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### DEMAND EFFECTS OF FISCAL POLICY SINCE 2008

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#### Abstract

The Great Recession 2007-09 has led to controversies around the role of fiscal policy. Academically this has translated into renewed interest in the effects of fiscal policy. Several studies have since suggested that fiscal multipliers are substantially larger in downswings or depressions than in the upswing. In terms of economic policy reactions countries have differed substantially in the fiscal stance. It is an important open question how big the impact of these policies on economic growth has been. The paper uses the regime-dependent multiplier estimates by Qazizada and Stockhammer (2015) and by Gechert and Rannenberg (2014) to calculate the demand effects of fiscal policy for Germany, USA, UK, Greece, Ireland, Italy, Portugal and Spain since 2008. This allows assessing to what extent fiscal policy explains different economic performances across countries. We find expansionary fiscal policy in 2008/09 in all countries, but since 2010 fiscal policies have differed. While the fiscal impact was roughly neutral in Germany, the UK, and the USA, it was large and negative in Greece, Ireland, Italy, Portugal, and Spain.

**Keywords:** multiplier; fiscal policy; austerity; recession;

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## **Introduction**

"In a depressed, deflationary economy conventional fiscal prudence is dangerous folly," *Paul Krugman* (September 11, 2015 on New York Times)

In 2008-09 advanced economies experienced the worst recession since the Great Depression. This experience has challenged economists and policy makers to reconsider the role of fiscal policy. Before the Great Recession, the majority view was one of a limited role of fiscal policy. In the early phase of the crisis 2008/09, there was a short-lived Keynesian revival. Economic policy was at that point leading (mainstream) economic theory. However, in summer 2010 there was a noticeable shift in fiscal policy. The case for austerity was put forward by several governments and by the European Commission. The programs administered by the Troika were imposing harsh austerity on countries in severe recession. While German finance minister Wolfgang Schäuble was making the case for expansionary fiscal contractions (EFC) based on the findings of Alesina and others, a substantial body of academic literature had accumulated that suggests that fiscal multipliers are particularly large in recession, which is in direct contradiction to the notion of EFC. Several commentators have claimed that differences in fiscal policy go a long way in explaining the different economic performances of countries since then (Wren Lewis 2015, Krugman 2010, Gechert et al 2015). This paper will use recent estimates of regime-dependent multipliers to calculate the growth contributions of fiscal policy for the Greece, Ireland, Italy, Portugal and Spain (which we will refer to as the GIIPS countries) and Germany, UK and USA. This will allow us to assess how much economic policy has differed across countries and to what extent it explains differences in economic performance.

This paper uses the multiplier estimates by Qazizada and Stockhammer (2015) and Gechert and Rannenberg (2014) to calculate the effect of fiscal policy on GDP in eight

OECD economies. Qazizada and Stockhammer (2015) estimate simple multipliers in a panel of 21 OECD countries using a two-stage least square estimation (TSLS) approach whereas Gechert and Rannenberg (2014) offer a meta-analysis based on 98 published studies. The studies thus take two very different methodological approaches, but both identify regime-dependent multipliers. We use these two studies to gauge plausible estimates for multipliers in the upswing and the downswing. The main part of the paper uses these multipliers to calculate the effects of the fiscal policy stance on GDP growth for different countries since 2007. We are interested in the effects for the GIIPS which have experienced a particularly severe recession in comparison to that of the Germany, UK and USA which have seen a recovery of output since 2008.

The paper is structured as follows. Section 2 summarises the debate on fiscal policy. Section 3 discusses the literature on fiscal multipliers. Section 4 explains the calculation of the multipliers for eight countries since 2007 and the fiscal policy effects. Section 5 discusses the main findings and section 6 concludes.

### **Swings in the fiscal policy debate**

Fiscal policy has seen big changes over the past decades. While some of these changes are closely related to developments in economic theory, others have been triggered by economic circumstances, in particular, crises, or by ideological shifts. In the post-war era, fiscal policy was assigned a prominent role, with full employment regarded as the primary economic aim. This was underpinned by the old Keynesian argument that in an economy with excess capacity, deficit-financed government spending is a powerful stabilization tool. The theory assumed that the fiscal multiplier is a function of marginal propensities of consumption, import, and taxation and the multiplier impact is considered to be larger than one.

Keynesian theory dominated the macroeconomic policy stance throughout the 1960s and 70s in most countries, even if its hegemony was somewhat uneven (Hall 1989). Meanwhile, the neoclassical counterattack came in the form of Monetarism which argued that the economy is anchored in the natural rate of unemployment (Friedman, 1968). Further, Monetarism claimed that the marginal propensity to consume out of current income is low as agents decide their spending based on permanent income (Friedman, 1957). Therefore, government deficit spending induces only little immediate additional private demand while it increases interest rates and crowds out private investment in the long-run. As a result, the size of the multiplier is lower than one in the short run. In the long-run, government spending leads to increases in debt and inflation with no impact on output.

High inflation coupled with rising unemployment in the 1970s, weakened the Keynesian dominance in economic policy. As a result, in the 1980s, macroeconomic priorities shifted toward price stability and sound fiscal policy shaped by Monetarism. Academically, this was strengthened by New Classical economics, which criticized Keynesian theory and insisted on microfoundations for macroeconomic theory based on rational individuals and clearing markets (Laidler, 1986). When the government spends by issuing bonds, agents expect higher future taxes and reduce their consumption and increase savings (the Ricardian equivalence theorem reinstated by Barro 1989). Hence, the impact of government spending, in new classical Dynamic Stochastic General Equilibrium (DSGE) models with Ricardian equivalence, is less than one.

