Fiscal Institutions for a Currency Union

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I. Introduction

The recent severe worldwide recession and financial disruption has exposed the difficulty of fiscal policy coordination in Europe, in particular among countries within the Euro area, where the Stability and Growth Pact (SGP) did not prevent several countries, beginning with Greece, from reaching the verge of default and seeking financial assistance. Responses to these fiscal crises have included coordination with the International Monetary Fund, the establishment of a new bailout fund within Europe, to make future financial rescues easier to manage, and a move to make the Stability and Growth Pact more effective as a device for fiscal discipline, to make such rescues less likely.

Notably, this is not the first time that the SGP has been found wanting and its reform attempted. In the past its targets for annual deficits and debt of 3 percent and 60 percent of GDP, respectively, were seen as too rigid to deal with country-specific issues, with the natural result that they were frequently violated without significant consequences for the countries that transgressed. This led to modifications in 2005 intended to make the SGP more flexible and hence also more credible. The recent episode, on the other hand, has led this year to the formulation of measures that would increase surveillance and sanctions, to give the SGP more bite.

It seems clear from the evolution and performance of the SGP over time that the objective of finding the right mechanism for fiscal policy coordination within the Euro area presents a significant challenge. Aside from the obvious political problems involved when countries perceive infringements on national sovereignty, there remains the classic problem of making rules that are transparent and firm while at the same time flexible enough to be credible.

But are improved mechanisms for fiscal policy coordination and financial rescues the right objectives for countries within the Euro area? We will argue that the case is not obvious, and that even if there is a place for common fiscal rules they should not take the form of a strengthened version of the SDP. To help illustrate these arguments, we use the alternative practice in another important currency union, the United States, which has no common or centrally imposed fiscal restrictions.

Virtually all US states have some sort of annual requirement related to budget balance, although these restrictions vary in their intensity, with some states having relatively weak rules relating only to initial policy projections and, at the other extreme, some actually requiring that each fiscal year end with a balanced budget, with measures taken within the year to offset unfolding fiscal shocks.[1] But these are self-imposed restrictions chosen independently by the individual states themselves typically more than a century ago. They reflect the wishes of the states to maintain credibility and access to financial markets, and have nothing to do with the need to protect a common currency.[2] The US federal government played no role in this process. Indeed, the US constitution would restrict the ability of the US federal government to impose such rules on individual states, as federal intervention in state fiscal affairs is generally limited to matters affecting interstate commerce, such as taxation of cross-state transactions. The key point about the fiscal rules in US states is that, even if these rules share common characteristics, the similarities arose through unilateral action based on each state's self interest rather than through any type of policy coordination, explicit or even implicit.

[1] For more information on state budget rules, see Clemens and Miran (2010). Because states have separate capital budgets, the budget balance requirements generally do not restrict borrowing for capital projects in the same manner. Also, as unfunded state pension commitments are not treated as explicit commitments, many states adhering to balanced budget requirements still face considerable future fiscal pressure. See Novy-Marx and Rauh (2011) for recent estimates of these implicit pension liabilities.

[2] See Eichengreen and von Hagen (1995).

Because both the United States and Europe have fiscal rules, the question is not whether such rules should exist, but rather what form they should take and how they should be developed and implemented. It might be that a type of "crowding out" exists, that centrally imposed rules obviate the incentives for some or all individual states or countries within a currency union to adopt their own. Perhaps state-level balanced-budget rules would not have developed had the United States imposed fiscal rules on states from beginning, as is the case in Europe, which based each country's entry into the Euro area upon its satisfying (or appearing to satisfy) the debt and deficit conditions of the SGP. But even had each country been permitted to impose its own budget rules upon entering the Euro area, it is doubtful that these rules would have uniformly followed those embodied in the SGP.

Although there are important differences between the two currency unions, many of these differences actually make the case for policy coordination stronger in the United States rather than in Europe. Even where the case for coordination or other fiscal restrictions may be stronger in Europe, the type of rules needed would appear to be quite different than those currently being followed or developed. In short, it is difficult to see why the path Europe is currently following is optimal for Europe, if the path being followed in the United States is optimal for the United States.

In the next section, we consider several potential arguments for fiscal policy coordination. In light of that discussion, we then move on in the following section to consider the implications for fiscal rules – both their need and their design – as well as alternative restrictions or institutions that might be appropriate.

II. Arguments for Fiscal Policy Coordination and Restrictions

A. Spillover Effects of Fiscal Policies

Perhaps the most basic intuition supporting common fiscal rules in a currency union is that there already is monetary policy coordination. Without an independent instrument of monetary policy at its disposal, a member country cannot as easily offset the economic spillover effects of another member country's fiscal policy, and so a coordination of these fiscal policies is also desirable. Otherwise, the monetary authority may have to compromise its own objectives to deal with the shocks induced by individual countries.

Leaving aside for the moment what this argument implies for how fiscal policy should be coordinated, let us consider the strength of the argument itself. It relies on there being strong potential spillovers from one country to another. Otherwise, one country's fiscal policies would be of little concern to another within the currency union. It may be natural to assume that spillovers are important, since countries within a currency union are likely to have economies that are reasonably interconnected. But the strength of potential spillovers is an empirical question.

To shed some light on this question, we estimate a simple VAR of the form:

(1) $$X_t = \Pi X_{t-1} + u_t$$

where X_t is the vector of differences in the logarithm of real GDP for the individual countries in the Euro area and u_t is a vector of disturbances.[3] The frequency of the data is quarterly and the sample period for these estimates is 1976:Q1-2010:Q3, covering all current members of the Euro area except Cyprus, Estonia, Malta, Slovenia and Slovakia. To conserve on the number of

[3] The addition of further lags did not have a significant impact on the estimates.

estimated parameters, given the large number of countries and relatively short sample period, we impose two alternative sets of restrictions on the off-diagonal elements of the coefficient matrix Π, which relate output changes in one country to lagged output changes in others:

a) $\Pi_{ij} \sim f_{ij}$ $(i \neq j)$ where f_{ij} is the average share over the period 2000-2008 of country i's trade volume (exports plus imports) within the Euro area with country j. That is, we impose the assumption that the effects of lagged shocks in other countries, j, affect output in a particular country i in proportion to their importance as trading partners for country i.

b) $\Pi_{ij} \sim Y_j$ $(i \neq j)$; where Y_j is country j's average share of Euro area GDP based on the same recent data. That is, we impose the assumption that lagged shocks within the Euro area affect output in each country in proportion to the source country's economic size.

While method a) allows the effects of a particular country to vary according to trade patterns, method b) does not. But either method imposes only a proportionality constraint on each row of the matrix Π and still allows the overall impact of other countries on a particular country, i, to vary across i.

We estimate equation (1) for all US states (excluding Alaska and Hawaii) as well, using state personal income rather than GDP as a measure of output (over the sample period 1969:Q1-2010:Q3) because data for the latter measure are not available at a quarterly frequency. To calculate impulse response functions for shocks starting in a particular country or state, we use a Cholesky decomposition that orders that country or state first and then orders all remaining countries or states in order of average GDP or income. We then aggregate effects on individual

countries or states by average GDP or income to form estimates of impulse responses of aggregate output to the output shock in one country or state.

Figure 1 presents these estimated impulse response functions for 10-percent output shocks in four Euro area countries (panels a and c) and four US states (panels b and d), with the first two panels based on trade weights (restriction a above) and the last two panels based on size weights (restriction b above). The four Euro area countries are those whose fiscal situations have generally received the most attention in recent months, Greece, Ireland, Portugal and Spain. The four US states are those facing the greatest budget shortfalls for the upcoming 2012 budget year as a percent of their fiscal-year 2011 budgets, according to one recent estimate (McNichol, Oliff, and Johnson, 2011, Table 1).[4] Looking first at Figure 1a, it is not surprising that shocks to Greece and Ireland are estimated to have a smaller impact than shocks to Portugal and Spain, given the relative sizes of these four countries' economies. Comparing these results with those in panel c, we observe that weighting by size rather than by trade has relatively little impact on the initial impact of the shocks, with the main difference being with respect to the subsequent impulse response patterns.

A comparison of panels b and d of Figure 1 suggests similar differences between trade-weighted and size-weighted estimates for the US states. However, the more important distinction in the figure is between the United States and Europe. The aggregate effects of shocks in all four states are stronger than the effects of shocks in all four Euro area countries. This ranking holds even when one compares the smallest of the four US states, Nevada, to the largest of the four Euro area countries, Spain, even though Nevada accounts for a much smaller share of US personal income (0.8 percent) than Spain does of GDP in the Eurozone (11.8

[4] The shortfalls for these states range from 29.3 percent for California to 45.2 percent for Nevada.

percent). Moreover, the shocks in the other three states are estimated to have a considerably larger impact than those in Nevada, which is not surprising given their economic significance. By the estimates in panels b and d, for example, the impact of an output shock in California, New Jersey or Texas is roughly ten times as important to the United States than a shock to Greece or Ireland is to Europe, and roughly three times as important as a shock to Spain.

In summary, shocks to countries in distress would certainly have an impact on aggregate economic activity in Europe. But the impact of shocks to states in distress is significantly greater in the United States. This is not surprising, given how integrated the economies of states within the United States are. Thus, if the rationale for fiscal rules is to limit the spillover effects of economic shocks that result from unrestrained fiscal policies in other members of the currency union, it is not immediately evident why this should be of greater concern in Europe than in the United States.

A rejoinder to this conclusion might be that the individual countries of Europe have much larger budgets relative to their economies than do US states; hence a budget shock equal to a given percentage of a country's budget might be several times as big relative to the size of that country's economy than a shock of the same percentage to a typical US state's budget. But what is relevant is the size of the shock itself, not the budget. During the recent financial crisis, many US states have faced incipient budget gaps equal to 30 percent or more of their budgets (see footnote 4). These large gaps reflect the volatility of revenues in many states and the sensitivity of their spending (particularly on social insurance) to the business cycle. Thus, the potential shocks to their economies and those of other states associated with budget gaps are large.

