national perspectives. In contrast, the financial/fiscal trilemma states that financial markets have become so extensive that countries can no longer credibly backstop financial stability based on their own fiscal resources alone while still preserving external financial integration.

<sup>29</sup> Claessens, Herring, and Schoenmaker (2010) emphasize that expectations about the resolution regime are a critical influence on the behavior of both banks and regulators even in advance of problems, and thereby play a big role in determining financial stability.

where the resolution costs reach a non-negligible fraction of GDP. Nor are substantial ex post fees credible once the financial system is weak. Thus, a fund financed by fees might suffice for insolvencies that are localized in space and time, but larger crises would likely require contributions from national fiscal authorities. Financial stability requires that market participants anticipate the availability of adequate funding in such systemic or near-systemic cases.

To minimize taxpayer costs while reducing moral hazard on the part of bank creditors, an essential component of a SRM is bail-in for senior bank creditors, whose claims could receive haircuts, or be converted to equity, in case of bank failure. (This is a prominent feature of the resolution philosophy for cross-border institutions agreed by the US Federal Deposit Insurance Corporation and the Bank of England in December 2012.<sup>30</sup>) To avoid capital flight within the euro area, it is essential that such arrangements for debt restructuring be completely uniform across member countries, with decisions made by a central resolution authority. Of course, if the expectation of debt restructuring leads to greater volatility in liquidity, the ECB will have to stand ready as the LLR. As noted above, the ECB has undertaken this task de facto, with a broad interpretation potentially allowing massive intervention in secondary sovereign debt markets (OMT) in cases of convertibility risk.

Over the longer term, given the goal of full financial integration, it makes most sense for larger cross-border banks to be chartered at the euro zone level, so that these banks in some sense lose their national character (Čihák and Decressin 2007). In such

---

<sup>30</sup> See: "Resolving Globally Active, Systemically Important, Financial Institutions," <http://www.fdic.gov/about/srac/2012/gsifi.pdf>



cases national deposit insurance would be anachronistic. This utopian state of affairs may be a long way off, but the general point is that national structures for bank guarantees and supervision promote national fragmentation of the euro area's financial markets – fragmentation that has become extreme in the past couple of years. Conversely, initiatives aimed at eliminating fragmentation make it more difficult to conceive of purely national competences in banking policy.<sup>31</sup>

A complete banking union would therefore require at least some fiscal capacity. Pisani-Ferry and Wolff (2012) suggest some possibilities and conclude that the most practical alternative builds on the ESM. Another option they analyze is an insurance and resolution fund, built up over a period of years and financed by taxes on financial institutions. Sovereigns might also contribute toward building up this fund, which could be managed along the lines of sovereign wealth funds, with some dividends returned to the national coffers in proportion to contributions. To the extent that sovereigns maintain responsibility for local financial conditions (for example, through loan-to-value requirements for home purchases), payments and disbursements could be structured like private insurance contracts. Premiums could increase with observable risk characteristics (such as domestic housing booms), and payouts could feature a deductible, in the form of a moderate first tranche of bank rescue expenses that remains a sovereign liability. The Commission is the natural candidate to decide the premium-change triggers, which should be designed to be as objective as possible.

---

<sup>31</sup> State and federal bank chartering still coexist in the US, for example, but the rules governing the supervision of state-chartered banks remain sub-optimally complex, and some of these banks do not maintain membership in the Federal Reserve System (which ensures access to the Fed discount window). Such institutions are not central to states' financial systems, however.

It would be difficult to maintain a big enough rescue/resolution fund to handle a large euro-area wide crisis; such cases might call for supplemental taxes. Shaky public finances would accordingly impair market confidence in financial guarantees. Even when countries are fiscally healthy, their ex post *willingness* to contribute resources in case of a big crisis is questionable, so an effective banking union might require some independent taxation capacity.

The necessary fiscal aspect of a complete banking union thus raises essential questions about the democratic accountability of the decision makers who run it. Parallel moves toward political union are an essential complement in ensuring that national electorates accept the legitimacy of decisions made in the common interest. As Pisani-Ferry, Sapir, Véron, and Wolff (2012) note (p. 15), “the potentially distributional character of resolution decisions and the potentially large fiscal cost of banking crises call for political responsibility.” Thus, the SRM must be quite separate from the ECB, and endowed with independent supervisory powers and its own governance structure.<sup>32</sup>

The SSM will endow the ECB with a macro-prudential remit (in parallel with the European Systemic Risk Board) and presumably with appropriate powers of intervention (e.g., establishment of capital buffers). Can such measures be applied at the level of individual member states when regional asset and lending booms arise? Regionally targeted tools would be especially important in the case of housing booms. The ECB could require lending institutions under its umbrella to hold higher capital against housing loans in a particular country, or to demand lower LTV. How effective can such

---

<sup>32</sup> The negative feelings the IMF inspired in Asian crisis countries in 1998 through its financial-sector interventions are suggestive of the kind of political backlash that could occur.

measures be if there is no mechanism to force lenders not under the SSM's authority, including non-EU banks, to comply? As noted above, banks from outside the EU were significant lenders to Ireland and Spain during those countries' housing booms.<sup>33</sup>

As I have suggested, the ECB's LLR role for banks should remain a durable and regular feature of EMU, and thereby enhance its resilience. What about the ECB's role in providing (indirect) liquidity to sovereigns? Because OMT have not yet been carried out, only promised, it is unclear how they would work in practice: the rules governing OMT remain (perhaps intentionally) ill-defined. One desired effect of the current EMU reform agenda is to minimize the chances that actual OMT are needed in the future, yet it does not seem credible that the ECB would forswear this type of weapon should another crisis comparable to the present one nonetheless arise.

Ultimately, however, ECB liquidity operations can counteract multiple equilibria but they cannot solve problems of banking or sovereign insolvency without undermining price stability. Thus, EMU must institutionalize fiscal and other mechanisms for resolving failed banks and bankrupt sovereigns.

## Fiscal Defenses and Fiscal Union

Motivated by the crisis, euro zone countries set up the European Stability Mechanism, which came into effect in September 2012. This fund can lend to sovereigns, including

---

<sup>33</sup> In principle, the EU's Macroeconomic Imbalance Procedure introduced in December 2011 (and discussed further below) covers a range of indicators with macro-prudential significance. It seems likely, however, that the ECB will be much better positioned and equipped than the Commission and the Council to intervene rapidly, including at the microeconomic level, to head off systemic financial risks.

for the purpose of bank recapitalization, subject to conditionality. The ESM is supposed to provide liquidity to sovereigns in case of a private lenders' strike, thereby avoiding "bad" equilibria that could lead to default. However, the mechanism also recognizes that in some cases, a sovereign is insolvent, not simply illiquid, and debt restructuring may be necessary. Greece restructured its privately held debt in March 2012, an unprecedented event for an EU country, but the intergovernmental ESM Treaty regularizes the possibility of such events. Article 12(3) of the Treaty requires that after 1 January 2013, all new euro area sovereign issues of maturity exceeding one year to contain a model collective action clause, which could facilitate restructuring. The feature is meant to save taxpayer money, to provide a kind of "disaster insurance" for sovereigns and, importantly, to encourage more market discipline for potentially profligate governments.

As I discuss in a moment, far beyond a reliance on market discipline, the euro area has also enhanced its mechanisms for directly controlling excessive debt and deficits at the national level. One could therefore ask whether the ESM will be necessary at all, if these fiscal restrictions are effective in moving public debts toward sustainable trajectories. The answer is yes, for at least two reasons.

First, the implicit endorsement of PSI in the future sovereign debt environment could make lenders more prone to flight. Even a government with a fiscal surplus could face problems if enough of its debt is short-term and due for refinancing.

A second reason, one which was not fully foreseen when the ESM was established, is *currency risk*. The possibility that Greece abandons the euro was widely

discussed in the press and even among euro zone policymakers. At times, some private forecasters regarded it as probable if not inevitable. Next Cyprus came into play. This circumstance has reintroduced currency risk into the euro area and the problem will become worse if a member state ever exits. Even a fiscally prudent government might wish for a devaluation given high enough unemployment, especially in light of the protracted adjustment to shocks in most EMU countries, and this circumstance could spark speculation and a run-up in sovereign yields. There would also be tension within the TARGET2 system, as foreseen by Garber (1999). The ESM would be helpful in such cases, although it could not by itself deliver a sufficient policy response, as the private sector in the afflicted country would also face high interest rates. A comprehensive policy response would necessarily involve extensive lending to banks by the ECB (and maybe outright sovereign debt purchases), alongside ESM direct lending to the sovereign.

A final potentially critical function of the ESM, as noted above, could be through direct recapitalization of banks. In this case, the ESM would be making an equity purchase, which might even turn a profit for taxpayers were it part of a policy package that successfully stemmed further losses in bank asset value. However, the recapitalization would not swell the gross debt of any individual sovereign.

While the ESM is intended to guard against (and hopefully eliminate) the bad equilibria that can arise during debt crises, other measures enhance the SGP as a way of directly reducing the vulnerability to crisis. The EU's six-pack regulations, which came into force in December 2011, broaden macroeconomic surveillance by the Commission

and ECOFIN beyond fiscal surveillance (under the Macroeconomic Imbalance Procedure, or MIP). The MIP also tightens both the preventive and corrective arms of the SGP. Importantly, for euro area members, the six-pack provides for sanctions in cases of excessive deficits or debts, with the decision to sanction governed by reverse qualified majority voting in the Council. The two-pack will go further in pre-emptive budgetary correction and in the management of member-state financial problems after they arise. The fiscal compact, part of a larger intergovernmental Treaty on Stability, Coordination, and Governance (TSCG, which entered into force at the start of 2013), has as its most striking feature the requirement that signatories alter national legislation to incorporate a budget-balance rule, either through constitutional amendment or a comparably binding law.

One general critique of the TSCG is that it continues the Maastricht treaty's focus on conventional fiscal variables, with essentially no reference to financial factors.<sup>34</sup> The TSCG's provisions do not account for the buildup of implicit public liabilities through the banking system – in the process of which the measured public deficit could be quite low due to unsustainably high tax revenues, as was the case in Spain and Ireland in the mid-2000s. Only to the extent that the broader macro surveillance under the MIP flags variables that tend to be correlated with future financial distress will the recent enhancements to the SGP be helpful in avoiding future crises. Fortunately, the “scoreboard” of the MIP lists several such variables, including

---

<sup>34</sup> The process of fiscal monitoring should provide an opportunity to look beyond conventional medium-term deficit forecasts and consider the long-term evolution of social welfare spending as driven by demographics, sectoral cost trends, and the like.

private sector debt and credit-flow indicators, total financial-sector liabilities, and changes in real house prices.