In the late 1980s and early 1990s, there were a series of other developments in economic theory. New Keynesian (NK) economists accepted neoclassical methodology but responded by arguing that despite rational expectations, there can be market failures and wage rigidities (Greenwald and Stiglitz, 1987). Hence, the implicit perfect capital markets assumption of Ricardian equivalence may not hold. When agents are finance-constrained,

their consumption will largely depend on current income (Mankiw, 2000). NK-DSGE models therefore include a share of Ricardian agents and finance-constrained consumers whose consumption depends on current income (Gali et al., 2007). Although the government spending multiplier in NK-DSGE models is positive and can be quite large, it is not long lasting because of neoclassical foundations and monetary policy following a Taylor-rule. New Keynesian models have neoclassical long-run properties.

Before the crisis, there was thus a majority view, often called the New Consensus view, which regarded the market system as essentially self-stabilising. Any short-run demand management was assigned to monetary policy, managed by independent central banks that should follow inflation targeting or a Taylor rule. Fiscal policy, in this view, was restricted to automatic stabilisers and would aim for medium-term balanced budget (Arestis 2009, Blanchard et al 2010). The Great Recession of 2008 put into question the new orthodoxy. Faced with an unprecedented financial collapse and a sharp recession, policy makers used sizable fiscal intervention in 2008 and 2009. However, this was politically contested and by mid-2010 the pendulum swung back with harsh austerity imposed in particular on southern European countries. In this period, economic policy was characterised to some extent by improvisation and in academia, as in politics, there has been a polarisation of views.

Within academia, the New Consensus view had been criticized by dissenting minorities, from different sides. From the Keynesian side, Post Keynesians have rejected the rational behaviour microfoundations for macroeconomic theory. Post Keynesian theory has been formulated as a coherent body of thought (Arestis 1992, Lavoie 2014, Palley 1996) that reinstates the Keynesian argument that involuntary unemployment is pervasive in market economies and that wage flexibility is not sufficient for full employment. Hysteresis phenomena are regarded as ubiquitous (Setterfield 1993, Stockhammer 2008, 2011) and financial markets are characterised by endogenous instability (Minsky 1986, Charles 2008).

As a consequence, Post Keynesians have maintained the view that fiscal policy is a key instrument for stabilisation and insisted that multipliers would be positive, large and long-lasting, in particular in times of financial crises (Arestis and Sawyer 1998). The Post Keynesians thus had formulated positions that the New Keynesian have developed since the crisis, but with a different methodological starting point.

The fiscal neutrality argument also came under attack from a different side. Giavazzi and Pagano (1990, 1997) and Alesina and Perotti (1995) coined the term Expansionary Fiscal Contraction (EFC) to suggest negative multipliers. They regress economic growth on the private consumption on Cyclically Adjusted Primary Balance (CAPB) for a panel of OECD countries and conclude that episodes of fiscal consolidations are correlated with rapid economic growth.<sup>1</sup> In a similar vein, Afonso (2006), in a panel study of EU15 countries over the period of 1970-2005, finds some evidence in favour of EFC for government final consumption spending, taxes, and social transfers. The inverse correlation of government spending and private consumption, he claims, amplifies when fiscal consolidation episodes occur. Proponents of EFC, in general, argue that with a large and sustained reduction in government spending, consumers will assume a future reduction in taxes and interest rates, which in turn will lead to higher income and private consumption. Economic policy in Europe has largely followed the EFC reasoning irrespective of a substantial amount of theoretical and empirical evidence for large multipliers during recessions.

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<sup>1</sup> The empirical findings of the EFC literature have been questioned. In particular, Guajarado *et al.* (2011) argue that changes in CAPB, which had been used by Giavazzi and Pagano (1990, 1997), Alesina and Perotti (1996), and Alesina and Ardagna (2010) as the key fiscal consolidation variable, can be an outcome of non-policy movements due to other developments such as a boom in stock market or devaluation. Hence, using changes in CAPB as measure of fiscal consolidations gives biased results Dullien (2012) moreover pointed to substantial data problems regarding the selection of alleged consolidation episodes that actually turned out as special accrual effects without a true fiscal impact

Since the crisis, New Keynesian-inspired research (in the USA and international organisations more so than in continental Europe) has made a powerful case for the effectiveness of fiscal policy. Monetary policy soon hit the zero-lower-bound (ZLB). In this situation, interest rate policy becomes ineffective. This argument is reminiscent of the old Keynesian argument of the liquidity trap. The ZLB issue had always been a theoretical possibility in NK models, but until the crisis (other than for the case of Japan) it was regarded as a hypothetical scenario. Since the crisis, the New Keynesian reasoning has gone beyond policy ineffectiveness and, at least in its radical wing, questions the self-adjusting properties of the market system in times of debt overhang. Summers (2014) has suggested the possibility of secular stagnation, i.e. that the natural rate of interest may be (and will remain for some time) negative. In this situation conventional policies should pursue medium-term budget deficits. Arguably, this version of New Keynesian economics is close to the Post Keynesian view, even if that is rarely acknowledged.