In addition, there are a series of logical questions regarding why and how we should seek to reduce the scope for spillovers from fiscal shocks. First, why should fiscal shocks be treated

differently from other shocks? That is, economic spillovers from one country to another can result from a variety of sources, including fiscal policy but also changes in preferences, productivity and demographics. It is not clear why we should worry primarily about fiscal shocks, or that they are a particularly important source of economic shocks relative to others. (Of course, it is difficult to know how important fiscal shocks would be without constraints like the SGP or state budget rules, since fiscal policy has had to operate under these rules.) One response might be that it is easier to specify controls that limit fiscal shocks than other shocks but it is not clear why it would be optimal to limit fiscal spillovers when other spillovers are not restrained. For example, suppose that a country is hit with a negative productivity shock that reduces it income and hence its import demand. An expansionary fiscal policy might reduce the net spillover of the productivity shock to other countries, and limits on fiscal policy would then exacerbate rather than moderate the spillover.

Finally, even if controlling for spillovers induced by fiscal policy would be desirable, it is not at all clear why restrictions should take the form of limits on deficits or debt. We have understood at least since the concept of the balanced budget multiplier was introduced that fiscal policy might influence aggregate demand and output without a change in the deficit. Our more sophisticated current methods of analyzing the effects of fiscal policies make quite evident how unrelated measured deficits or debt may be to the economic effects of fiscal policies, given how much the components of the deficit and its future path may differ. If we wish to moderate the potential spillover effects of fiscal policy, a very different type of restriction would seem appropriate.

In summary, it is very hard to make the case for having common fiscal restrictions like those embodied in the Stability and Growth Pact on the basis of a need to offset the spillover

effects of fiscal shocks. Economic interdependence and hence the potential impact of such spillovers appears stronger in the United States, which has no common fiscal restrictions, and if restrictions were formulated with an eye toward reducing spillovers they would look quite different than those currently in place that limit deficits and debt, even with account taken of cyclical conditions.

B. The Samaritan's Dilemma

Economic integration within a currency union may signal other connections among countries, in particular social cohesion and interaction. If residents of one country in a currency union care about the well-being of those in another, then this connection might provide another rationale for common budget rules, based on the familiar problem of the Samaritan's dilemma (Buchanan, 1975).

Most discussions of the Samaritan's dilemma relate to restrictions that a government imposes directly on its own citizens. For example, we may mandate that individuals participate in an old-age pension system requiring contributions from workers, because we know that, as a society, we will feel compelled to support in old age individuals who have not saved for retirement, even if such a lack of saving was strategic. We might (as the United States recently has) require the purchase of health insurance if we find it morally unacceptable to turn away from hospitals those who have failed to do so.

Governments as well as individuals may need to be constrained from taking strategic advantage of others, and one can see a close analogy between mandatory old-age pensions and deficit restrictions in this context. Running excessive deficits, like failing to save for old age, may involve a country allocating too large a share of its resources to current expenditures and too little for future expenditures by existing generations of individuals or futures ones. If a country's

actions would drive its citizens into financial distress or poverty without a bailout by other members of a currency union, then it makes sense that these other member states would wish to impose restrictions to avoid this outcome. It is not membership in a currency union *per se* that is relevant here, but the social interconnections that common membership in a currency union may reflect.

But what determines the strength of such social interconnections? Evidence from the literature suggests that a taste for redistribution and provision of public goods relates to the degree of population homogeneity. Societies that are more heterogeneous, for example with respect to racial or ethnic composition, exhibit less redistribution to the poor and lower levels of public goods provision than do more homogeneous societies (Alesina, Baqir and Easterly, 1999; Luttmer, 2001). By some measures, such as common language and exposure to common cultural institutions, the US states as a group are evidently more homogeneous than the countries in the Euro area. Also, there is more labor mobility in the United States. For example, between 2008 and 2009, according to data from the Current Population Survey, 1.6 percent of the US population moved internally from one state to another. The comparable figure for the EU, according to Eurostat, is 0.3 percent. It is even smaller within the Euro area.[5]

Thus, Europe appears much less susceptible to the Samaritan's dilemma than does the United States, based on homogeneity and social cohesion. On the other hand, the United States also has in place a number of federal institutions, most notably the federal tax system, that automatically cushion shocks to individual income (see Auerbach and Feenberg, 2000) and hence also to aggregate income in any particular state or region and thus lessen the impetus for

[5] Of course, labor mobility could also potentially work against a perceived need to help countries in need, if the concern is over the country's residents rather than the country itself, for residents of a failed state or country could depart for greener pastures. But, given the magnitude of labor flows, even in the United States, this would relieve relatively little of the pressure for assistance.

further action in response to a shock. Such federal institutions function not only as shock-absorbers; they also provide persistent transfers among regions, with wealthy states and regions providing considerable support to those that are poorer. While Europe does have limited interregional transfers, it seems very unlikely that those on a scale that exist in the United States could develop, precisely because of differences in the degree of social cohesion.

C. Cross-Border Financial Exposure

Leading up to the Greek bailout and since then, much of the support for intervention was based on the potential exposure of financial institutions in other Euro area countries. There is little doubt that such cross-border exposure is a relevant consideration.

How one should measure cross-border exposure is not obvious. One might wish to look at all of a country's liabilities, both public and private, that financial institutions hold because of the very real possibility that private distress will lead to public bailouts within the country – thus making private obligations public – and also because a severe financial crisis arising from a sovereign default would also have major repercussions for the country's private borrowers. A much narrower measure of cross-border exposure would be based exclusively on official sovereign liabilities alone.

Figure 2 shows the exposure of banks in different countries to all liabilities (public plus private) in the four key Euro area countries already discussed, Greece, Ireland, Portugal and Spain. The first panel of the figure expresses these holdings relative to total claims held by the same institutions. The second panel relates this exposure to the GDP of the creditor institutions.[6]

These two panels of the figure reveal a number of interesting patterns. First, several Euro area countries have important exposure to at least one of the countries in financial distress, with

[6] Note that these measures exclude domestic holdings.

geographic proximity playing some role. For example, institutions in Portugal have considerable exposure to Spain and those in Spain have considerable exposure to Portugal, while on the other hand US institutions have relatively little exposure to any of the problem countries. Second, the importance of a country's financial sector is reflected in the magnitude of exposure relative to GDP, for example making UK exposure appear fairly large by this measure, even though its exposure to the four countries is not particularly large relative to all cross-border holdings by UK financial institutions. Third, exposure to Greece is far less significant than exposure to the other three countries, particularly Ireland and Spain. Finally, the exposure of institutions in the problems countries themselves is considerable, particularly in Ireland and Portugal; Ireland's exposure to Spain equals 14 percent of Irish GDP, and Portugal's exposure to Spain equals nearly 12 percent of Portuguese GDP.

Figure 3 presents (for the six countries shown in Figure 2 for which data are available) comparable measures of exposure just to sovereign debt, excluding both liabilities of private borrowers as well as derivatives and other claims, some of which may well relate to public liabilities. Thus, the measures in these two panels represent a lower bound measure of cross-border exposure. Naturally, the numbers in Figure 3 are substantially lower than those in Figure 2. But they still show considerable exposure. For example, in 2010, French holdings of Spanish sovereign debt equaled almost 1.6 percent of French GDP, and French holdings of the sovereign debt of these four countries at risk exceed 3 percent of French GDP. Interestingly, the sovereign exposures of France and Germany were noticeably higher than that of the United Kingdom as a share of GDP, even though the UK has the larger financial sector as a share of GDP and is <u>not</u> a member of the Euro area, and hence is less exposed via a common currency to the shocks in these four issuing countries.

The patterns in Figures 2 and 3 help explain why other Euro area countries would have been concerned about the consequences at home of a debt crisis in any of the four countries considered here. They also help provide some rationale for worries about "contagion," the notion that allowing a default to occur in one of these countries might increase the likelihood of default in another. While some explanations for contagion may relate to effects on overall confidence in markets, perceptions of global risk, or assessments of the political appetite for financial bailouts, cross-border exposure provides a much more direct story. With such important cross-border holdings as shown in Figure 2, for example, a default in Portugal could put considerable pressure on balance sheets in Spain, and a default in Spain could put considerable pressure on balance sheets in Ireland and Portugal.[7]

Thus, cross-border exposure helps explain why a concerted Euro area solution to prevent default in Greece and the other countries occurred. But what explains this cross-border exposure? Of course, one country's external liabilities must be some other country's external assets, so there is no point in trying to explain overall holdings. But the apparent lack of diversification, and in particular the concentrated exposure in some countries to the liabilities issued in countries at risk, does require an explanation.

One possible explanation, if a seemingly circular one, is that investors viewed membership in the Eurozone as tantamount to a financial guarantee for public obligations and, by implication, private obligations that were implicitly supported by government guarantees. This view certainly is consistent with the evolution of interest rate spreads on government securities, as shown in Figure 4. Prior to the advent of the Euro, Germany's 10-year benchmark

[7] Indeed, IMF (2010b, p. 35) found considerable exposure to contagion in Ireland, Portugal, and Spain as measured by the sensitivity of CDS spreads in one country to increases in CDS spreads in others. Greece also was found by this approach to be very susceptible, which is less easily explained by cross-border exposure, given the holdings shown in Figure 2.

government bond rate carried a lower interest rate than those of Ireland, Spain and Portugal. As adoption of the Euro neared, these rates converged, so that by the time currencies were fixed with respect to the Euro, in January 1999, they were virtually identical, indicating no differential country risks, i.e., a perception of convertibility. This same convergence occurred for Greek yields as Greece's 2001 entry into the Eurozone approached. Not until late 2008, as the world financial crisis was already well underway, did yields among the countries begin to diverge again.