Even so, broad surveillance over financial trends is in itself insufficient for assessing the vulnerability of financial institutions and markets and for determining the most appropriate corrective actions. Thus, the MIP needs as a supplement a strong SSM, which alone can be a truly direct defense against financial instability. Furthermore, as argued above, the SSM cannot be effective unless buttressed by deposit insurance, a powerful SRM, and dedicated centralized fiscal capacity. In particular, and as noted earlier, effective regulation requires a credible threat that financial institutions can be closed down, which in turn relies on funding to facilitate changes in ownership, segregation of bad assets, recapitalization, and the like. Especially to cover the likelihood of bigger, systemic events, the SRM should therefore have the ability to draw on the joint fiscal resources of member states.

Consideration of financial stability needs does, however, add a powerful extra argument (mentioned earlier) for constraining governments to avoid large debts. In a banking union, the credibility of the communal fiscal backstop depends on all members maintaining sufficient fiscal space. Absent strong fiscal norms, there would be a tendency for each individual country to free ride on the fiscal strength of its partners.

A potential difficulty with extending the SGP approach, despite some elements of flexibility built into the six-pack, is the older concern that rigid fiscal rules might limit appropriate policy responses in the face of economic shocks. The original architecture of EMU removed the exchange rate as a national-level adjustment tool. At the same time,

the prospective euro zone lacked a substantial central budget that might allow the operation of the automatic fiscal stabilizers seen in federal nation states, according to which net regional tax payments to the center decline when the regional economy does, whereas certain federally funded social benefits rise.

In fiscal unions such as the US, and even when subnational units do not subject themselves to constitutional deficit limits, regional taxation capacity is relatively low, both because of the mobility of workers and firms, and because the tax burden imposed by the center is already high, so that both marginal tax distortions and political resistance are higher. Thus the importance of fiscal federalism is greater than among EMU states, which retain significant taxation capacity. People and especially capital have become more mobile within EMU, and this trend may be expected to continue, so that in future the fiscal capacities of nation states may decline, buttressing the case for centralized fiscal capacity. But for now, EMU countries in principle still have far greater effective taxation powers than US states or Canadian provinces, making the case for intra-federation transfers somewhat less compelling than it is within nation states. Nonetheless, under conditions of nominal price rigidity, and even when private asset markets are complete, gaps between currency union members in the marginal social value of transfers leave scope for Pareto-improving transfer arrangements (Farhi and Werning 2012). When transfers are not possible, activist fiscal policy potentially could help reduce such gaps.<sup>35</sup>

---

<sup>35</sup> In any case, asset markets are most likely to fail in their insurance role precisely when big negative economic shocks occur.



Notwithstanding this potential, the EDP and SGP, as strengthened by the six-pack, two-pack, and fiscal compact could seriously restrict the ability of some countries to run countercyclical fiscal policies – effectively obtaining transfers from future generations – when hit by a negative shock. Unless these countries already have low debts and deficits, their domestic fiscal stabilizers may fail. It is precisely in such circumstances that national sovereign debts and banking systems have come under pressure.

In principle, ex post austerity in this situation has two potential effects that pull in opposite directions: a direct negative effect on aggregate demand and a direct positive effect to the extent that confidence in the sustainability of public finances is enhanced. It is an important research question to quantify these distinct effects reliably, but in the recent euro area experience, any positive confidence effects evidently have been dominated by other, negative factors. Figure 13 shows the relationship between the change in structural budget surpluses and output growth over 2009-2012.<sup>36</sup> The ex post imposition of austerity after a financial and debt crisis is underway, and especially when several neighboring countries are acting similarly, can have devastating output effects, hardly conducive to big reductions in debt-to-GDP ratios in the short run or to the restoration of confidence. Governments in a currency union may have no choice, however, if they cannot tap world capital markets and have limited official finance. The

---

<sup>36</sup> An alternative estimation period for the regression in the figure would be 2008-2011, for which the relationship is still negative but weaker. Part of the reason is that the IMF's April 2013 estimate of the Greek output gap rises sharply between 2011 and 2012 (from -2.6 to -7.7), while the large 2012 negative output gap reduces the estimate of Greece's structural budget deficit for 2012.

question of fiscal transfers from partner countries therefore becomes most urgent when crises erupt. More mundane, cyclical fluctuations are less problematic.

The purposes most urgently requiring some sort of centralized EMU fiscal capacity are: a financial stability fund for bank resolution and recapitalization; deposit insurance; and liquidity support in case of sovereign debt crises. Such a capacity might allow central debt issues subject to joint and several liability, but over time, it would be prudent and politically more acceptable to build up centralized funds through the payment of insurance premia by member countries. The ESM is the prototype for this set of capacities, but it is too small relative to the size of potential challenges, and the requirement of unanimous decisions by its members reduces its flexibility. To effect the ESM's enlargement, regular national insurance payments (that are recognized as such) would be an attractive route. (In the case of deposit insurance, financial institutions should pay insurance charges.)

The necessary size of the centralized fiscal capacity ultimately rides on the size of the banking system that is covered, the effectiveness of its supervision, and levels of national public debt. Obviously, higher national debt levels inflict negative externalities on the collective through several channels, making the case for some restrictions on debt issue stronger.<sup>37</sup>

As a brake on moral hazard, payments to the ESM could rise for countries that engage in riskier behaviors, with premia indexed to publicly available indicators (larger

---

<sup>37</sup> Both substantial PSI in cases of sovereign debt problems and prompt corrective action in cases of banking sector weakness can reduce the ultimate costs to the public. If the banking union's own fiscal resources are at risk, this might encourage earlier intervention to reorganize weak institutions.

fiscal deficits or current account deficits, slower structural reform, etc.). Countries in exceptional economic distress might endogenously pay lower premia according to a specific formula, resulting in a degree of automatic fiscal relief from the center. There is already precedent for such indexation (albeit, with infrequent revision) in the rules for distributing seigniorage earned by the Eurosystem. A closer precedent is the provision of the SGP that fines on member states with excessive deficits be paid into the ESM. It would be natural for the Commission and the Council to be arbiters of the ESM insurance fee structure.

A promising new idea calls for contractual arrangements between the EU or euro area and member states, whereby credible structural reforms earn transfers from the center. Thus, European Commission (2012) suggests the rapid development of a Convergence and Competitiveness Instrument (CCI) through which member states will contract with the Commission to carry out structural reforms as a counterpart to financial support.<sup>38</sup> Monitoring fulfillment need not be prohibitively challenging (higher retirement ages; opening closed professions; easing restrictions on dismissal) and might justify substantial reductions in premia paid to a central insurance fund. The rationale is that the adjustment to substantial reforms may require transitional government assistance, justifying an inflow of resources from the center. Yet such investments in dynamism and flexibility are likely to have positive spillovers to euro area and EU partners. To ensure that commitments are executed as per the contract, premia reduction would have to follow a well-defined schedule of verifiable deliverables. As a

---

<sup>38</sup> For a related proposal, see Delpla (2012).

political matter, a focus on conventional budget balance should not divert political attention, energy, and capital from growth-promoting market reforms, especially in labor markets, as pointed out long ago by Eichengreen and Wyplosz (1998).<sup>39</sup> Thus, the CCI offers a useful complement to the developing apparatus of fiscal coordination and surveillance.

What prospects exist for collective debt issuance? While this might occur on a limited scale, and for special purposes, creating a full-scale fiscal capacity with taxing and borrowing powers, on the model of the nation-state, raises a host of problems. For one thing, the scope for EU or euro area wide democratic representation in fiscal decisions would have to expand. Through what agencies would the center actually collect taxes from EU or euro area citizens, when some national governments already have problems doing so domestically? Absent full political union, collective responsibility for nationally issued debt raises decisive moral hazard problems.

The need for accountability to national tax payers is present of course even when centralized fiscal functions are restricted to financial stability concerns. One reason the Maastricht treaty left financial supervision at the national level (as noted above) was the lack of agreement on how to pool the resulting fiscal burdens. But the potential for “democratic deficit” seems even higher in the realm of generalized fiscal policy than with respect to a fiscal financial stability backstop. For one thing, the scope for financial stability support is comparatively well defined. Furthermore, now, because

---

<sup>39</sup> For the US, growth has been the single most important factor ensuring government solvency over the postwar period (Hall and Sargent 2011).

of the crisis, financial stability is more widely recognized as an essential public good, not readily provided at the national level when national financial markets are tightly integrated.

A powerful argument for some sort of collective euro bond is the need for a large liquid market in a euro-area wide (relatively) safe asset. Here the most promising proposal for the medium term is the idea of tranching a fund of euro area sovereign debts to create European Safe Bonds, as suggested by the Euro-nomics group of economists (Brunnermeier et al. 2011). As these writers emphasize, this reform can be accomplished with minimal or no change in existing EU treaties. All that is required is to set up an agency that would purchase euro zone sovereign bonds to serve as backing for the issuance of new euro-denominated bonds in multiple seniority tranches. There is no need for an infusion of fiscal resources from member states, nor is there any financing of member-state fiscal deficits with common euro area bonds. However, the initiative would help to deactivate the doom loop by steering bank holdings away from riskier national sovereign bonds. It would also inject into the market a new safe and presumably liquid asset.

One other mode of effecting income transfers (and not just from EU partners, but also from the entire world) is the issuance of GDP-linked debt. Under this plan, countries suffering a growth slowdown would automatically benefit from a reduction in government debt payments. Within a generalized policy framework that otherwise promotes stronger and less variable economic growth, countries should be able to issue such securities on favorable terms. Obstfeld and Peri (1998) suggested such securities in

the EMU context, and considered mechanisms to mitigate moral hazard. For further discussion see Drèze (2000) and Borensztein and Mauro (2004).

In summary: The most significant and urgent area for EMU institutional innovation is the creation of a true banking union. The SSM is an important first step, but it is incomplete without deposit-insurance and resolution components, which additional features imply the need for a credible fiscal backstop. This backstop is complementary to efforts to stabilize sovereign debt markets via the ESM. Indexing the member state contributions to all central funds to economic variables could enhance national risk sharing within EMU while mitigating moral hazard. Enhancements to the SGP through the six-pack, two-pack, and fiscal compact are useful in broadening surveillance. Furthermore, they address the problem, implied by the financial/fiscal trilemma, that one EMU member's fiscal weakness hurts others by weakening the collective fiscal firewall against financial instability. However, conventional fiscal deficit indicators miss the overhang of potential government guarantees to the financial system – making broad surveillance by the Commission as well as the SSM and ESRB all the more critical. Promising areas for future innovation include programs that trade transfers for growth-enhancing reforms, as well as public debt indexed to GDP and the creation of safe euro instruments as an underpinning for the financial system. Many of these reforms require, however, complementary evolution in the democratic governance of EMU institutions, as well as careful attention to the impact on and role of EU members that do not use the euro.