Inspired by these debates, there has been a re-assessment of the estimates of fiscal multipliers. In particular, the IMF has famously admitted that its macroeconomic models have substantially underestimated multipliers of fiscal policy in recessions (Blanchard and Leigh 2013). One of the developments is that recent empirical research allows for different effects of fiscal policy in the upswing and the downswing of the business cycle. This literature will be discussed in the following section.

### **Estimating fiscal multipliers**

The estimation of the fiscal multiplier has a long tradition in macroeconomics. Recently three main estimation strategies have been widely used. One strand of the literature uses structural vector autoregression (VAR) techniques to identify the innovations in

government spending and taxation and estimate its impact on output. A second group uses a single equation estimation strategy and either uses exogenous variables such as military expenditures or econometric techniques like two stage least squares (TSLS) for identification. The third strand of the literature uses estimated or calibrated structural macroeconomic models. The vast majority of the available literature assumes linear multipliers and only recently there have been attempts to allow for multipliers to vary over the business cycle. A comprehensive review of these can be found in Gechert (2015), Hebous (2011) and Spilimbergo et al (2009).

Within the VAR literature, the size of multiplier depends on sample, control variables and identification of shocks. A number of studies report a multiplier of larger than one for the US (see, for example, Blanchard and Perotti 2002; Gali et al. 2007; Fatas and Mihov 2001). Burriel et al. (2010) argue that the size of the multiplier in general increases when controlling for debt-to-GDP ratio, but it decreases for EU countries when controlling for financial stress. In addition, estimated multipliers are downward biased if financial variables are omitted (Gechert and Mentges, 2013).

Compared to VAR studies, NK-DSGE model-based studies impose more theoretically motivated restrictions on the system. These restrictions include the existence of Ricardian consumers and the central bank following a Taylor rule. Forni et al. (2009) utilize a NK-DSGE model for Euro Area for the period 1980-2005 and report that government consumption expenditures have a mild Keynesian effect on output. Ratto et al. (2009) study the impact of government spending shocks on output in the Euro Area for the period of 1981 to 2006 and find that government consumption, investment and transfer shocks crowd-out private investment and private consumption of Ricardian consumers. In general, NK-DSGE models typically yield a small or negative impact of government spending on output due to the assumption of Ricardian households and monetary policy following a Taylor-rule.

The estimation of the regime-dependent multipliers, similar to linear estimation, can be categorized into three groups based on the estimation strategy. These are NK-DSGE, VAR, and single equation strategy. NK-DSGE models can have a nonlinear fiscal multiplier for several reasons. Fiscal multipliers in recessions can be large because of frictions due to asymmetric information between borrower and lender (Fernandez-Villaverde, 2010) and because of binding finance constraints (Eggertsson and Krugman, 2012). Further, the multipliers can also be large in recession because of the presence of those households whose borrowing is constrained by the value of their collateral (Turini et al., 2012) and a depressed labour market (Michaillat, 2012). Most prominently, Eggertsson (2009), Woodford (2011) and Christiano et al (2011) demonstrate that when monetary policy hits the ZLB, the multiplier can be substantially larger than otherwise.

These theoretical arguments are supported by several empirical investigations. Using regime-switching VAR approaches, Auerbach and Gorodnichenko (2012a) and Bachmann and Sims (2012) find a multiplier of larger than one during downswings. Auerbach and Gorodnichenko (2012b) study OECD countries for the period of 1985-2010 and report a multiplier of 2.3 for the US in downswing compared to zero in upswings. De Cos and Moral-Benito (2013) report a multiplier of 1.4 during downswing vs. 0.6 during upswing for Spain during 1986-2012. In a similar vein, Thomakos (2012) finds a multiplier of 1.32 in downswing compared to zero during tranquil periods for Greece for the period 2000-2012. In opposition to the former studies, Ramey and Zubairy (2013) investigate nonlinearity for periods of high unemployment (i.e. average unemployment above 6.5 percent) and ZLB in the US and claim that multipliers are by and large linear.

Other studies have used TSLS estimations methods to measure the size of multiplier during the crisis and normal times. For example, Turini et al. (2012) study 56 countries and estimate multipliers for the period of banking crisis vs. normal times. They report a multiplier

of 0.8 during crisis and 0.2 in normal times. Afonso et al (2010) study 98 countries using TSLS estimation for the period of 1981-2007 and find a multiplier within a range of 0.6 to 1.1. When they investigate nonlinearity between the periods of crisis vs. normal times, they find that multipliers are not statistically different among different regimes.

In a more recent paper, Qazizada and Stockhammer (2015) investigate nonlinear multipliers for the periods of downswing vs. upswing for 21 advanced countries over the period of 1979-2011. They primarily use government final consumption expenditure as an instrument. To overcome endogeneity of government spending, they employ TSLS estimation and use one year lagged value of government spending as an instrument for government spending. They find a government consumption multiplier of 3.07 in the downswing vs. 1.01 in an upswing.

Gechert and Rannenberg (2014) conduct a meta-regression analysis of estimates of fiscal multipliers from econometric studies such as the ones listed above, based a dataset with 1882 observations from 98 studies published between 1993 and 2013. They identify multipliers for several components of government spending and income: unspecified (overall) government spending, final consumption spending, investment, and military spending. They also report multipliers for government transfers and taxes. To analyse multipliers for different phases of the business cycle, they distinguish between regime-independent multiplier estimates as well as a lower (downswing) regime, and an upper (upswing) regime. According to the meta-estimates, spending multipliers increase by 0.6 to 0.8 units during downswings as compared to an average scenario. For government consumption in particular, the multiplier is approximately 1.8 in a downswing compared to 0.50 and 0.54 during the upswing and average scenario respectively.