A lack of diversification away from countries at risk is consistent with a perception that these countries' liabilities are effectively convertible, and yield spreads suggest that such convertibility was indeed perceived. Given such perceptions and the resulting cross-border exposure to financial risk, bailouts of some sort become inevitable. These bailouts might have taken an alternative form, such as direct aid by countries like Germany and France to their at-risk financial institutions, rather than a general bailout of the issuers of risky securities. It is an interesting question why bailouts did not take this form, given that it would seem to be more consistent with the self interest of individual countries. But this is a side issue to the central question of why Europe and its financial institutions chose this particular equilibrium, rather than one in which bailouts were not expected, perceived risks led to greater diversification, and greater diversification obviated the need for bailouts.

One explanation, of course, is the Samaritan's dilemma already discussed. There may, potentially, be others, but there was certainly no explicit guarantee of convertibility associated with entry into the Euro area. Moreover, the lack of a specified bailout procedure, and the relative weakness of the central European government institutions relative, say, to those at the federal level in the United States, might have given pause to automatic assumptions that implicit

guarantees existed. It would not take coordinated activity by the US states and intervention by the IMF to orchestrate a federal bailout of California, but it is Greece and not California that has been bailed out.

It is worth noting here that the exposure of financial institutions in the United States to problems at the state and local level is minimal. According to the Federal Reserve Board's Flow of Funds Accounts, only 1.7 percent of the commercial banking sector's financial assets were held in state and local government securities in 2010. Also, because there is far less identification of US companies with individual states, there is much less likelihood that a company would have implicit guarantees from a particular state, rather than from the US federal government. Thus, the potential cross-border exposure to risk of financial institutions with Euro area is substantially higher.

III. Further Issues

Given that fiscal rules, under the SGP and elsewhere, typically track debt and short-run deficits, two additional issues of concern at present are that many commitments that may cause fiscal stress are implicit, and that there are other elements of fiscal policy, notably the structure of taxation, that also can produce spillovers to other members of an economic union.

A. The Importance of Implicit Liabilities

Concerns about a country's fiscal situation typically extend beyond a given fiscal year, for it is well understood that a country's fiscal trajectory and not just its current debt or deficit affect whether fiscal adjustment is necessary. Indeed, the SGP as currently structured reflects this through its medium-term objectives and stability and convergence programs. But the SGP's horizon still extends only a few years beyond the present. This perspective may help to smooth

out cyclical effects and take account of policy transitions in progress. However, given the nature and size of long-term fiscal commitments for the typical advanced economy with an aging population, this horizon is inadequate to provide a reasonable assessment of the fiscal risks associated with transfer programs, particularly those that are age-based.

A common way of measuring the significance of longer-term commitments that has developed in the literature (see, e.g., Blanchard et al., 1990, and Auerbach, 1994, 1997) is in terms of the *fiscal gap* associated with them, typically expressed as a share of GDP. A fiscal gap over a horizon from the current period, *t*, through a terminal period, *T*, for example, would equal the required increase in the primary surplus relative to those projected under current policy that would be needed to maintain the debt-GDP ratio at its current value, or

$$\Delta = \frac{B_{t-1} - (1+r)^{-(T-t)} B_{t-1} \frac{Y_{T+1}}{Yt} + \sum_{s=t}^{T} (1+r)^{-(s-t+1)} D_s}{\sum_{s=t}^{T} (1+r)^{-(s-t+1)} Y_s} \quad (1)$$

where B_{t-1} is the outstanding debt at the end of year *t*-1 (the beginning of year *t*), D_t is the primary deficit in year *t*, Y_t is GDP in year *t*, and *r* is the relevant interest rate.[8]

By computing the fiscal gap over a long horizon, the calculation can take into account increases in future costs associated with demographic changes and age-based social insurance programs, which are effectively implicit government liabilities that are excluded from standard measures of national debt. Of course, such calculations require detailed projections regarding the path of future government revenues and expenditures; simply extrapolating values forward from the present based on GDP growth defeats the purpose of the exercise. And there is no ideal measure of the strength of long-term commitments, which might be relatively weak in some

[8] An alternative assumption regarding debt might be that the debt-GDP ratio would converge to some reasonable share of GDP, rather than simply being kept from increasing. This approach, taken in IMF (2010a), would increased the estimated fiscal gaps for countries with initial debt-GDP ratios lying above the target value.

countries and stronger in others. Thus, calculation of fiscal gaps requires some thought and judgment, an aspect that makes incorporation in rigid fiscal rules somewhat problematic.

Figure 5 provides a range of estimates of 50-year fiscal gaps (from 2010 thorough 2060) for the "older" European Union countries (those admitted through 1995), based on three sets of projections, two from the European Commission (EC, 2009) and one from the IMF (2010a, c). These three sets of projections differ primarily with respect to projected growth of spending on health care and pensions, with the European Commission baseline projections being the most optimistic and the IMF projections being the most pessimistic and also most closely conforming to past performance, taking account of projected changes in the age structure of the populations of these countries.[9]

As the figure shows, most of the countries face positive gaps under their current policy trajectories, regardless of the method of projection used. But the differences among the projections is very large for some countries. For example, Portugal's fiscal gap is 5.5-5.8 percent of GDP based on the EC projections, but 9.5 percent of GDP based on the IMF projections.

Figure 5 also provides a fourth series, a measure of the fiscal gap based on the IMF projections, but under the assumption that the initial stock of publicly held national debt equals

[9] To form these estimates, we start with 2010 levels of net publicly held debt (except for Luxembourg, for which we use gross debt because a measure of net debt is not available) and GDP, and 2007 shares of GDP accounted for by revenues and spending in areas excluding health care, public pensions, and education (2007 being a convenient year for long term projections because it is a pre-crisis year.) We assume that these components of revenues and expenditures stay constant as a share of GDP. For the various scenarios, we then incorporate projections from the EC or the IMF for the remaining expenditure components, and discount all projections to the present using a real discount rate of 3 percent.

For the scenario based on the IMF projections, education spending is not projected separately and so we assume it to grow smoothly with GDP. Also the IMF projections are available only through 2050, and so we assume smooth growth of all components with GDP thereafter. This extrapolation likely imparts a favorable bias to the measured fiscal gaps, given the trends in the other series between 2050 and 2060.

Further details regarding these calculations are available upon request.

zero. What is striking about this measure is how little it affects the measured fiscal gaps. Inspection of expression (1) reveals why. If one assumes a constant debt-GDP ratio, then a portion of debt service is provided by debt growth, since debt is allowed to grow at the same rate as GDP. Thus, the added fiscal burden of debt service is not high, unless one assumes a high real interest rate, which is not done in these calculations. Nonetheless, there is definitely a relationship between current debt-GDP ratios and fiscal gaps, as illustrated by the scatter plot in Figure 6, which plots each country's fiscal gap against it debt-GDP ratio. Also shown in the figure is the (green) regression line relating the two, for which the coefficient of the fiscal gap on the debt-GDP ratio is 0.074. The coefficient is significant (with at t-statistic of 3.05), which wouldn't necessarily follow from the fact that debt is included in the fiscal gap calculation, since as just discussed its direct impact on the fiscal gap is so small. What the significant relationship demonstrates, then, is that there is a connection between past fiscal problems and future ones; countries that have accumulated a lot of debt in the past are likely to accumulate a lot more in the future following their current fiscal trajectories. For example, even though Greece's fiscal gap would be huge in the absence of its initial stock of outstanding debt, it also has the largest such stock relative to GDP.

Thus, even though existing debt-GDP ratios do not, in themselves, tell us much about the future fiscal adjustments that countries must undertake, they do serve as useful predictors of these adjustments. That said, though, the adjusted R^2 of the regression line shown in Figure 6 is .37, meaning that nearly 2/3 of the variance in the fiscal gap remains unexplained. Countries like Greece appear to be in much worse shape than their debt-GDP ratios alone would suggest, while countries like Germany appear to be in much better condition. One can improve predictions by adding to the regression the current primary surplus relative to GDP. This improves the adjusted

R^2 to .55 and produces predicted values shown by the red dots in the figure. For some countries, like Austria, Belgium, and Denmark, this brings the predicted and actual values very close together. But for outliers like Greece and Germany, considerable residuals remain. Note, also, that in this augmented regression, the coefficient of the debt-GDP ratio becomes insignificant and has the wrong sign.[10] This suggests that rules that give a positive weight to both debt and deficits do not necessarily capture the magnitude of fiscal stress, to the extent that the fiscal gaps as estimated here are good measures of the underlying fiscal imbalances that countries face.

B. Tax Policy Coordination

A point emphasized above is that there are sources of individual-country shocks other than fiscal policy with which members of a currency union should be concerned. On the other hand, even if one limits the focus exclusively to fiscal policy, the fiscal balance itself is only a limited measure of the potential impact of one country's fiscal policy on the economies of other countries in a currency union. Tax policy can also cause fiscal spillovers and therefore also deserves attention in the design of fiscal rules.

One restriction on tax policy central to both the European Union and the United States is with respect to tax and non-tax trade barriers. Indeed, the removal of trade barriers was one of the original elements of the EU's formation, and the commerce clause of the US constitution keeps individual US states from imposing barriers on interstate commerce. Within the United States, there are relatively few other restrictions on the tax policies that individual states can adopt. States typically impose sales taxes, but can choose the rates and bases of these taxes freely. Most but not all states impose corporate income taxes, but the rates, bases, and

[10] The coefficient of the debt-GDP ratio is -0.0048 with a t-statistic of only 0.13. The coefficient of the primary surplus is -1.39 with a t-statistic of 2.46.

apportionment methods are theirs to choose individually. And states and the local jurisdictions within them may use tax incentives such as tax holidays to attract businesses from other states. In the European Union, on the other hand, restrictions or initiatives are present in all of these areas. They include minimum tax rates for the VAT, the Code of Conduct for business taxation that limits "harmful" tax measures[11], most notably lower rates of tax for non-resident investors aimed at attracting business to a country, and the recently proposed Common Consolidated Corporate Tax Base (CCCTB), which would establish for corporations operating in adopting countries a standardized tax base and common three-factor formula for apportionment of income, based equally on payroll, assets, and sales.