#### **IV. Conclusion**

The EU imposed the euro on a linked system of national economies with well-known structural rigidities in labor and product markets. Within each country, powerful national vested interests protected existing distortions. Each economy was bound to face difficulties in an environment without its own monetary policy, but the original proponents of EMU argued that this very fact would create a policy discipline conducive to greater economic dynamism and flexibility. Governments facing difficulty would have no choice but to implement reforms, and market participants would accept these in order to avoid high unemployment and reduced profits. Importantly, governments would not be able to postpone reforms indefinitely through spending and borrowing. Both the SGP and no-bailout restrictions, along with the vigilance of market investors in sovereign debt, were to be effective brakes on public borrowing.

In a sense, this process may have worked, but not in the way its designers hoped. Policies and institutions have not faced a continuous discipline that produces steady, gradual reform. Instead, policy discipline was largely absent during the euro's first ten years, allowing lack of structural reforms and the proliferation of public and private debts to create severe vulnerabilities. In the ensuing euro zone crisis, itself a second act to the preceding global financial crisis, reform pressure has arrived suddenly and intensely, imposed on domestic interests from abroad because of the sheer absence of private market alternatives to conditionality-bound official lending.

In this essay I have focused on the interplay between finance and fiscal reform (a subset of the broader range of issues on the EU agenda, see European Commission

2012). Central to reform is recognition of the tradeoff between safeguarding financial stability and moral hazard.

Banking union must repair the discipline deficit that allowed unrestrained borrowing and lending to set the stage for the current crisis. Fiscal risks will be excessive and market incentives distorted if private unsecured lenders, whether to banks or to sovereigns, expect protection at taxpayer expense. That is why enhanced financial market safeguards – such as ECB lender of last resort activism and universal deposit insurance – require stricter, better-coordinated supervision of financial institutions, including centralized resolution powers. In turn, resolution powers call for joint fiscal resources to back them up. In our financially integrated world, the size of modern banking systems in many cases exceeds the fiscal capacities of the state (the financial/fiscal trilemma). Therefore, if it is to succeed, banking union requires some pooling of national fiscal resources. Of course, adequately addressing some of the coordination problems raised by financial globalization requires truly global solutions, not just action by EMU members or the EU.

Likewise, collective EMU support of sovereign borrowers also justifies stricter centralized fiscal oversight, as a matter of political necessity as well as incentive-compatibility. Excessive government borrowing hurts other euro members by destabilizing the domestic financial sector and weakening any joint fiscal firewall, so it is an appropriate matter for concern at the community level. Measures that limit public deficits make the postponement of reforms harder and thus are likely to encourage structural reforms in nonfinancial markets as well. At the same time, some scope must



remain for countercyclical stabilization. Over-ambitious debt and deficit reduction should not be pursued during downturns, especially downturns like the current crisis that affect many countries at once. Avoiding such outcomes is another motivation for some expanded mechanisms for fiscal resource pooling at the community level.

The challenge now is to redesign the euro zone in a way that indeed enhances policy discipline while promoting stability, growth, and the common interest in avoiding political and social unrest. New EMU-level institutions are needed to achieve these goals, but to be effective it is not enough that they be efficiently designed. They must also respect (and be seen to respect) the principle of democratic legitimacy and accountability.

## References

- Abiad, Abdul, Daniel Leigh, and Ashoka Mody. "Financial Integration, Capital Mobility, and Convergence." *Economic Policy* 24 (April 2009): 241-305.
- Acharya, Viral V., Itamar Drechsler, and Philipp Schnabl. "A Pyrrhic Victory? Bank Bailouts and Sovereign Credit Risk." Working Paper 17136, National Bureau of Economic Research, June 2011.
- Acharya, Viral V. and Philipp Schnabl. "Do Global Banks Spread Global Imbalances? Asset-Backed Commercial Paper during the Financial Crisis of 2007–09." *IMF Economic Review* 58 (August 210): 37-73.
- Adam, Klaus, Pei Kuang, and Albert Marcet. "House Price Booms and the Current Account." Mimeo, Mannheim University, University of Frankfurt, and London School of Economics, March 2011.
- Alessandri, Piergiorgio and Andrew G. Haldane. "Banking on the State." In Asli Demirgüç-Kunt, Douglas D. Evanoff, and George G. Kaufman, editors. *The International Financial Crisis: Have the Rules of Finance Changed?* Singapore: World Scientific Publishing Company, 2011.
- Allsopp, Christopher and David Vines. "Fiscal Policy, Intercountry Adjustment and the Real Exchange Rate within Europe." In Marco Buti, Servaas Deroose, Vítor Gaspar, and João Nogueira Martins, eds., *The Euro: The First Decade*. Cambridge, UK: Cambridge University Press, 2010.
- Begg, David, Pierre-André Chiappori, Francesco Giavazzi, Colin Mayer, Damien Neven, Luigi Spaventa, Xavier Vives, and Charles Wyplosz. *Monitoring European Integration: The Making of Monetary Union*. London: Centre for Economic Policy Research, 1991.
- Begg, David, Paul De Grauwe, Francesco Giavazzi, Harald Uhlig, and Charles Wyplosz. *The ECB: Safe at Any Speed?* Monitoring the European Central Bank No. 1. London: Centre for Economic Policy Research, 1998.
- Benigno, Gianluca and Luca Fornaro. "The Financial Resource Curse." Mimeo, London School of Economics, 2013.
- Blanchard, Olivier. "Adjustment within the Euro: The Difficult Case of Portugal." *Portuguese Economic Journal* 6 (April 2007a): 1-21.
- Blanchard, Olivier. "Current Account Deficits in Rich Countries." *IMF Staff Papers* 54 (2, 2007b): 191-219.

Blanchard, Olivier and Francesco Giavazzi. "Current Account Deficits in the Euro Area: The End of the Feldstein-Horioka Puzzle?" *Brookings Papers on Economic Activity* (2, 2002): 147-209.

Blank, Sven and Claudia M. Buch. "The Euro and Cross-Border Banking: Evidence from Bilateral Data." *Comparative Economic Studies* 49 (September 2007): 389-410.

Bolton, Patrick and Olivier Jeanne. "Sovereign Default Risk and Bank Fragility in Financially Integrated Economies." *IMF Economic Review* 59 (No. 2, 2011): 162-194.

Booth, Laurence, George Georgopoulos, and Walid Hejazi. "What Drives Provincial-Canada Yield Spreads?" *Canadian Journal of Economics* 40 (August 2007): 1008-1032.

Borensztein, Eduardo and Paulo Mauro. "The Case for GDP-Indexed Bonds." *Economic Policy* 19 (April 2004): 165-216.

Brunnermeier, Markus, Luis Garciano, Philp R. Lane, Marco Pagano, Ricardo Reis, Tano Santos, Stijn van Nieuwerburgh, and Dimitri Vayanos. "European Safe Bonds (ESBies)." URL: <http://euro-nomics.com/wp-content/uploads/2011/09/ESBiesWEBsept262011.pdf>

Buiter, Willem and Anne Sibert. "How the Eurosystem's Treatment of Collateral in Its Open Market Operations Weakens Fiscal Discipline in the Eurozone (and What to Do about It)." Discussion Paper 5626, Centre for Economic Policy Research, 2005.

Calvo, Guillermo A. "Servicing the Public Debt: The Role of Expectations." *American Economic Review* 78 (September 1988): 647-661.

Chen, Ruo, Gian Maria Milesi-Ferretti, and Thierry Tresselt. "External Imbalances in the Euro Area." *Economic Policy* 28 (January 2013): 101-142.

Čihák, Martin and Jörg Decressin. "The Case for a European Banking Charter." Working Paper WP/07/173, International Monetary Fund, July 2007.

Claessens, Stijn, Richard J. Herring, and Dirk Schoenmaker. *A Safer World Financial System: Improving the Resolution of Systemic Institutions*. 12<sup>th</sup> Geneva Report on the World Economy. Geneva and London: Centre for Monetary and Banking Studies and Centre for Economic Policy Research, 2010.

Coeurdacier, Nicolas and Philippe Martin. "The Geography of Asset Trade and the Euro: Insiders and Outsiders." *Journal of the Japanese and International Economies* 23 (2009): 90-113.

De Grauwe, Paul. "The Governance of a Fragile Eurozone." *Australian Economic Review* 45 (September 2012): 255-268.

Delpla, Jacques. "Pour une allocation chômage européenne." *Les Echos*, 14 March 2012.  
URL: <http://lecercle.lesechos.fr/economie-societe/international/europe/221144524/allocation-chomage-europeenne>

De Santis, Robert A. and Bruno Gérard. "International Portfolio Reallocation: Diversification Benefits and European Monetary Economic Union." *European Economic Review* 53 (November 2009): 1010-1027.

Demirgüç-Kunt, Asli and Harry Huizinga. "Are Banks Too Big to Fail or Too Big to Save? International Evidence from Equity Prices and CDS Spreads." Policy Research Working Paper 5360, World Bank, Development Research Group, July 2012.

Díaz-Alejandro, Carlos F. "Good-bye Financial Repression, Hello Financial Crash." *Journal of Development Economics* 19 (February 1985): 1-24.

Drèze, Jacques H. "Economic and Social Security in the Twenty-First Century, with Attention to Europe." *Scandinavian Journal of Economics* 102 (September 2000): 327-348.

Eichengreen, Barry and Charles Wyplosz. "The Stability Pact: More than a Minor Nuisance?" *Economic Policy* 26 (April 1998): 65-113.

European Commission (Directorate-General for Economic and Financial Affairs), *EMU@10: Successes and Challenges after 10 Years of Economic and Monetary Union*. Brussels: European Commission, 2008.

European Commission. "A Blueprint for a Deep and Genuine Economic and Monetary Union: Launching European Debate." Brussels, 28 November 2012.

Fagan, Gabriel and Vítor Gaspar. "Adjusting to the Euro." Working Paper Series 716, European Central Bank, January 2007.

Farhi, Emmanuel and Iván Werning. "Fiscal Unions." Mimeo, Harvard and MIT, July 2012.

Folkerts-Landau, David and Peter Garber. "What Role for the ECB in Europe's Financial Markets?" In Alfred Steinherr, editor, *30 Years of European Monetary Integration*. London: Longman, 1994.

Garber, Peter M. "The TARGET Mechanism: Will It Propagate or Stifle a Stage III Crisis?" *Carnegie-Rochester Conference Series on Public Policy* 51 (1999): 195-220.