## Calculating growth contributions of fiscal policy

In this paper, we seek to answer what has been the contribution of fiscal policy to GDP growth in seven European countries and the United States during and after the Great Recession. To accomplish this, we first identify the turning points for the business cycle for the period of 2007 to 2014, for each country. Then, we calculate the impact of the fiscal policy by multiplying the changes in fiscal policy with the respective multiplier in those periods. For multipliers, we use the results from Qazizada and Stockhammer (2015) and Gechert and Rannenberg (2014) complementarily in order to cope with econometric model uncertainty. Qazizada and Stockhammer (2015) use TSLS estimation technique and study 21 advanced countries. They report a multiplier for government consumption; this is frequently used as a summary measure for fiscal policy, but to the extent that other fiscal components and tax income develop differently from government consumption, it may give misleading results. In contrast, Gechert and Rannenberg (2014) is based on meta-regression analysis of 98 published papers. They report multipliers for different categories of government consumption (GCON), government investment (GINV), government transfers (GTRAN), and taxes (GTAX). They control for import share of GDP and thus have country-specific multipliers. A high level of import share means a greater leakage from the economy and thus a lower size of the multiplier. Table 1 presents the average multipliers for our countries. While regime-independent multipliers with the exception of GINV are below one and multipliers in upswing are all smaller than unity, downswing multipliers (with the exception of GTAX) are all above one. The largest one is GTRAN with a size of more than 2.78 for the US.

Insert Table 1 about here

For our calculations of the fiscal impact, we use both the estimates from Qazizada and Stockhammer (2015) and from Gechert and Rannenberg (2014). The Qazizada and Stockhammer (QS) multipliers are based on government consumption expenditures, but they are used as a proxy for total fiscal policy. The QS multipliers are assumed identical in all countries. The Gechert and Rannenberg (GR) multipliers differ according to import shares and are adjusted for each country for the corresponding year. For the GR total fiscal policy, we cumulate the effects for government consumption, government investment, taxes, and transfers.<sup>2</sup>

For the calculations of multipliers based on Gechert and Rannenberg (2014), we need to make a set of adjustments. While the government expenditure data can be used directly, the government income variables need to take into account income induced by the governments' own expenditures. The tax and transfer multipliers apply to the tax and transfer impulses, but some of the actual tax incomes are induced by the governments' expenditures causing more tax income. The observed tax and transfer income thus needs to be adjusted. We define tax and transfers impulses as follows:

$$\Delta TX^{impulse} = \left[ \Delta TX - \varepsilon^{TX,Y} m^{GCON} \left( \frac{TX}{Y} \right) \Delta GCON - \varepsilon^{TX,Y} m^{GINV} \left( \frac{TX}{Y} \right) \Delta GINV - \varepsilon^{TX,Y} m^{TR} \left( \frac{TX}{Y} \right) TR^{impulse} \right] \frac{1}{1 - \varepsilon^{TX,Y} m^{TX} \left( \frac{TX}{Y} \right)}$$

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<sup>2</sup> The government consumption multipliers by Qazizada and Stockhammer (2015) and those by Gechert and Rannenberg (2014) do not have the same interpretation. Qazizada and Stockhammer use government consumption as summary variable for all government expenditures. It should thus pick up other components of government expenditures and tax as far as they are correlated. In Gechert and Rannenberg, the government consumption multipliers are conditional on the other fiscal components and thus only measure partial effects.

$$\Delta TR^{impulse} = \left[ \Delta TR - \varepsilon^{TR,Y} m^{GCON} \left( \frac{TR}{Y} \right) \Delta GCON - \varepsilon^{TR,Y} m^{GINV} \left( \frac{TR}{Y} \right) \Delta GINV - \varepsilon^{TR,Y} m^{TX} \left( \frac{TR}{Y} \right) TX^{impulse} \right] \frac{1}{1 - \varepsilon^{TR,Y} m^{TR} \left( \frac{TR}{Y} \right)}$$

These equations essentially state that the tax impulse,  $TX^{impulse}$ , is the observed tax,  $TX$ , income minus the tax income induced by government expenditures times, e.g.  $GCON$ , the respective multiplier,  $m^{GCON}$ , and the income elasticity of taxes,  $\varepsilon^{TX,Y}$ . We assume, for simplicity, that those elasticities are equal to unity, which is a crude but plausible approximation (Price et al. 2014). While the transformations may look substantial, it turns out that their effect on the results is rather small.

The total fiscal impact, or growth contribution of fiscal policy is then defined as:

$$fiscal\ impact = m^{GCON} \Delta GCON + m^{GINV} \Delta GINV + m^{TX} \Delta TX^{impulse} + m^{TR} TR^{impulse}$$

We have experimented with several ways of measuring downswings and we use an unemployment-based measure as our preferred method. We use quarterly unemployment rate as a measure of the business cycle to discern the business cycle turning points. We define a downswing as three or more consecutive quarters of uni-directional change with a minimum cumulative change of one percentage point in unemployment.<sup>3</sup> Otherwise quarters are classified as upswings.