Such attempts at tax policy harmonization can all be understood as being aimed at reducing tax competition among member countries, to lessen the incentives for individuals and businesses to cross borders to gain more favorable tax treatment. In one sense, these measures complement budget discipline, because they make it easier for member countries to raise revenue without provoking large negative behavioral responses; put equivalently, tax policy coordination helps limit the marginal deadweight loss of raising revenue and thereby moderates the marginal cost of public funds. But there are several problems with this simple logic.

First, lowering the cost of public funds is not necessarily an optimal strategy if there is an agency problem for governments; tax competition may be desirable to keep such governments in check.[12] If the government of one country wishes to impose very high tax rates, should other countries be forced to do so as well?

Second, tax policy coordination essentially locks in place an existing tax structure, thereby limiting experimentation with alternatives. For example, in the United States, where

[11] See Council of the European Union (1999).

[12] See, e.g., Wilson (1999).

formula apportionment of corporate taxes has long been standard practice among the states, there has in recent years been a clear trend away from the standard three-factor (assets, payroll, and sales) formula for apportioning income to the taxing state, toward stronger or exclusive reliance on sales for apportionment. This movement is consistent with the fact that apportioned corporate taxes to some extent mimic taxes imposed directly on the apportionment factors (McLure, 1980). Thus, a shift toward sales-apportioned corporate taxes has an impact similar to a shift from taxing property and labor income to taxing sales, which individual states have come to see as being in their interest to promote competitiveness with respect to other states. But the CCCTB would institutionalize the traditional three-factor formula, even though there is no obvious argument for it.

Finally, restrictions on tax policy are very difficult to implement consistently. Because there may be a variety of alternative ways of producing particular incentives, it is often difficult to enforce a given set of restrictions. This has given rise to extended litigation in the European Court of Justice (see Graetz and Warren, 2006), and helps explain the continued pressure on countries like Ireland to raise their corporate tax rates. After all, it is a very well-known result that an import tariff can be implemented as the combination of two separate policies, a domestic production subsidy plus a consumption tax. Under existing rules, there is nothing that prevents a country from reducing its tax on domestic corporate income and labor income and increasing its consumption tax, i.e., subsidizing domestic production and taxing consumption relative to some initial tax system. This would not be an issue if EU countries relied exclusively on consumption taxes or broad-based income taxes devoid of tax incentives, for example, but it is a problem when one starts with a tax system consisting of an arbitrary mix of instruments.

In summary, there is some logic for including tax policy coordination among the fiscal rules imposed on members of a currency union, to limit tax competition and cross-border fiscal externalities. But in order to do so one must take a stand on the tax structure to which individual countries should conform, and privileging the status quo tax structure is not a good approach if that tax structure evolved in a different economic environment and is characterized by inconsistencies. For US states, where tax rates and government spending as a share of income are relatively low, tax policy restrictions and coordination are limited and there is a stronger and growing reliance on consumption taxes – much stronger than at the federal level. It is no coincidence that these are destination-based taxes that promote an individual state's competitive position with respect to others.

A lack of coordination may not be as feasible for Europe, where countries depend much more heavily on their own tax structures for revenue, but the alternative should be a more systematic consideration of the form that tax policy coordination should take. For example, if variations in consumption tax rates have weaker fiscal spillovers than variations in income tax rates, as they would if cross-border shopping is of less concern than factor mobility, then a greater general reliance on consumption taxation may be necessary under a coordinated tax structure.

IV. Implications for the Design of Fiscal Rules

The foregoing discussion of existing fiscal rules and their effects, as well as the various potential motivations for fiscal rules, has several implications for the design of fiscal rules and alternative mechanisms and procedures for a currency union like the Euro area.

A. Should There Be Fiscal Rules?

It is clearly an open question whether a currency union needs common fiscal rules, as not all currency unions have them. There appear to be three potential arguments why members of a currency union might wish to impose budget rules such as one finds in the Stability and Growth Pact on other countries in the union: (1) to help reduce economic spillovers that might be caused by fiscal shocks; (2) to deal with the Samaritan's dilemma, recognizing that bailouts will occur if they are needed; and (3) to avoid the need for self-interested intervention to protect cross-border investments and avert contagion.

Above, we have questioned whether traditional fiscal rules are a convincing answer to any of these potential problems. As to the first, there is no doubt that members of a currency union ought to be concerned about the transmission of economic shocks. But fiscal policy is only one source of such shocks, and not necessarily the most important one. Even with fiscal policy, one would need to go beyond debt and deficit measures to place effective limits on spillovers. But experience, as in the area of tax policy coordination, suggests that such broader limits would be very difficult to design, much less to impose. And, if spillovers are of such concern, then they would seem to be of greater concern among states in the United States, which are more integrated than countries in the Euro area.

As to the Samaritan's dilemma, the establishment of some sort of common social safety net and the provision for greater labor mobility, rather than budget rules, would seem the most direct way to lessen the compulsion for compassionate intervention. Such a safety net may be hard to implement in the Euro area, but this difficulty arises precisely because the perceived need to aid those in other countries is not strong enough. It is hard to believe that the Samaritan's dilemma explains why Germany, France, or the Netherlands would contribute to a bailout of

Greece, when no such cross-state bailouts have been seriously contemplated in the United States. It is far more plausible that self interest has played a role in the ongoing European bailout process, in particular to protect very large cross-border investments. The existence of such investments, along with historical interest rate convergence, suggest the perception of implicit insurance through bailouts, which in turn have proved hard to avoid in light of such expectations. It is puzzling why the bailout of Greece was general in nature, rather than focusing on financial assistance to domestic institutions with cross-border exposure. In any event, if the Euro zone is stuck in a self-sustaining equilibrium of cross-border exposure and bailouts, the answer would appear to be restrictions on cross-border exposure, not the imposition of budget rules. And, in light of the recent divergence of interest rates seen in Figure 4, even such restrictions may be unnecessary to move away from the "bad" equilibrium.

B. So Why Have Fiscal Rules?

If fiscal rules are not the answer to any obvious question relating to the avoidance of externalities within a currency union like the Euro area, then what might explain their existence and, indeed, the continuing commitment to making them work rather than scrapping them? Why, in particular, would such rules be imposed by a central authority when there is evidence, from the evolution of state-level fiscal rules in the United States, that it is in the self interest of the countries themselves to adopt the rules?

A possible answer comes from another setting in which there is a central imposition of rules that ought to be in the countries' self interest, international trade. Especially for small countries that can have little impact on their terms of trade, the arguments for free trade are compelling, yet much effort has been devoted to the promulgation and enforcement of free-trade agreements. One explanation for such agreements is that they serve as a counterweight to the

pressures of domestic interest-group politics. Likewise, it may be that the governments of some countries need external support to implement fiscal policies that are in their countries' overall interests, but not in the interests of some powerful interest groups.

It may make sense to have common fiscal rules if these rules help individual countries to implement sound but controversial fiscal policies. Even in this case, however, the rules need some attention. Focusing just on debt and current and near-term deficits is inadequate, even when these aggregates are measured honestly and not distorted by financial engineering and misreporting, because the size and strength of long-term spending commitments also need to be taken into account.

But the construction of long-term projections and the assessment of long-term commitments require judgment that put pressure on the mechanism of budget rules, which need transparency and simplicity in order to be credible. If the Stability and Growth Pact has failed as a control mechanism, it is implausible that a version that added limits on longer-term trajectories could succeed. Indeed, the relative optimism one sees in the long-term projections of the European Commission, in comparison with those provided by the IMF (as discussed above in relation to Figure 5) provides an indication of the likely outcome of an attempt to expand fiscal rules to encompass measures that depend strongly on forecasting assumptions. It is for this reason that an alternative mechanism might work better, in particular a more independent entity to assess and expose weaknesses in fiscal performance.

There has been an important trend toward the establishment of such independent entities for fiscal evaluation (see, e.g., Calmfors, 2010). Such entities can assess complicated situations in a way that fiscal rules simply cannot. While it is not plausible that small independent bodies can be legally empowered to force countries to change fiscal policies, this drawback is more

superficial than real in comparison to budget rules that apply in theory but not in practice. And, more than simple budget rules, independent fiscal entities can expose gaps in logic and provide additional support for needed changes in fiscal policy that may require implementation over a period of years.

In short, common fiscal rules in a currency union appear to be a solution in search of a problem, and the problems to which they appear most likely in place to solve call for alternative solutions, for example to shift the political equilibrium away from one of implicit bailout commitments or to empower the governments of individual countries to do the right thing.