Gaulier, Guillaume and Vincent Vicard. "The Signatures of Euro Area Imbalances." Mimeo, Banque de France, July 2012.

Gennaioli, Nicola, Alberto Martin, and Stefano Rossi. "Sovereign Default, Domestic Banks, and Financial Institutions." Mimeo, February 2012.

Gerlach, Stefan, Alexander Schulz, and Guntram B. Wolff. "Banking and Sovereign Risk in the Euro Area." Discussion Paper 7833, Centre for Economic Policy Research, May 2010.

Giavazzi, Francesco and Marco Pagano. "Confidence Crises and Public Debt Management." In Rudiger Dornbusch and Mario Draghi, editors, *Public Debt Management: Theory and History*. Cambridge, UK: Cambridge University Press, 1990.

Giavazzi, Francesco and Luigi Spaventa. "Why the Current Account Matters in a Currency Union." In Miroslav Beblavý, David Cobham, and L'udovít Ódor, *The Euro Area and the Financial Crisis*. Cambridge, UK: Cambridge University Press, 2011.

Goodhart, Charles A. E., editor. *Which Lender of Last Resort for Europe?* London: Central Banking Publications, 2000.

Goodhart, Charles A. E. "Some New Directions for Financial Stability." Per Jacobsson Lecture, Zurich, June 2004. URL: <http://www.bis.org/events/agm2004/sp040627.htm>

Gourinchas, Pierre-Olivier. "Comment on 'Current Account Deficits in the Euro Area: The End of the Feldstein-Horioka Puzzle?'" *Brookings Papers on Economic Activity* (2, 2002): 196-207.

Gourinchas, Pierre-Olivier and Maurice Obstfeld. "Stories of the Twentieth Century for the Twenty-First." *American Economic Journal: Macroeconomics* 4 (January 2012): 226-265.

Hall, George J. and Thomas J. Sargent. "Interest Rate Risk and Other Determinants of Post-WWII US Government Debt/GDP Dynamics." *American Economic Journal: Macroeconomics* 3 (July 2011): 192-214.

Kalemli-Ozcan, Sebnem, Simone Manganelli, Elias Papaioannou, and José Luis Peydró. "Financial Integration, Macroeconomic Volatility and Risk Sharing – The Role of Monetary Union." In Bartosz Maćkowiak, Francesco Paolo Mongelli, Gilles Noblet, and Frank Smets, editors, *The Euro at Ten – Lessons and Challenges*. Frankfurt: European Central Bank, 2009.

Kalemli-Ozcan, Sebnem, Elias Papaioannou, and José Luis Peydró. "What Lies Beneath the Euro's Effect on Financial Integration? Currency Risk, Legal Harmonization, or Trade?" *Journal of International Economics* 81 (2010): 75-88.

Kenen, Peter B. *Economic and Monetary Union in Europe: Moving beyond Maastricht*. Cambridge, UK: Cambridge University Press, 1995.

Krugman, Paul R. *Has the Adjustment Process Worked? Policy Analyses in International Economics* 34. Washington, D.C.: Institute for International Economics, 1991.

Lane, Philip R. "Irish Fiscal Policy under EMU." *Irish Banking Review* (Winter 1998): 2-10.

Lane, Philip R. "Global Bond Portfolios and EMU." *International Journal of Central Banking* 2 (June 2006): 1-23.

Lane, Philip R. "The European Sovereign Debt Crisis." *Journal of Economic Perspectives* 26 (Summer 2012): 49-68.

Lane, Philip R. and Peter McQuade. "Domestic Credit Growth and International Capital Flows." Mimeo, Trinity College Dublin, May 2012.

Lane, Philip R. and Gian Maria Milesi-Ferretti. "The External Wealth of Nations, Mark II: Revised and Extended Estimates of Foreign Assets and Liabilities, 1970-2004." *Journal of International Economics* 73 (November 2007a): 223-250.

Lane, Philip and Gian Maria Milesi-Ferretti. "The International Equity Holdings of Euro Area Investors." In Robert Anderton and Filippo di Mauro, editors, *The Importance of the External Dimension for the Euro Area: Trade, Capital Flows, and International Macroeconomic Linkages*. Cambridge, UK: Cambridge University Press, 2007b.

Lane, Philip R. and Barbara Pels. "Current Account Imbalances in Europe." Discussion Paper 8958, Centre for Economic Policy Research, May 2012.

Merler, Silvia and Jean Pisani-Ferry. "Sudden Stops in the Euro Area." Bruegel Policy Contribution 2012/06, March 2012.

Mody, Ashoka and Damiano Sandri. "The Eurozone Crisis: How Banks and Sovereigns Came to Be Joined at the Hip." *Economic Policy* 27 (April 2012): 199-230.

Mongelli, Francesco Paolo and Charles Wyplosz. "The Euro at Ten – Unfulfilled Threats and Unexpected Challenges." In Bartosz Maćkowiak, Francesco Paolo Mongelli, Gilles Noblet, and Frank Smets, editors, *The Euro at Ten – Lessons and Challenges*. Frankfurt: European Central Bank, 2009.

Obstfeld, Maurice. "The Logic of Currency Crises." *Cahiers Économiques et Monétaires* (43, 1994): 189-213.

- Obstfeld, Maurice. *EMU: Ready or Not?* Essays in International Finance No. 209. Princeton, NJ: International Finance Section, Department of Economics, Princeton University, 1998.
- Obstfeld, Maurice and Giovanni Peri. "Regional Non-Adjustment and Fiscal Policy." *Economic Policy* 13 (April 1998): 205-259.
- Pisani-Ferry, Jean. "The Euro Crisis and the New Impossible Trinity." Bruegel Policy Contribution 2012/01, January 2012.
- Pisani-Ferry, Jean, André Sapir, Nicolas Véron, and Guntram B. Wolff. "What Kind of European Banking Union?" Bruegel Policy Contribution 2012/12, June 2012.
- Pisani-Ferry, Jean and Guntram B. Wolff. "The Fiscal Implications of a Banking Union." Bruegel Policy Brief 2012/02, September 2012.
- Prati, Alessandro and Garry J. Schinasi. *Financial Stability in European Economic and Monetary Union*. Princeton Studies in International Finance No. 86. Princeton, NJ: International Finance Section, Department of Economics, Princeton University, 1999.
- Rey, Hélène. "Comment on 'The Euro's Three Crises'." *Brookings Papers on Economic Activity* (1, 2012): 219-226.
- Rodrik, Dani. "The Future of Economic Convergence." In *Achieving Maximum Long-Run Growth*. Kansas City, MO: Federal Reserve Bank of Kansas City, 2012.
- Sapir, André. "Europe after the Crisis: Less or More Role for Nation States in Money and Finance?" *Oxford Review of Economic Policy* 27 (2011): 608-619.
- Schmitz, Birgit and Jürgen von Hagen. "Current Account Imbalances and Financial Integration in the Euro Area." *Journal of International Money and Finance* 30 (December 2011): 1676-1695.
- Schoenmaker, Dirk. *Governance of International Banking: The Financial Trilemma*. Oxford: Oxford University Press, 2013.
- Shambaugh, Jay C. "The Euro's Three Crises." *Brooking Papers on Economic Activity* (1, 2012): 157-211.
- Spiegel, Mark M. "Monetary and Financial Integration: Evidence from the EMU." *Journal of the Japanese and International Economies* 23 (2009a): 114-130.
- Spiegel, Mark M. "Monetary and Financial Integration in the EMU: Push or Pull?" *Review of International Economics* 17 (2009b): 751-776.

Van Rompuy, Herman. "Towards a Genuine Economic and Monetary Union." Brussels, 5 December 2012.

Véron, Nicolas. "Europe's Single Supervisory Mechanism and the Long Journey Towards Banking Union." Bruegel Policy Contribution 2012/16, October 2012.

Viner, Jacob. *The Customs Union Issue*. New York: Carnegie Endowment for International Peace, 1950.

Vives, Xavier. "The Supervisory Function of the European System of Central Banks." *Giornale degli Economisti e Annali di Economia* 51 (October-December 1992): 523-532.

Walters, Alan. *Sterling in Danger: Economic Consequences of Fixed Exchange Rates*. London: Fontana, 1990.

Waysand, Claire, Kevin Ross, and John de Guzman. "European Financial Linkages: A New Look at Imbalances." IMF Working Paper WP/10/295, December 2010.

Wyplosz, Charles. "Europe's Crisis: It's About Public Debts, Not Competitiveness." Mimeo, Graduate Institute, Geneva, August 2012.



Table 1 Average spreads of sovereign ten-year yields versus Germany, from euro entry until Lehman Brothers failure, September 2008 (basis points)

	Belgium	France	Greece	Ireland	Italy	Portugal	Spain
Average	4.3	-5.0	17.6	1.0	13.6	5.7	0.4
St. dev.	11.7	6.7	14.5	12.2	12.2	12.1	11.7