An alternative is the use of OECD Composite Leading Index (OECD CLI). That is a widely used measure to distinguish upswings and downsizing; however, in our sample, the indicator often is at odds with the GDP growth rate of respective countries. For instance, in 2009, Germany, Italy, and Portugal had negative GDP growth rates, but according to OECD CLI, 2009 is defined a period of expansion for these countries. Likewise, Spain in 2012 and Greece in 2012 and 2013 had negative growth rates, but those periods are expansion

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<sup>3</sup> This way of delineating business cycles builds on Ball (1994, 1999).

according to OECD CLI. Short, the OECD CLI gives counterintuitive results for our sample, thus, we prefer the simple change in unemployment measure to identify upswings and downswings. A second alternative measure is the output gap. This relies on an estimate of the NAIRU, the non-accelerating inflation rate of unemployment. Importantly, the data are only available at an annual basis. Using the output gap measure does give qualitatively similar results to the ones reported below.

We identify up and downswings with quarterly data, but our fiscal variables are annual data. We calculate annual multipliers as the average of the four quarterly regimes. For instance, if there are three quarters of the downswing and one quarter of upswing in one year, the annual weighted average multiplier based on Qazizada and Stockhammer (2015) will be  $(3.07*0.75+1.01*0.25)=2.56$  for instance. For comparison, we also present the contribution of fiscal policy under the assumption of non-regime multipliers, assuming that multipliers are linear across different regimes.

The source of our data for unemployment is OECD. All our other data are obtained from the AMECO database.

### **The growth contributions of fiscal policy since the crisis**

Figure 1 plots the overall impact of fiscal policy on GDP based on the QS and GR multipliers for Germany, the UK, the USA Greece, Ireland, Italy, Portugal, and Spain,. We report both the impacts on GR regime-dependent multipliers and GR non-regime multipliers (GR-NR). For most countries except Ireland, the QS and GR-based fiscal impacts look rather similar and differ in a qualitatively similar vein from the regime-independent impacts.

Insert Figure 1 about here

While Germany had positive growth contribution throughout the period (except for GR non-regime measures for 2014), fiscal impacts were larger in 2008 and 2009 than thereafter (Figure 1.1). The effects overall, however, are modest. At the peak, fiscal impacts were below 1.5% of GDP (both according to the GR and the QS measure) and consistently below .5% after 2009. For the UK, we find positive and substantial fiscal impacts until 2010 with both the QS and GR measure (Figure 1.2). The GR fiscal impact is at 4.5% of GDP for 2009 substantially larger than the QS measure (just below 2%), but otherwise they are rather similar. The UK had modest negative fiscal impacts 2010 and 2011 (of up to 1% of GDP) and a neutral stance thereafter. The US's positive fiscal impacts in 2008 and 2009 are much higher for the GR measure (7% in 2009) than with the QS measure (1%, 2009) (Figure 1.3). After 2010, the QS method shows marginally negative fiscal impacts and GR shows modest negative impacts (around -1%). For all three countries the non-regime multipliers depict very small fiscal impacts, never exceed the -1% to +1% of GDP band.

For Greece, the fiscal impact was sizable and expansionary in 2009, with 3% of GDP according to GR multipliers and 4% according to QS multipliers (Figure 1.4). From 2010 fiscal impacts were negative and large: around -7% in 2010, which fell to -4% in 2013. Only in 2014 was there a neutral fiscal impact. QS and GR fiscal impacts are very similar. GR non-regime fiscal impacts give similar time profile, but substantially lower impacts.

For Ireland, the QS multipliers imply expansionary effects in 2008, that fall sharply thereafter. In 2010, the QS fiscal impact amounts to -4% of GDP (Figure 1.5). Thereafter values are below -2%, but remain negative until 2014. Ireland is the one country where the QS and GR multipliers differ substantially. GR multipliers for Ireland are negative, which is

because of Ireland's high import shares. This either means that Ireland has consistently negative multipliers or that this result is an artefact of the estimation method.<sup>4</sup>

For Italy GR and QS, fiscal impacts indicate small positive growth contributions until 2010 and then sizable negative impacts (Figure 1.6). Only for 2009 does the GR fiscal impacts exceed 2% of GDP. For Portugal we find positive fiscal impacts with the GR measure until 2010 (Figure 1.7). According to the GR multipliers, there was already a small negative fiscal impact in 2010. Overall, the GR and QS measures do give a similar picture for Portugal, though values are somewhat higher with the QS measure. For Spain, we find positive fiscal impacts until 2010 with both measures and negative impacts thereafter (Figure 1.8). GR impacts are larger than QS impacts, in particular for 2009, where GR indicate a fiscal impact of 7%, but QS only 3% (non-regime GR impacts are 0.5%). The time profile looks similar with all three measures.

Overall GR and QS fiscal impacts show a similar picture, with the exception of Ireland, where GR gives negative multipliers due to Ireland high import shares. GR impacts are larger than QS in most countries, most notably for 2008 and 2009. The QS measure is typically between the regime-dependent GR and non-regime GR. Overall government consumption seems to be a reasonably good proxy for overall fiscal policy.

In all countries, we observe a policy change between 2008-09 and 2010-14 (see Table 2). While the policy was clearly expansionary for all countries in the first phase, it shifted to restrictive or neutral in the second period. The extent to which this has happened differs substantially between the GIIPS and Germany, UK and USA. While policy shifted from

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<sup>4</sup> While Ireland is often cited as case for EFC, recent studies report substantial positive multipliers for the Irish economy (Barrell et al 2013, Bergin et al 2013). Kinsella (2014) argues that its high degree of openness and positive trade shocks explain the Irish economic performance since 2010.

expansionary to neutral, i.e. withdrawing the stimulus in Germany, UK and USA, policy in the GIIPS took a much more contractionary turn.