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Figure 1a. Impulse Reponses of Eurozone Output to Country Shocks (Trade-weighted)

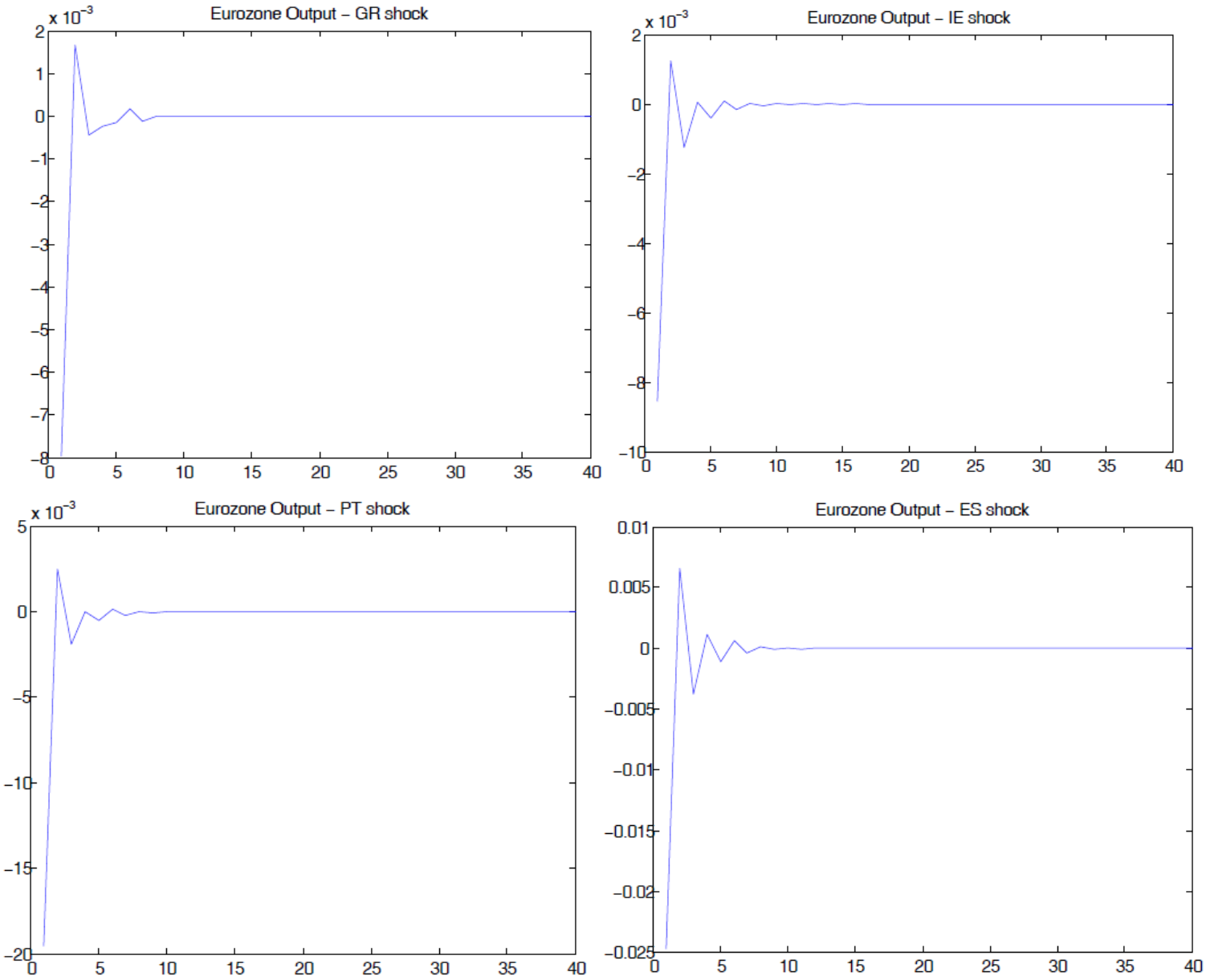


Figure 1b. Impulse Reponses of US Income to State Shocks (Trade-weighted)

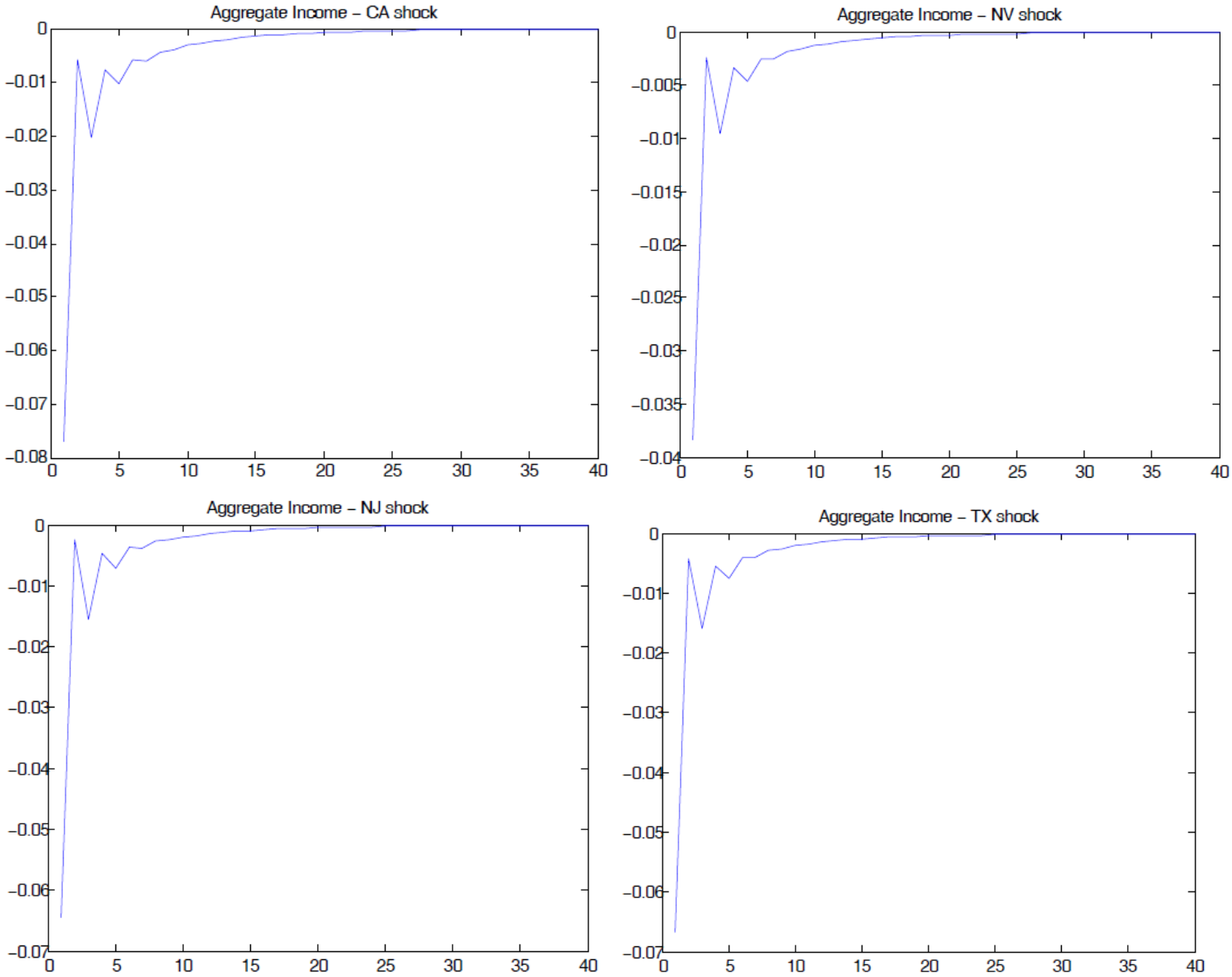


Figure 1c. Impulse Reponses of Eurozone Output to Country Shocks (Size-weighted)

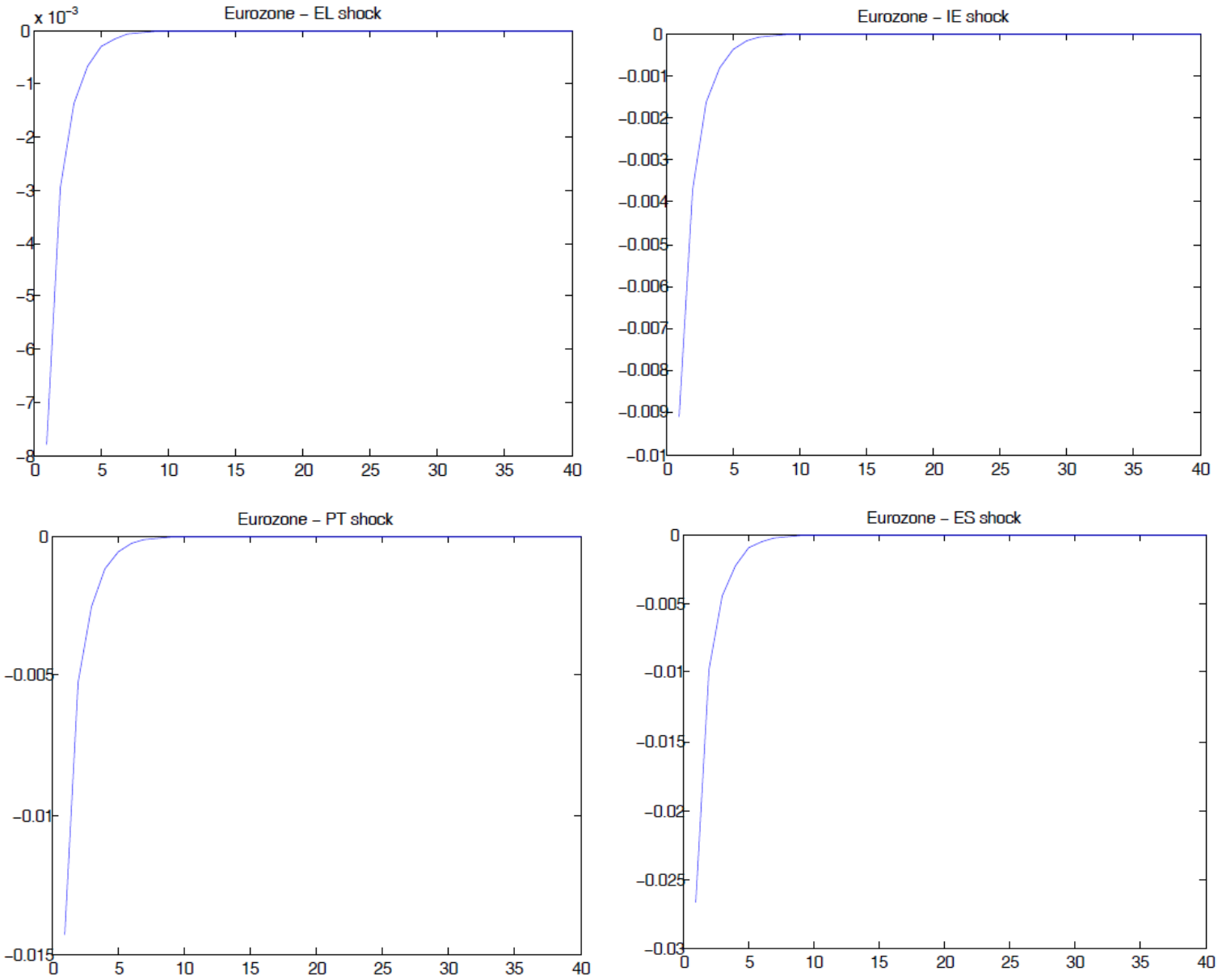


Figure 1d. Impulse Reponses of US Income to State Shocks (Size-weighted)