Source: Weekly end-of-week data from Global Financial Data

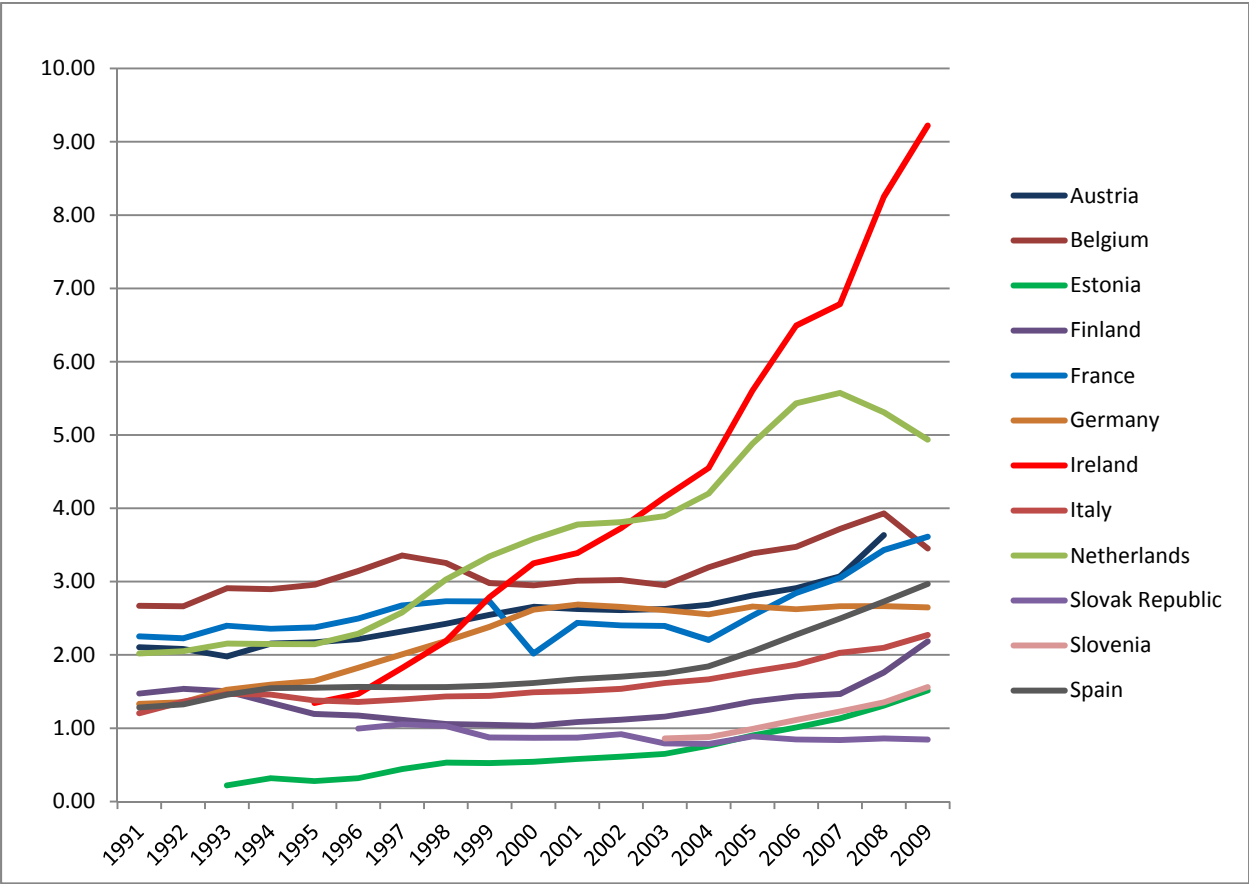


Figure 1 Bank assets relative to GDP, selected countries

Source: OECD Banking Statistics and IMF, WEO Database, October 2012

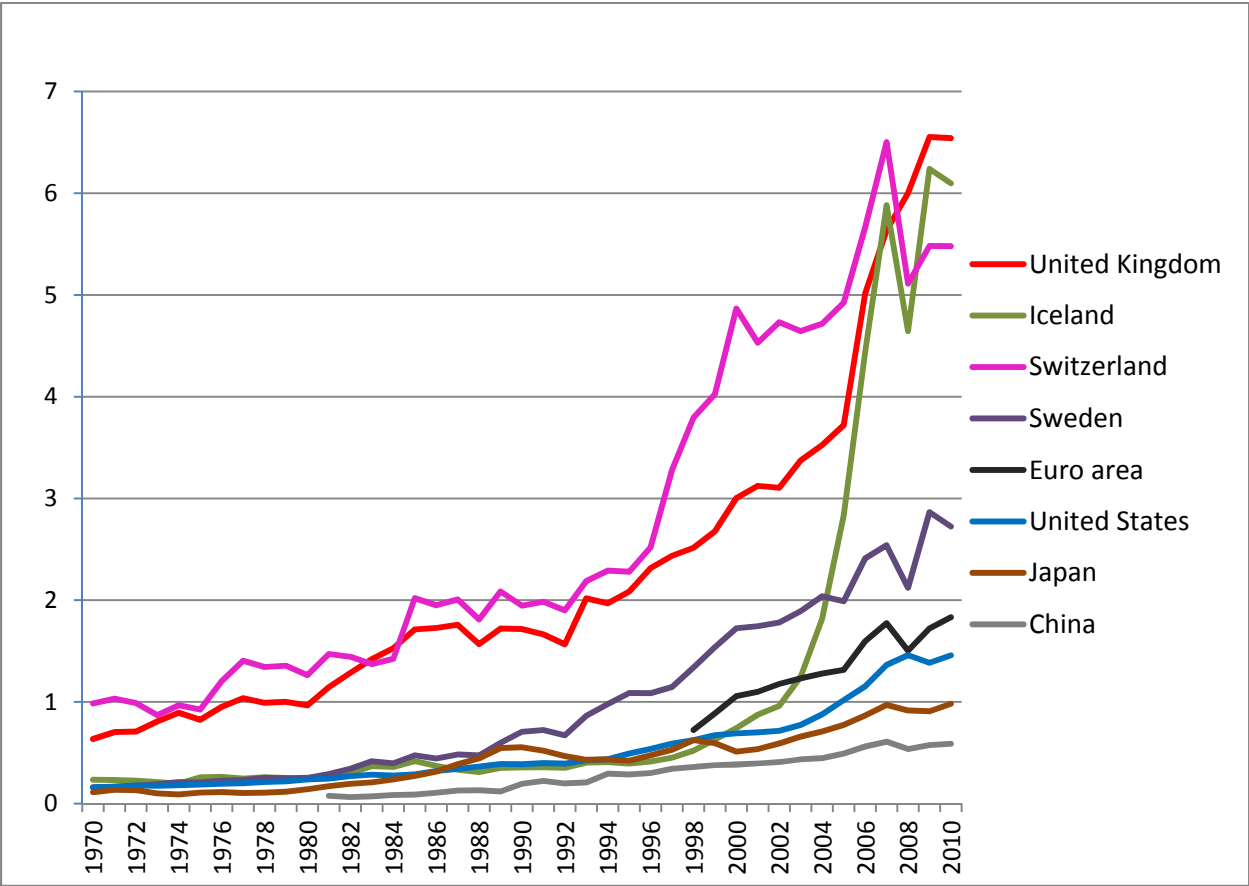


Figure 2 Average of gross external assets and liabilities relative to GDP

Source: Updated Lane and Milesi-Ferretti (2007a) data, courtesy of the authors

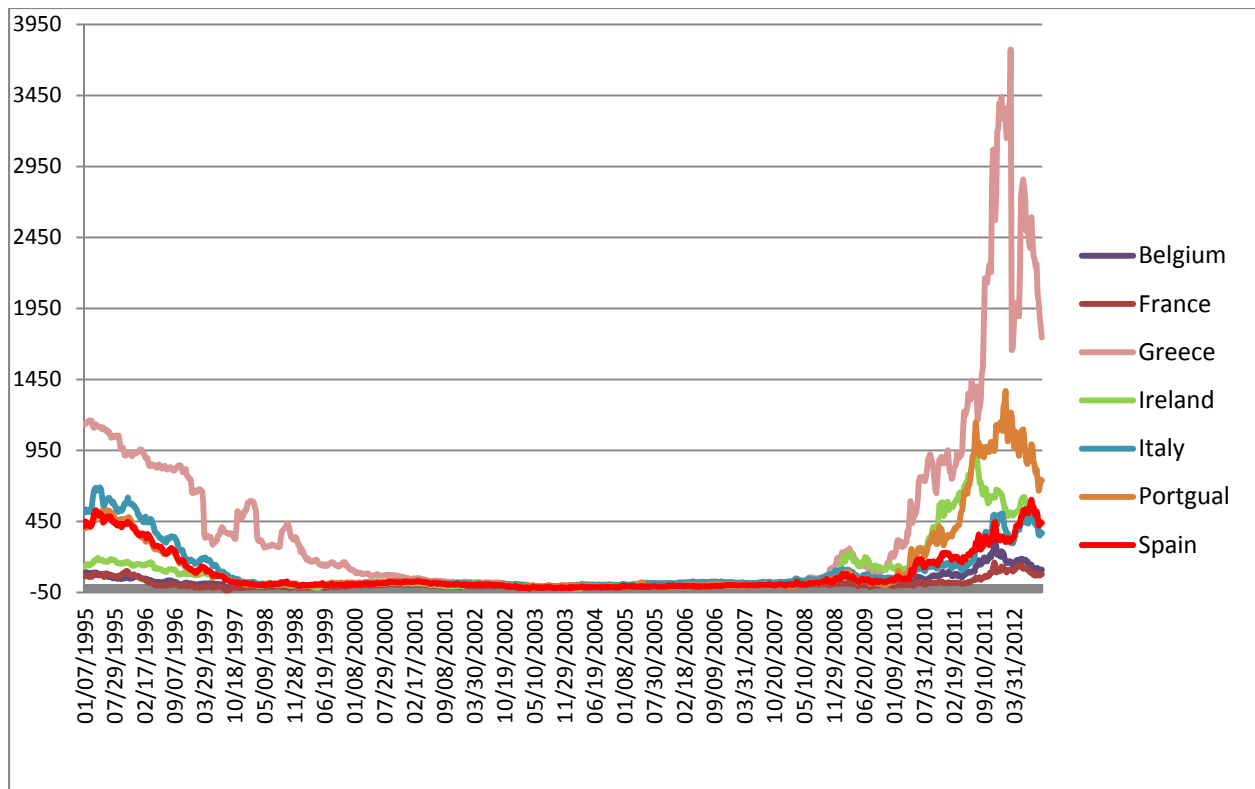


Figure 3 Ten-year government bond spreads against Germany, 1995-2012 (basis points)