Insert Table 2

With the exception of Ireland, which gives somewhat mixed and inconclusive results, the general pattern arises that those countries that turned to a restrictive fiscal stance after 2010 faced a double-dip recession. Those countries that embarked on a neutral or slightly expansionary fiscal stance experienced a recovery. Both patterns very much support a Keynesian story of a significant positive impact of fiscal policy on growth. One might argue that the crisis countries simply did not have the fiscal leeway for a neutral fiscal stance and had to embark on austerity without any realistic alternative, thus claiming a reverse-causality narrative from low growth to fiscal tightening. However, the bad growth performance in those countries is still at odds with the expansionary fiscal contraction hypothesis that forecasted a strong recovery for austere countries.

To assess the size of the fiscal impact relative to a country's actual GDP decline, we need to know its deviation from trend output. We calculate the pre-crisis trend growth for the 1998-2008 period (see Table 2) and calculate potential GDP after 2008 based this trend growth. We regard this as a reasonable proxy for trend growth because none of the countries experienced strong inflationary pressure in that period. We then calculate the gap between actual GDP and potential GDP if growth had continued at pre-crisis trends. For 2001-14 we see a large gap for GIIPS countries and a modest one for UK and USA. Only for Germany did growth exceed pre-crisis trends. How much of this gap is explained by fiscal impacts? For

the Greece between half (according to the GR multipliers) and one third of the deviation for pre-crisis trend growth in the 2010-14 period is explained by fiscal contraction. For Portugal about half of the gap is due to fiscal policy; for Italy between one fifth (with GR multipliers) and one third (with QS multipliers) and for Spain between one eighth (according to QS multipliers) and one third (with GR multipliers). Overall this suggests that the poor economic growth performance in the GIIPS countries since 2010 has to a significant extent be caused by contractionary fiscal policy.

## **Conclusions**

The paper has calculated the effect of fiscal policy in eight OECD economies since 2008, based on the regime-dependent multipliers reported by Qazizada and Stockhammer (2015) and Gechert and Rannenberg (2014) for the GIIPS countries, Germany, the USA and the UK. For most countries QS and GR fiscal impacts are similar, with GR impact typically showing larger effects. All countries pursued expansionary fiscal policy during the 2008/09 recession and all of them switched to austerity from 2010. However, the extent of fiscal tightening has differed substantially across countries. While austerity meant essentially a shift from expansionary to neutral for Germany, the USA and the UK, the fiscal contraction was much stronger in the GIIPS countries. As compared to the former group, the GIPS countries (with the exception of Ireland) experienced a substantial decline in output 2010-14 and fiscal policy explains, at least, half of this decline for Greece, Portugal, Spain and Italy. We thus conclude that fiscal policy played a major role in the depression that southern European countries are experiencing.

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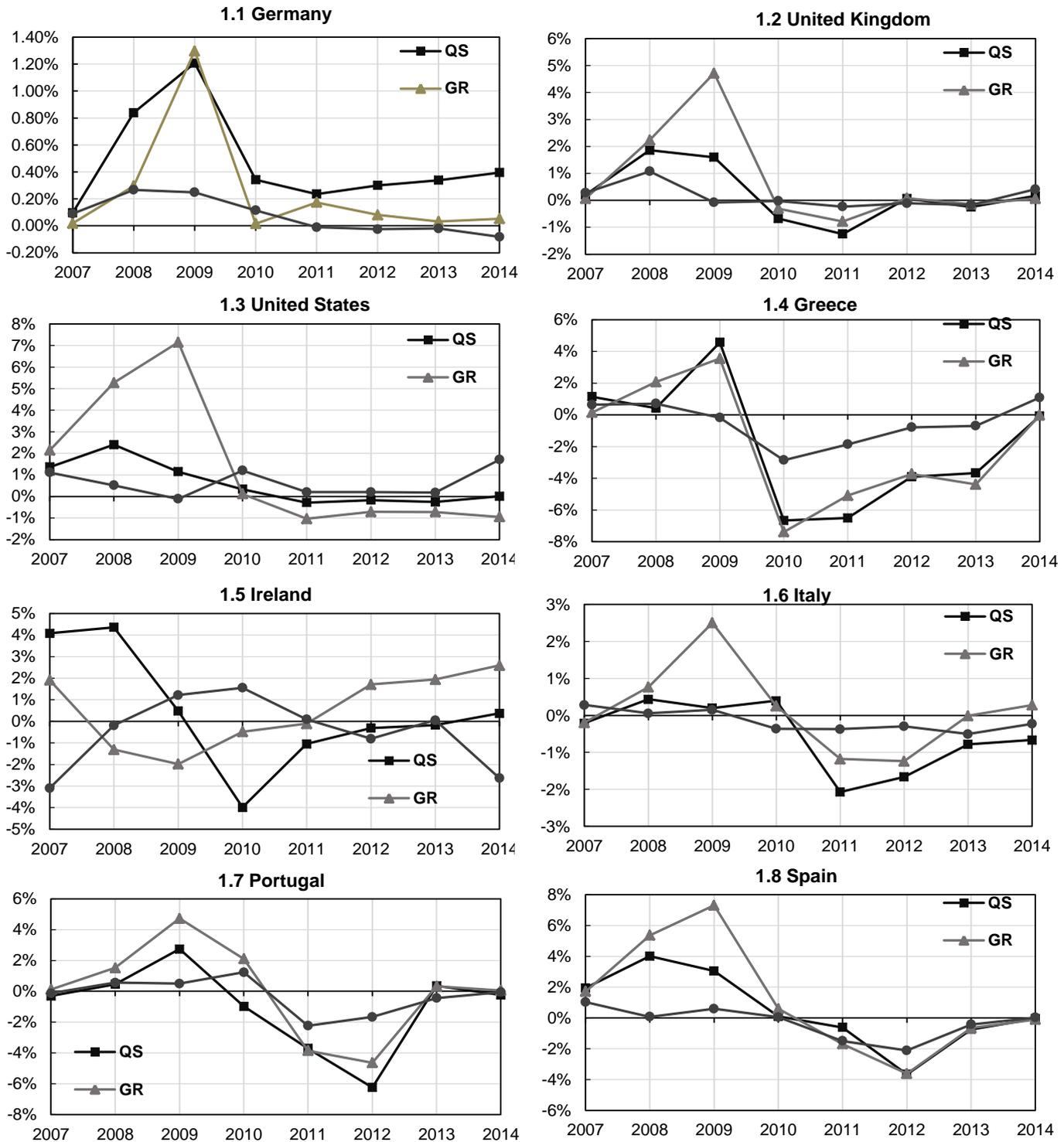
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**Table 1:** Multipliers for Different Types of Government Spending from Gechert and Rannenberg (2014) and Qazizada and Stockhammer (2015)