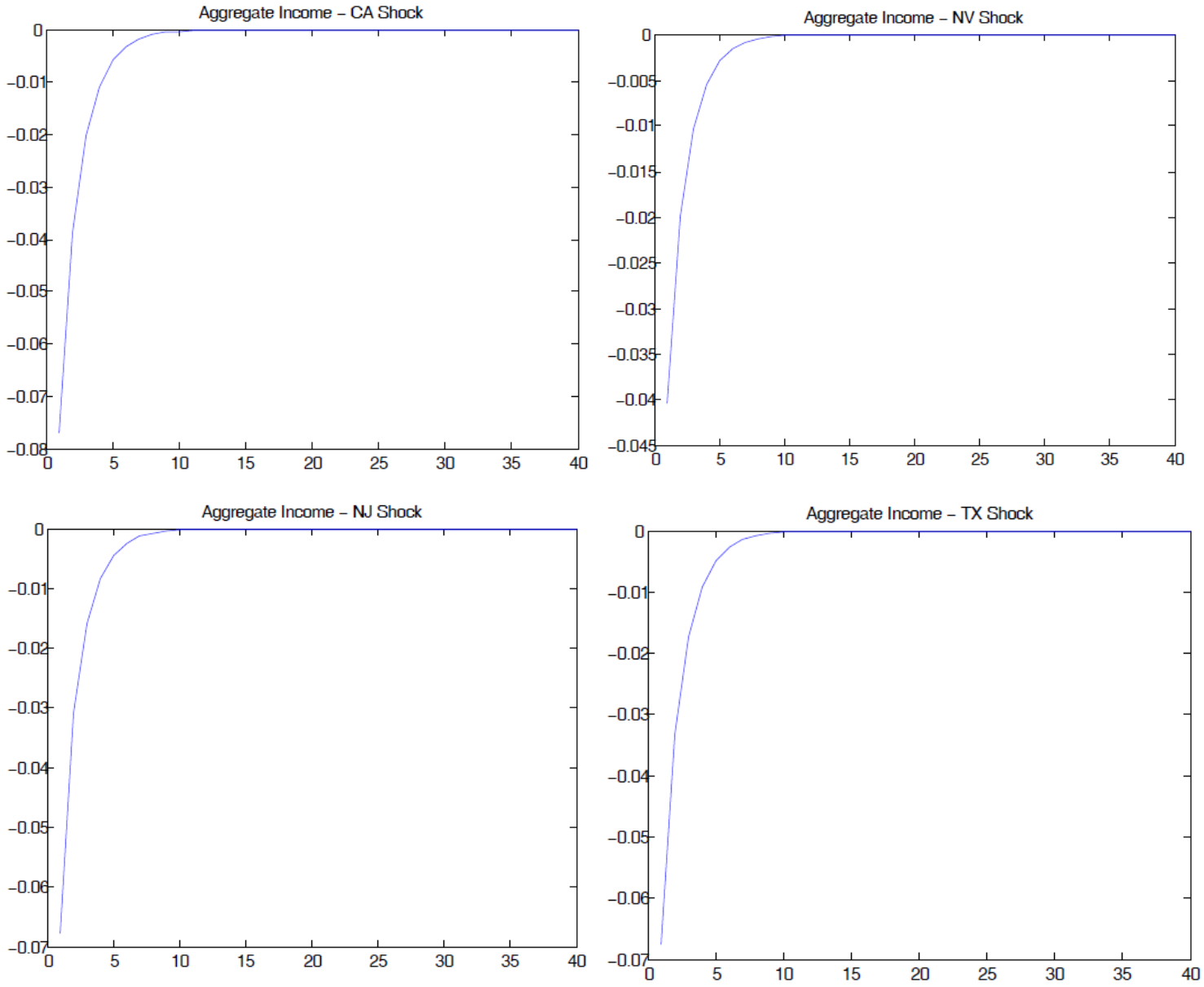
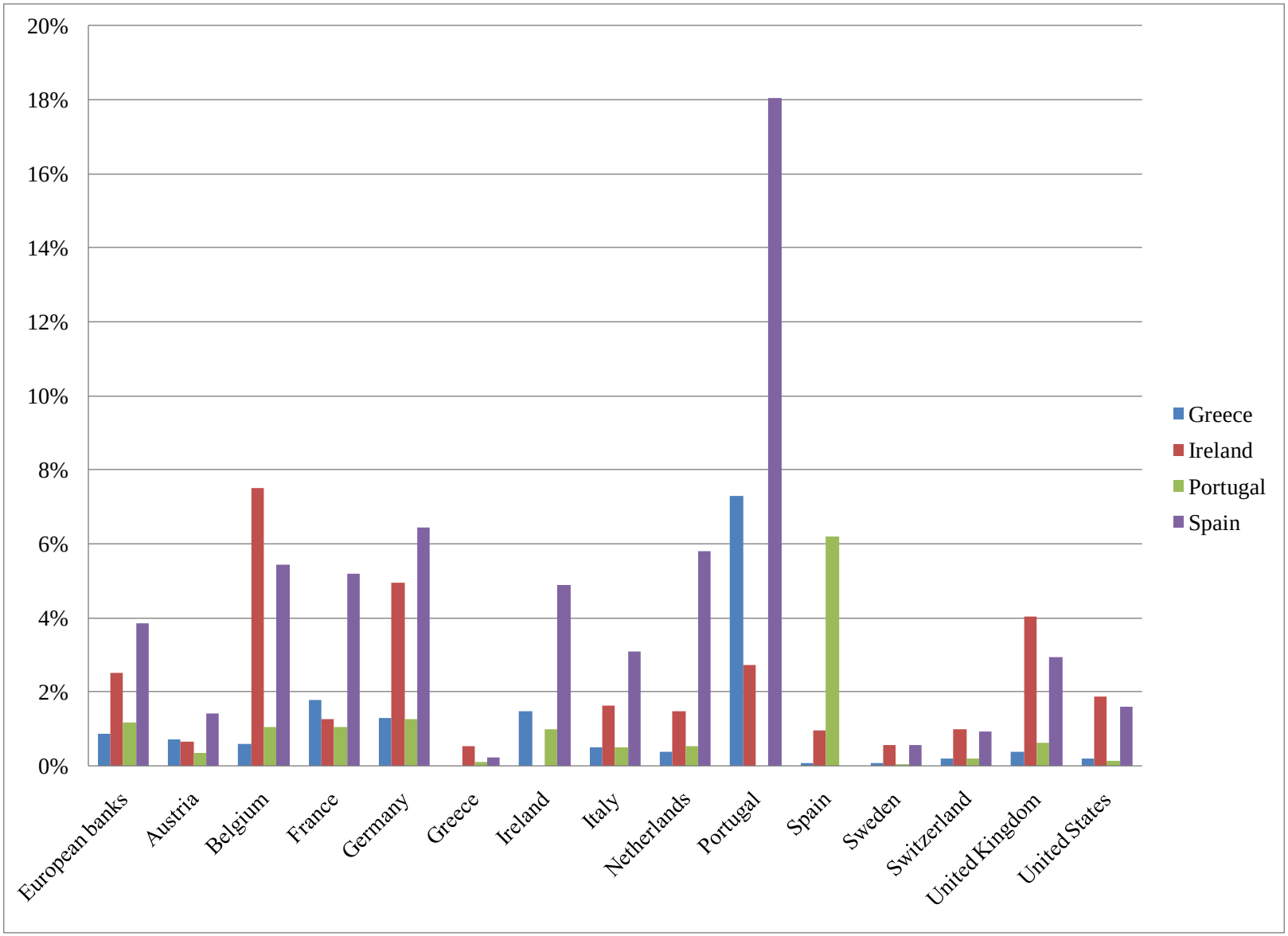
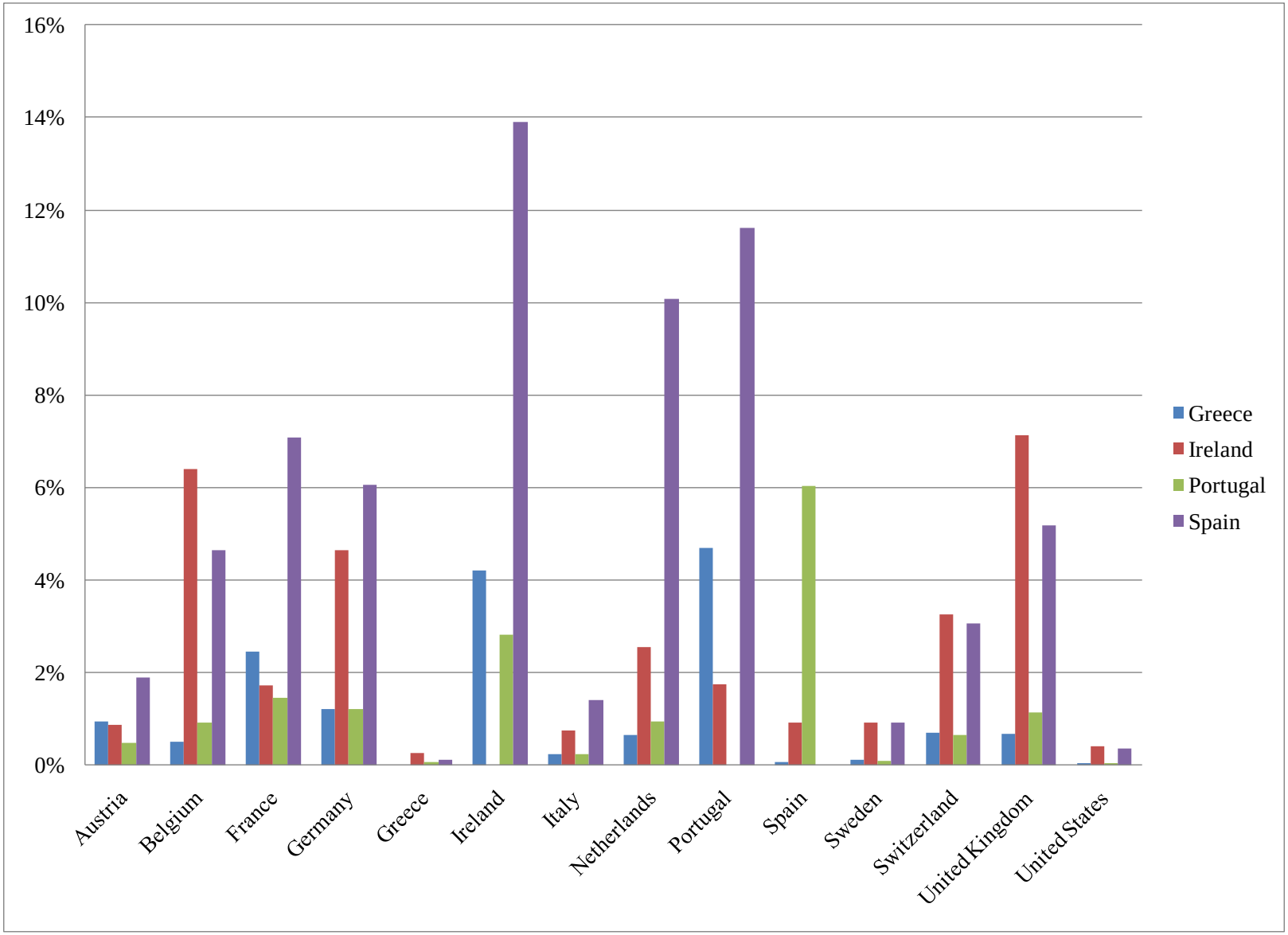