Source: Global Financial Data

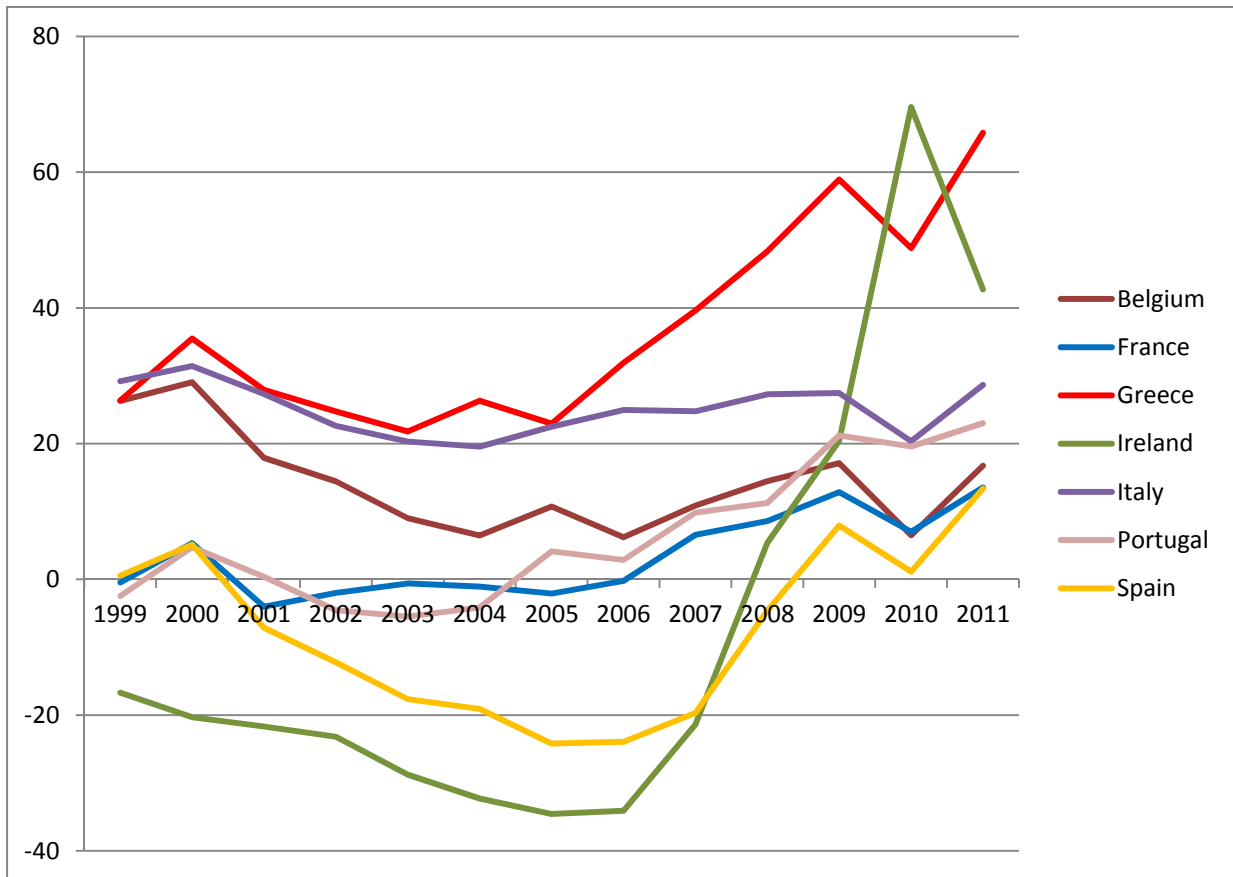


Figure 4 Hypothetical sovereign spreads over Germany based on Canadian spread responses to provincial deficits and debt (basis points)

Source: Author's calculations based on fiscal data from IMF, WEO Database, October 2012

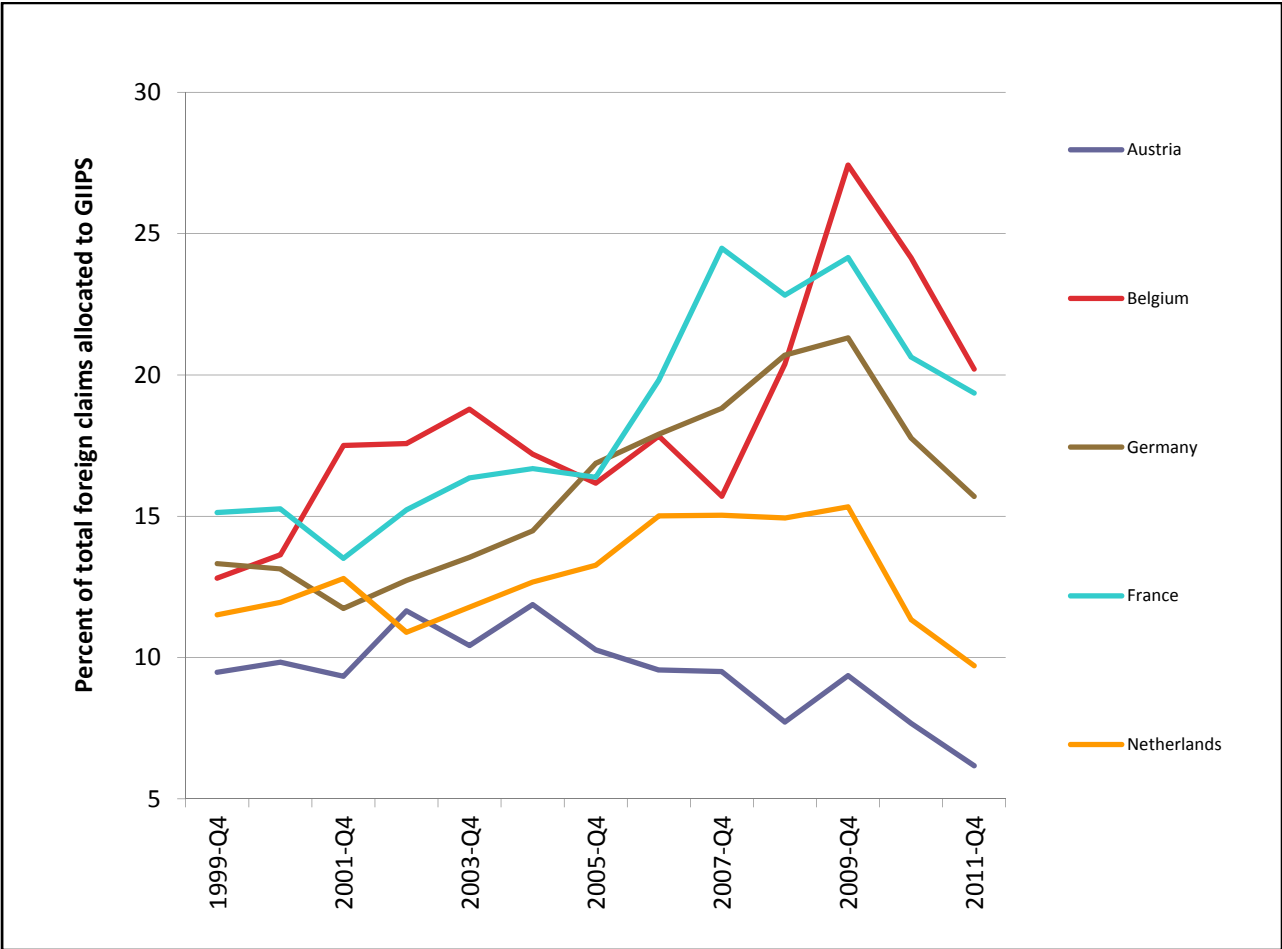


Figure 5 Foreign claims of northern euro zone banks on Greece, Ireland, Italy, Portugal, and Spain (percent of total foreign claims)

Source: Bank for International Settlements, Consolidated Banking Statistics

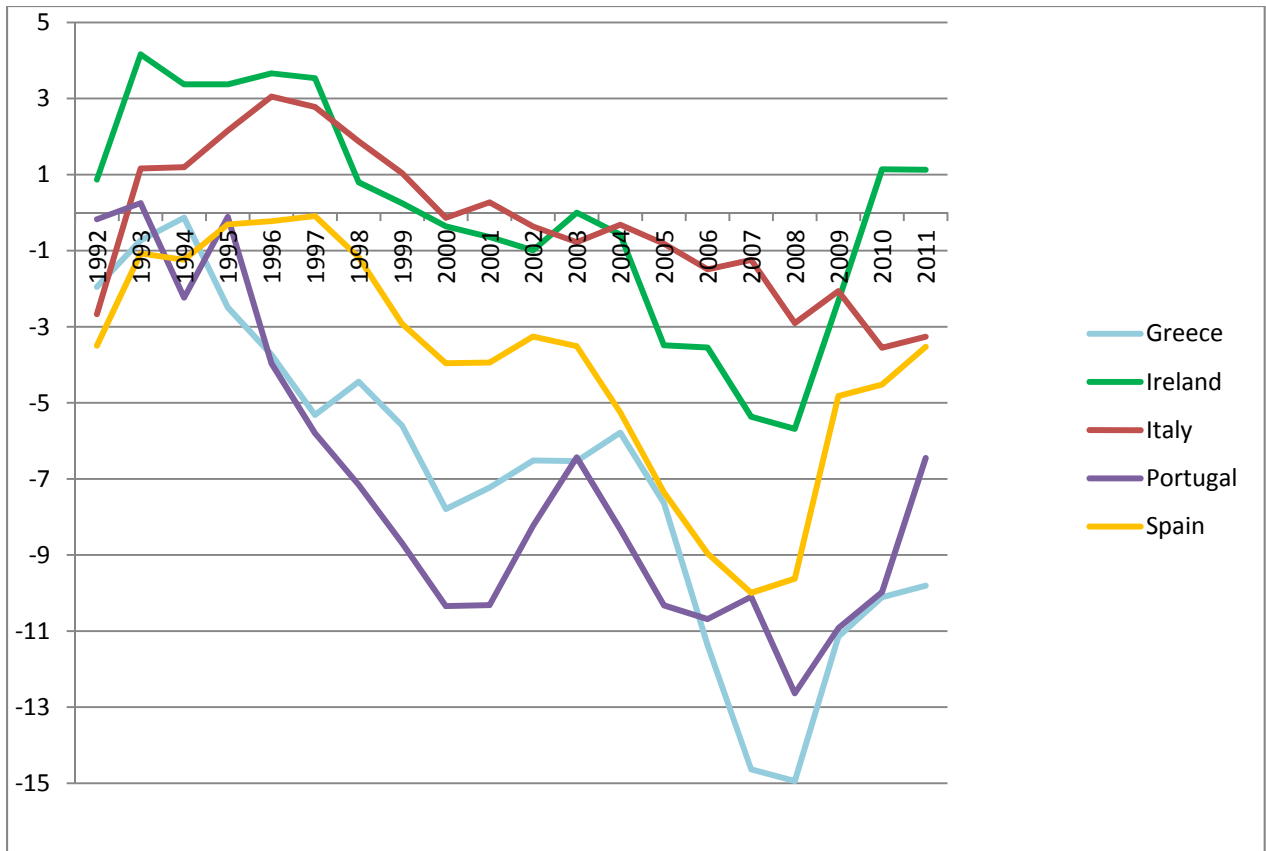


Figure 6 Current account balances of euro area peripheral countries (percent of GDP)

Source: IMF, *World Economic Outlook* database, October 2012.