| Country  | Regime-dependent Multipliers: Downswing |      |       |       |               | Regime-dependent Multipliers: Upswing |       |       |       |               | Regime-independent Multipliers |       |       |       |               |
|----------|---|------|-------|-------|---------------|---------------------------------------|-------|-------|-------|---------------|--------------------------------|-------|-------|-------|---------------|
|          | GCON                                    | GINV | GTAX  | GTRAN | QS Multiplier | GCON                                  | GINV  | GTAX  | GTRAN | QS Multiplier | GCON                           | GINV  | GTAX  | GTRAN | QS Multiplier |
| Germany  | 1.48                                    | 1.58 | 0.09  | 2.25  | 3.07          | 0.19                                  | -0.04 | 0.04  | 0.05  | 1.01          | 0.23                           | 1.18  | 0.06  | 0.1   | 1.7           |
| UK       | 1.59                                    | 1.69 | 0.19  | 2.36  | 3.07          | 0.29                                  | 0.07  | 0.14  | 0.16  | 1.01          | 0.34                           | 1.28  | 0.17  | 0.21  | 1.7           |
| USA      | 2.01                                    | 2.11 | 0.61  | 2.78  | 3.07          | 0.71                                  | 0.49  | 0.56  | 0.58  | 1.01          | 0.76                           | 1.71  | 0.59  | 0.63  | 1.7           |
| Greece   | 0.23                                    | 0.33 | -1.16 | 1     | 3.07          | 0.25                                  | 0.03  | 0.1   | 0.12  | 1.01          | 0.3                            | 1.24  | 0.13  | 0.17  | 1.7           |
| Ireland  | 1.55                                    | 1.65 | 0.15  | 2.32  | 3.07          | -1.06                                 | -1.29 | -1.21 | -1.2  | 1.01          | -1.02                          | -0.07 | -1.19 | -1.15 | 1.7           |
| Italy    | 1.67                                    | 1.77 | 0.27  | 2.43  | 3.07          | 0.43                                  | 0.21  | 0.28  | 0.3   | 1.01          | 0.48                           | 1.42  | 0.31  | 0.35  | 1.7           |
| Spain    | 1.44                                    | 1.54 | 0.05  | 2.21  | 3.07          | 0.37                                  | 0.15  | 0.22  | 0.24  | 1.01          | 0.41                           | 1.36  | 0.25  | 0.29  | 1.7           |
| Portugal | 1.73                                    | 1.83 | 0.33  | 2.5   | 3.07          | 0.15                                  | -0.08 | -0.01 | 0.01  | 1.01          | 0.19                           | 1.14  | 0.02  | 0.06  | 1.7           |

**Note:** GCON=Government consumption Spending, GINV= Government investment, GTAX=Taxes, and GTRAN=Government Transfers Spending. GCON, GINV, GTAX and GTRAN are from Gechert and Rannenberg (2014). QS Multipliers refer to multiplier estimates from Qazizada and Stockhammer (2015).

**Figure 1: Annual Impact of Fiscal Policy on GDP Growth for 2007-2014**



**Note:** QS refers to calculations using Qazizada and Stockhammer (2015) multipliers, GR refers to calculations based on Gechert and Rannenberg (2014) multipliers, and GR-NR refers to calculations using GR's non-regime dependent multipliers.