Figure 2a. Claims Relative to All Cross-Border Claims, September 2010



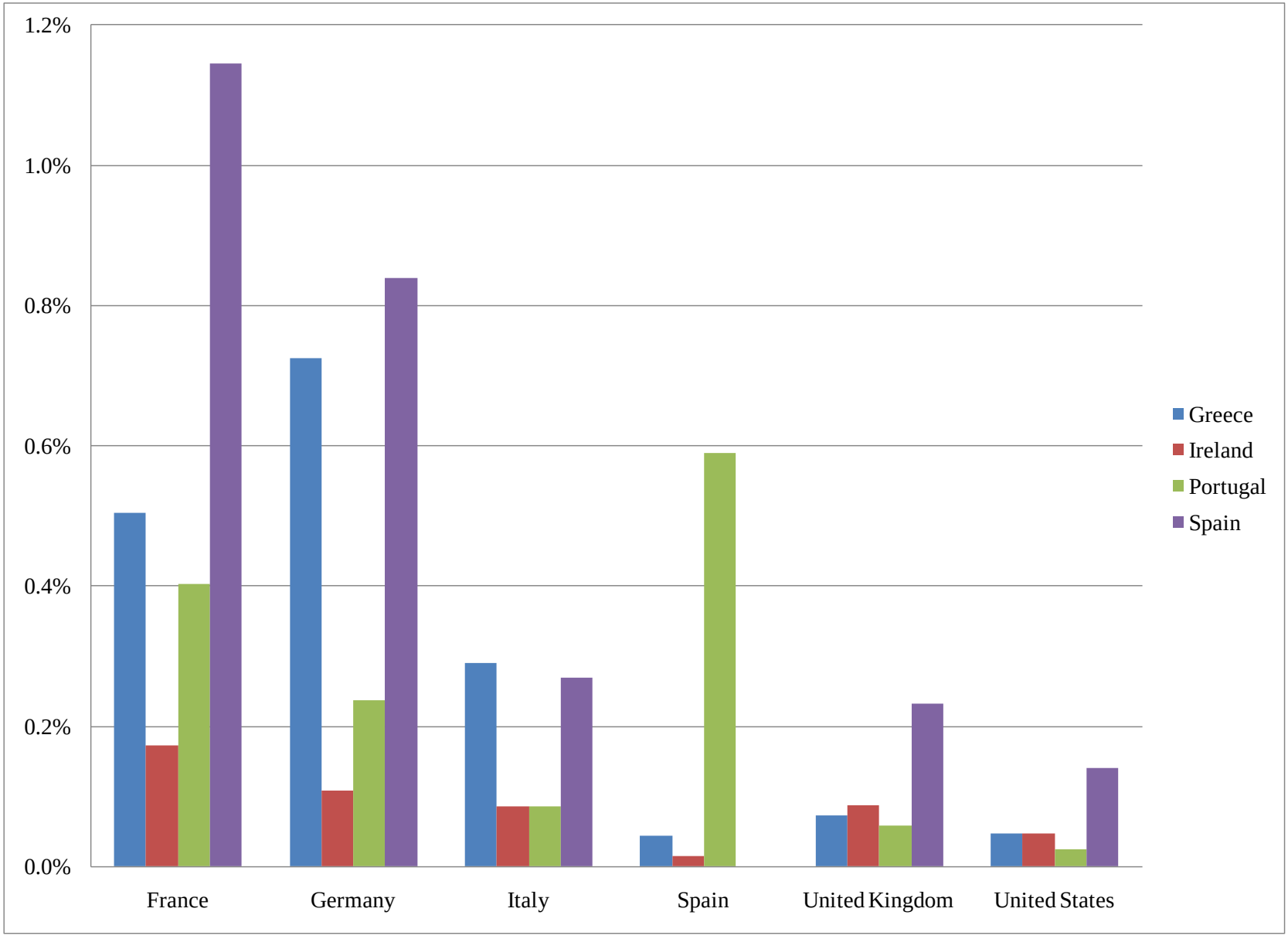
Source: Bank for International Settlements

Figure 2b. Claims Relative to GDP, September 2010



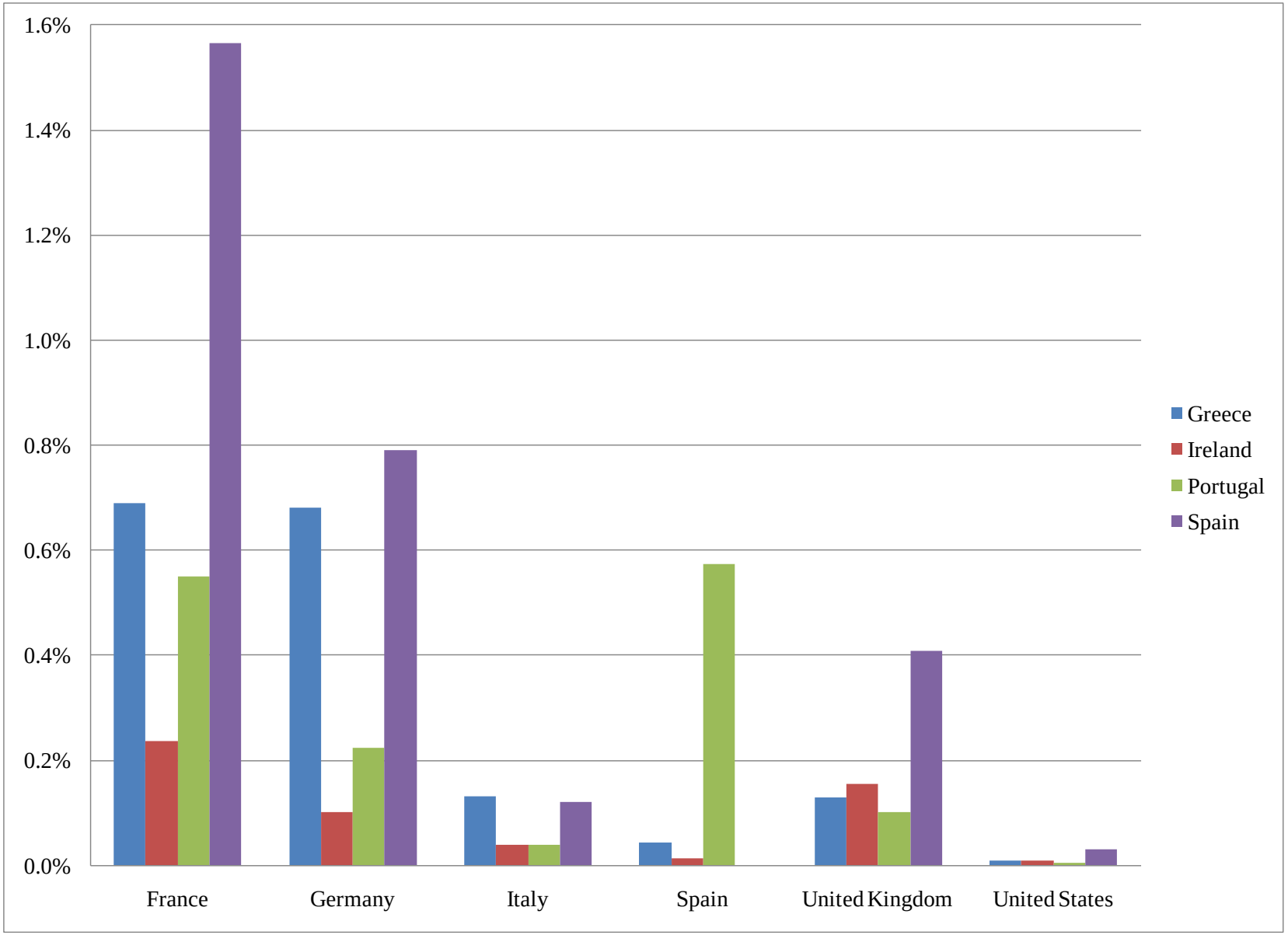
Sources: Bank for International Settlements; 2010 GDP: IMF World Economic Outlook (April 2011)