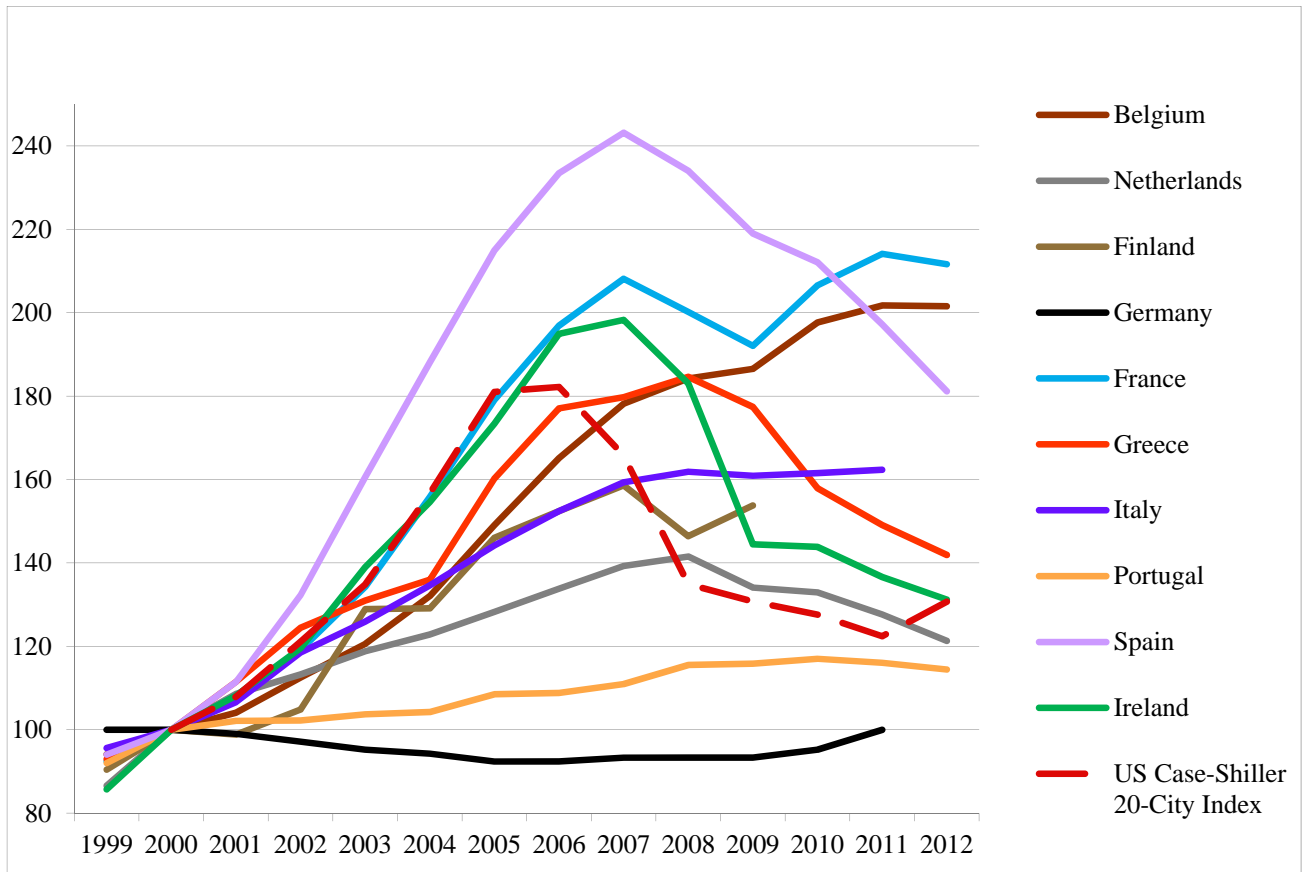


Figure 7 Residential property prices in the euro area and the United States (nominal index, base year = 2000)

Source: Ireland index is the D/Environment average second-hand house price index, courtesy David Duffy of the ESRI of Ireland; other countries from Global Financial Data



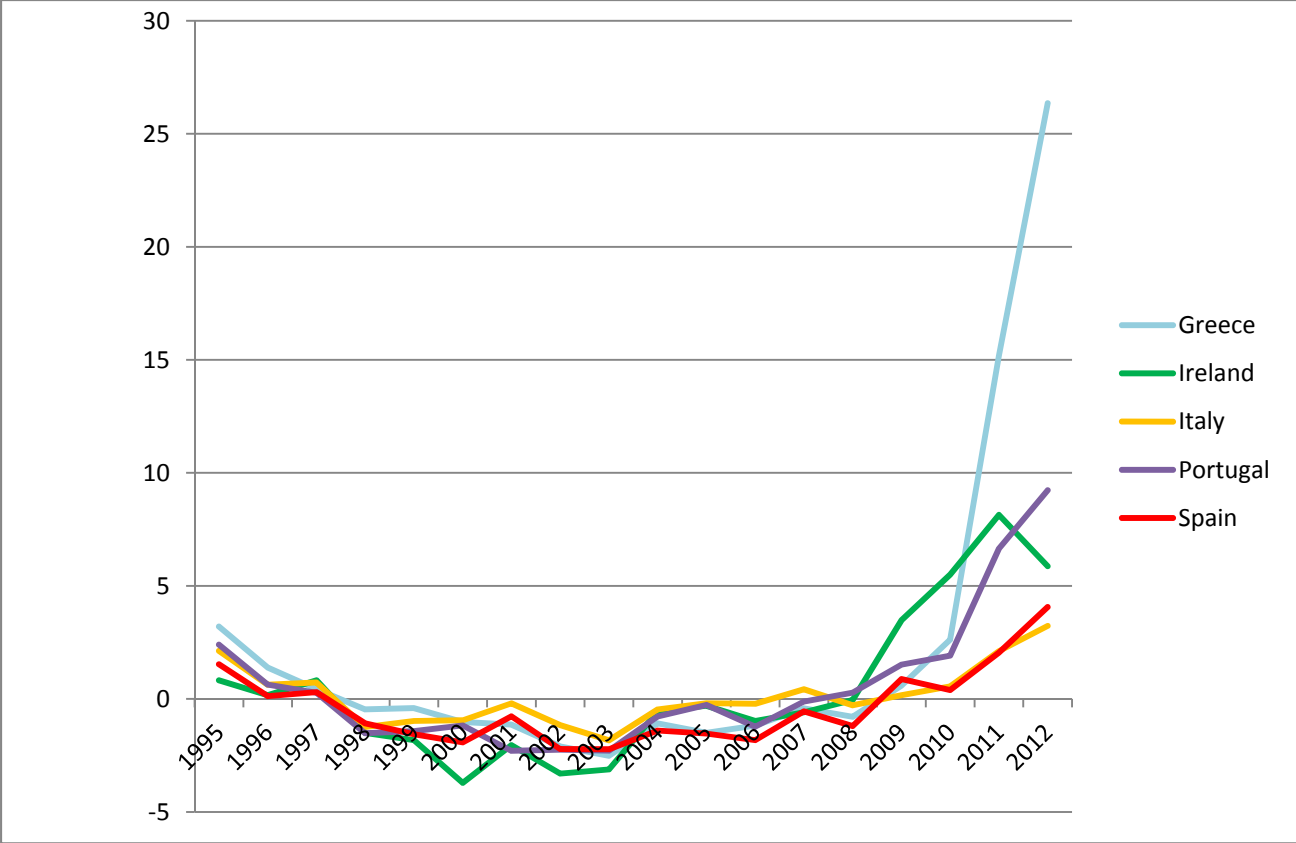


Figure 8 Ex post long-term real interest rates relative to Germany (based on CPI inflation, percent per year)

Source: Global Financial Data and IMF, WEO Database, October 2012

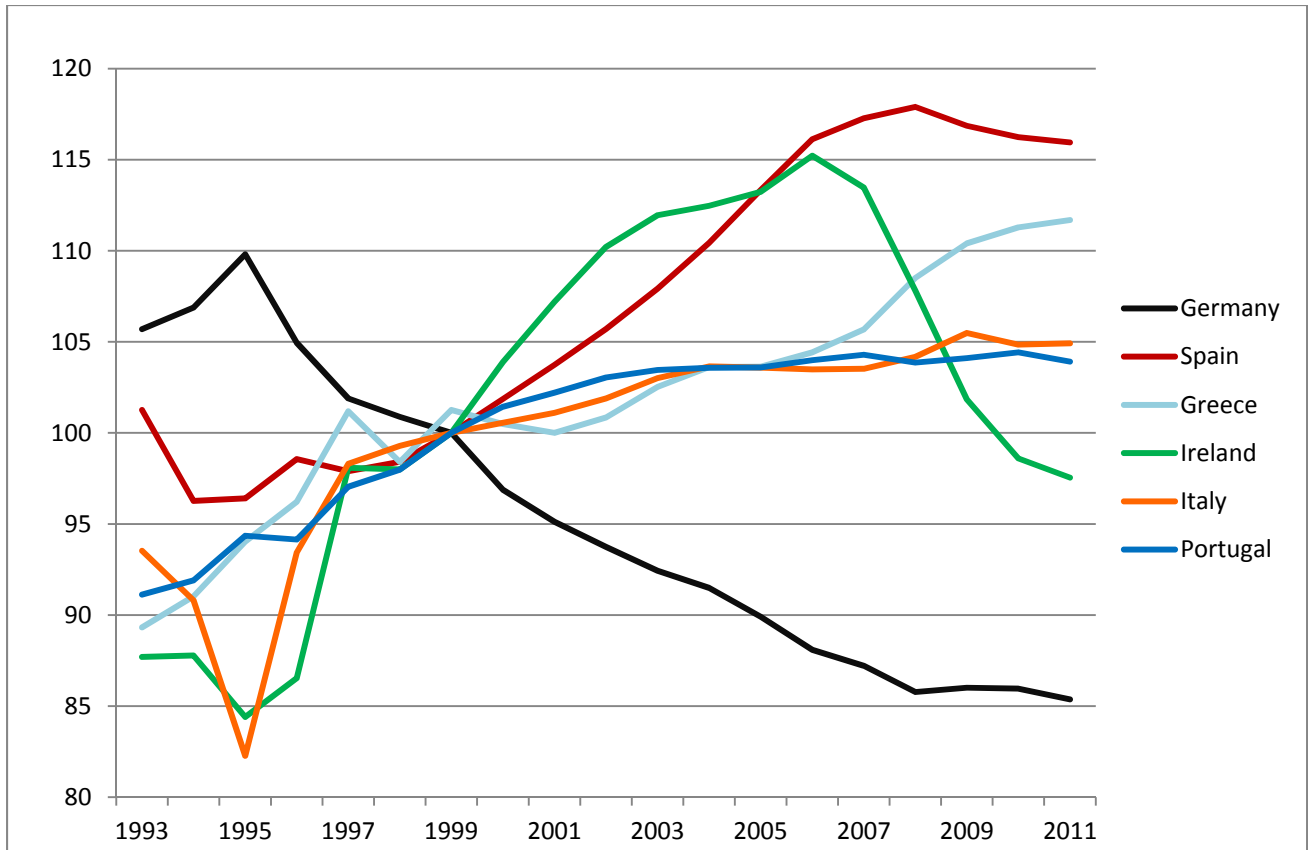


Figure 9 Harmonized international competitiveness index based on GDP deflators (annual data, year of euro entry = 100, increase is real appreciation)

Source: Eurostat

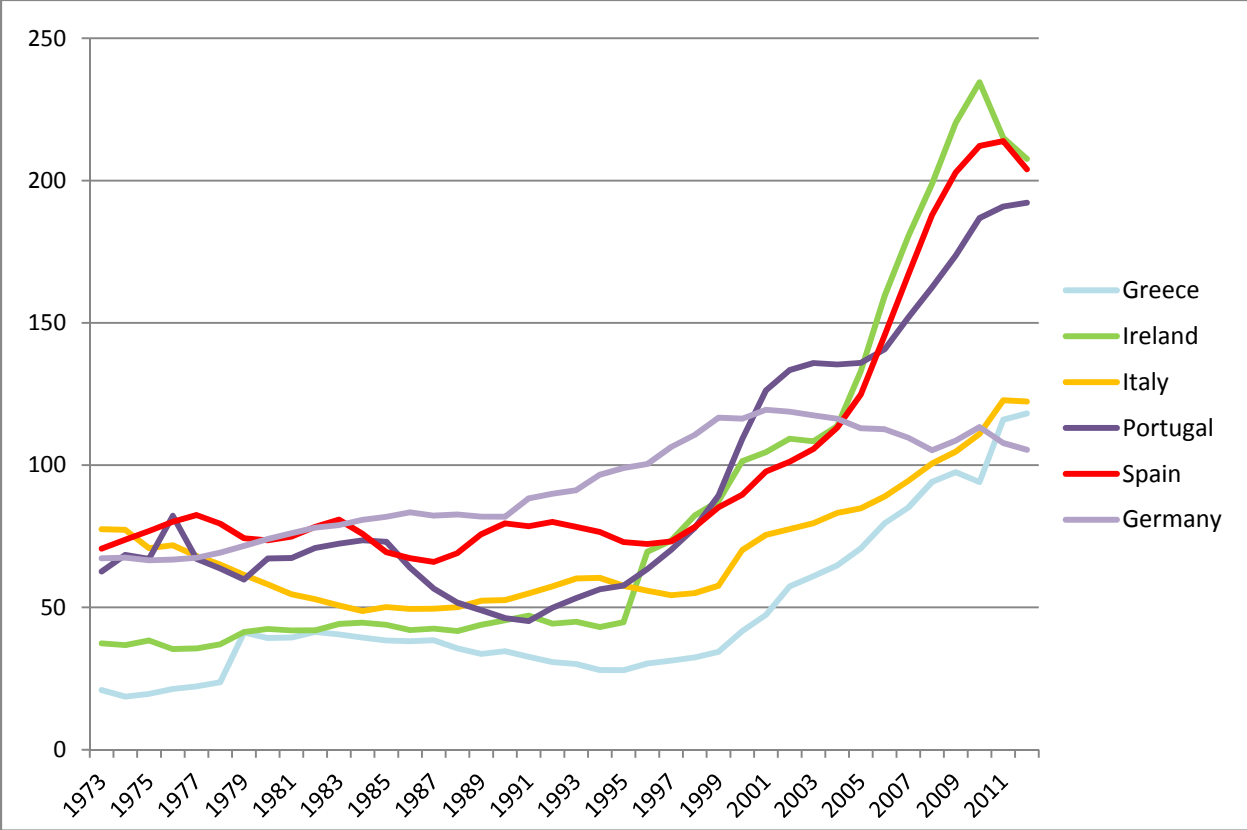


Figure 10 Domestic credit to the private sector (percent of GDP)

Source: World Bank



Figure 11 Harmonized CPI inflation rates (aggregates include all euro area members, with changing composition, percent per year)

Source: Eurostat

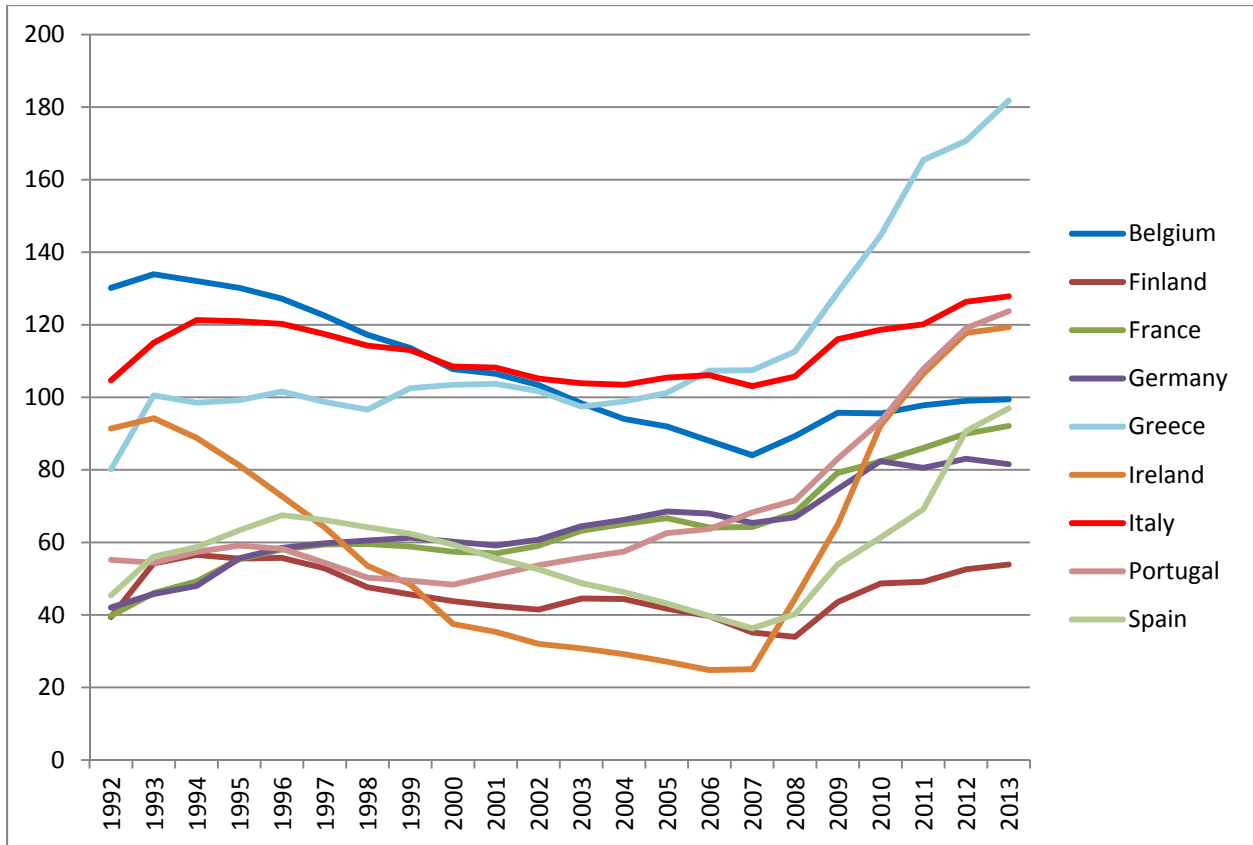


Figure 12 Gross general government debt of selected euro area countries (percent of GDP, projections after 2011)

Source: IMF, *World Economic Outlook* database, October 2012

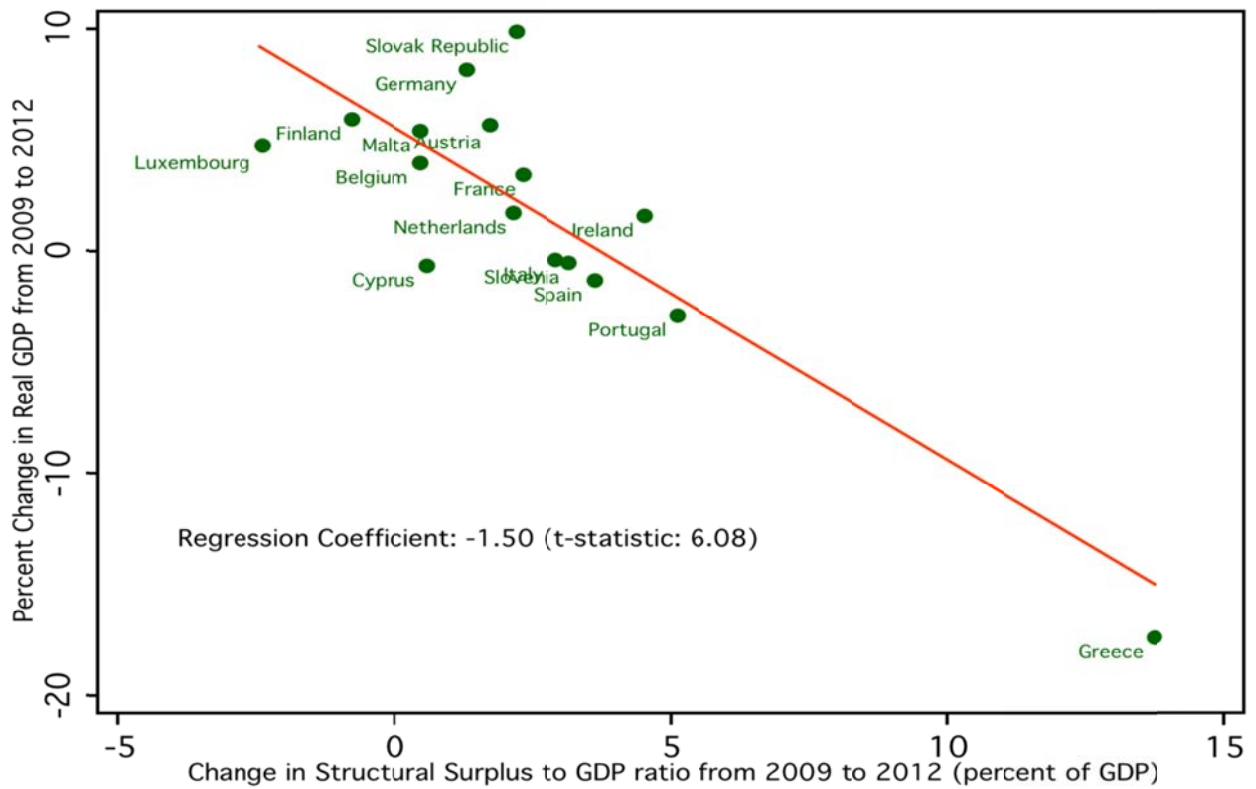


Figure 13 Relation between change in structural fiscal balance (as a share of GDP) and output growth (percent), 2009-2012

Source: IMF, *World Economic Outlook* database, April 2013, and author's calculations