Figure 3a. Public Sector Claims Relative to All Cross-Border Claims, September 2010



Source: Bank for International Settlements

Figure 3b. Public Sector Claims Relative to GDP, September 2010



Sources: Bank for International Settlements; 2010 GDP: IMF World Economic Outlook (April 2011)

Figure 4. Nominal Ten-Year Benchmark Interest Rates

Source: Datastream (10 Year Benchmark Sovereign Bonds)

Figure 5. Fiscal Gaps as a Share of GDP: 15 EU Countries

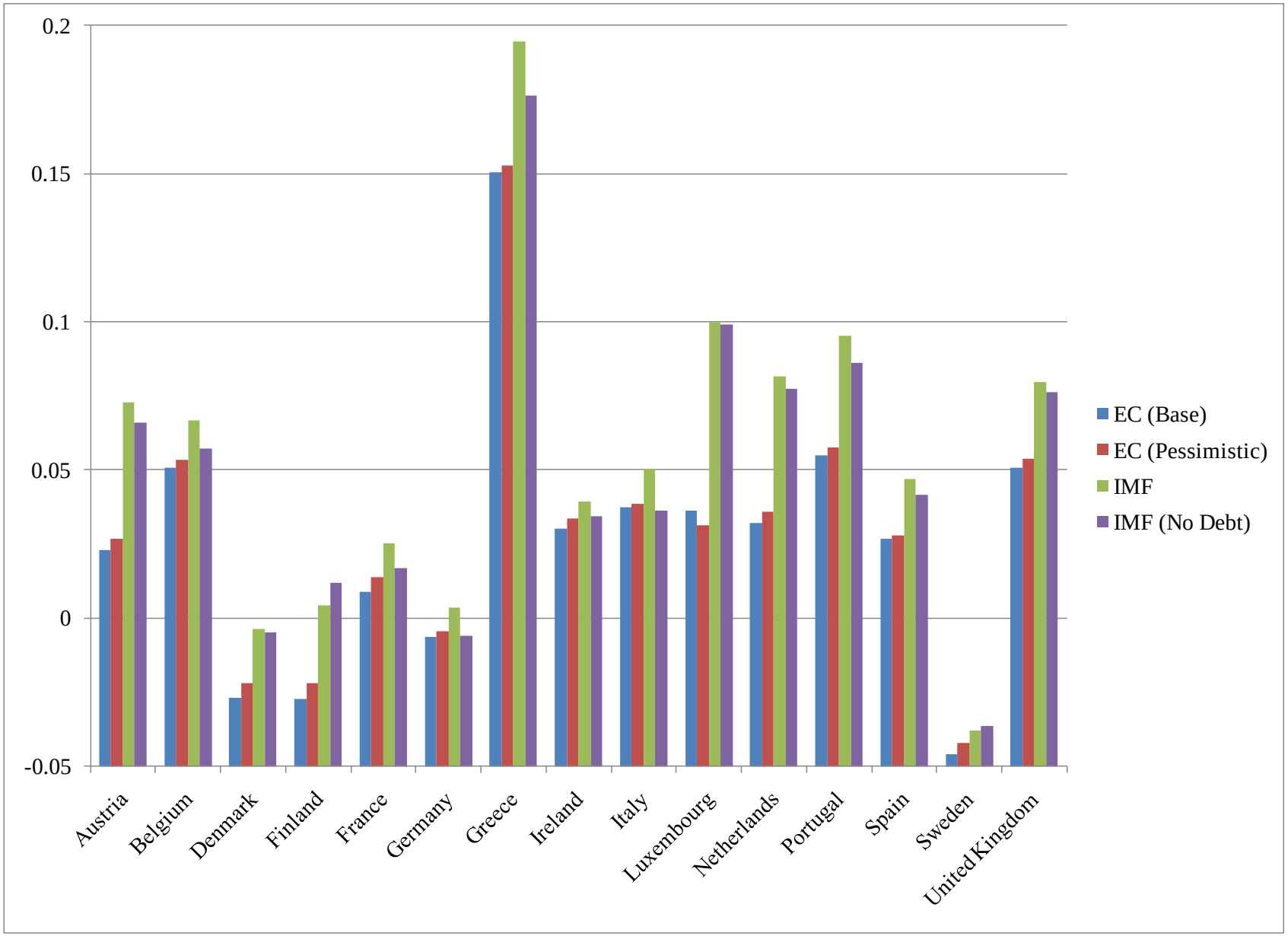
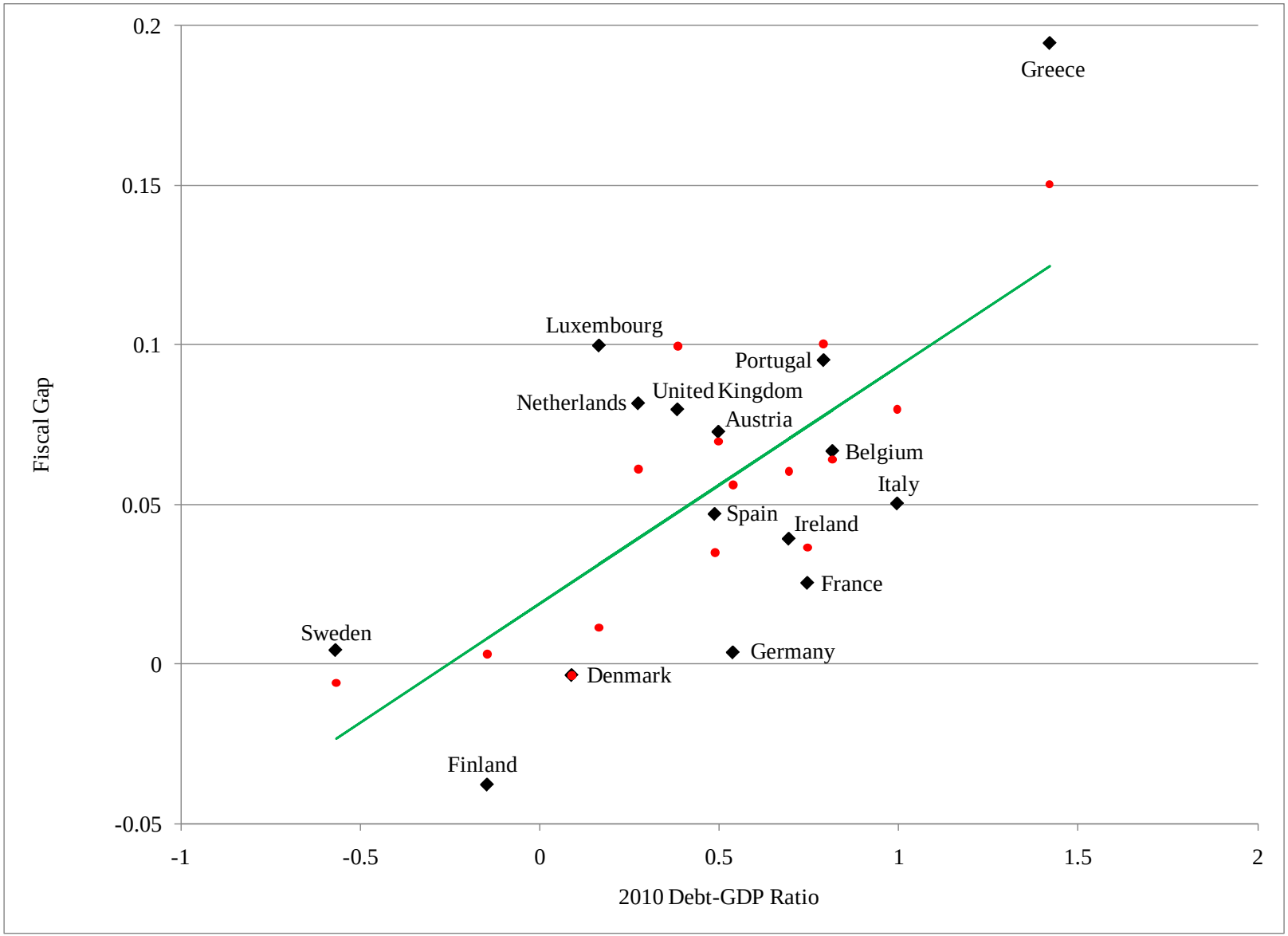


Figure 6. Fiscal Gaps versus Debt-GDP Ratios



Notes: Green line shows predicted fiscal gaps based on debt-GDP ratios; red dots show predictions based on debt-GDP ratios and primary surplus-GDP ratios