**Table 2:** Cumulative Impact of Fiscal Policy Using GR and QS Multipliers

| <b>Impact of Fiscal Policy with GR Multipliers</b> |         |        |        |         |         |        |          |        |
|--|---------|--------|--------|---------|---------|--------|----------|--------|
|  | Germany | UK     | USA    | Greece  | Ireland | Italy  | Portugal | Spain  |
| 2008/09  | 1.60%   | 6.90%  | 12.40% | 5.60%   | -3.30%  | 3.30%  | 6.20%    | 12.70% |
| 2010/14  | 0.40%   | -1.10% | -3.30% | -20.60% | 5.70%   | -1.90% | -6.00%   | -5.50% |
| <b>Impact of Fiscal Policy with QS Multipliers</b> |         |        |        |         |         |        |          |        |
|  | Germany | UK     | USA    | Greece  | Ireland | Italy  | Portugal | Spain  |
| 2008/09  | 1.10%   | 2.00%  | 2.10%  | 2.90%   | 2.80%   | 0.40%  | 1.90%    | 4.10%  |
| 2010/14  | 0.80%   | -1.10% | -0.20% | -12.20% | -3.00%  | -2.80% | -6.30%   | -2.90% |
| <b>Actual GDP Growth</b>                           |         |        |        |         |         |        |          |        |
|  | Germany | UK     | USA    | Greece  | Ireland | Italy  | Portugal | Spain  |
| 2008/09  | -2.40%  | -1.80% | -1.00% | -0.90%  | -1.60%  | -4.00% | -0.50%   | 0.10%  |
| 2010/14  | 9.80%   | 8.70%  | 11.10% | -24.00% | 7.10%   | -2.60% | -4.70%   | -2.50% |
| <b>Average Annual GDP Growth 1998-2008</b>         |         |        |        |         |         |        |          |        |
|  | Germany | UK     | USA    | Greece  | Ireland | Italy  | Portugal | Spain  |
| 1998/2008  | 1.58%   | 2.68%  | 2.57%  | 3.51%   | 5.13%   | 1.23%  | 1.62%    | 3.57%  |
| <b>Gap Between Actual and Potential GDP</b>        |         |        |        |         |         |        |          |        |
|  | Germany | UK     | USA    | Greece  | Ireland | Italy  | Portugal | Spain  |
| 2008/09  | 5.56%   | 7.16%  | 6.14%  | 7.93%   | 11.86%  | 6.47%  | 3.73%    | 7.05%  |
| 2010/14  | -1.91%  | 4.70%  | 1.74%  | 41.57%  | 18.55%  | 8.77%  | 12.79%   | 20.37% |

## Appendix

**A 1: Annual Impact of Fiscal Policy Using GR Multipliers**

| Year | Germany | UK     | USA    | Greece | Ireland | Italy  | Portugal | Spain  |
|------|---------|--------|--------|--------|---------|--------|----------|--------|
| 2007 | -0.67%  | 0.13%  | 2.01%  | 6.72%  | 0.68%   | -0.26% | 1.86%    | -0.31% |
| 2008 | 0.35%   | 2.38%  | 4.61%  | 2.95%  | 8.65%   | 0.94%  | 2.17%    | 6.60%  |
| 2009 | 2.25%   | 5.75%  | 5.95%  | 4.27%  | 2.90%   | 2.60%  | 6.54%    | 7.64%  |
| 2010 | 0.23%   | -0.66% | 0.09%  | -8.34% | -2.88%  | 0.16%  | 2.30%    | 0.37%  |
| 2011 | -0.50%  | -1.17% | -0.70% | -5.90% | -2.59%  | -1.35% | -5.49%   | -1.84% |
| 2012 | -0.09%  | 0.31%  | -0.48% | -4.09% | -0.72%  | -1.44% | -5.45%   | -3.99% |
| 2013 | 0.11%   | -0.32% | -0.48% | -4.88% | -0.51%  | -0.02% | -0.72%   | -0.75% |
| 2014 | 0.10%   | 0.02%  | -0.64% | 0.12%  | -0.50%  | 0.23%  | -0.42%   | -0.20% |

**A 2: Cumulative Impact of Fiscal Policy Using GR Multipliers**

| Year    | Germany | UK     | USA    | Greece  | Ireland | Italy  | Portugal | Spain  |
|---------|---------|--------|--------|---------|---------|--------|----------|--------|
| 2007    | -0.67%  | 0.13%  | 2.01%  | 6.72%   | 0.68%   | -0.26% | 1.86%    | -0.31% |
| 2008    | -0.32%  | 2.51%  | 6.62%  | 3.63%   | 15.37%  | 0.64%  | 1.90%    | 8.46%  |
| 2009    | 1.93%   | 8.26%  | 12.57% | 7.90%   | 18.27%  | 3.24%  | 8.44%    | 16.10% |
| 2010    | 2.16%   | 7.60%  | 12.66% | -0.44%  | 15.39%  | 3.39%  | 10.74%   | 16.47% |
| 2011    | 1.66%   | 6.42%  | 11.97% | -6.34%  | 12.79%  | 2.04%  | 5.25%    | 14.63% |
| 2012    | 1.57%   | 6.73%  | 11.49% | -10.43% | 12.08%  | 0.61%  | -0.20%   | 10.65% |
| 2013    | 1.69%   | 6.41%  | 11.00% | -15.31% | 11.56%  | 0.58%  | -0.91%   | 9.90%  |
| 2014    | 1.78%   | 6.43%  | 10.36% | -15.19% | 11.07%  | 0.81%  | -1.33%   | 9.70%  |
| Year    | Germany | UK     | USA    | Greece  | Ireland | Italy  | Portugal | Spain  |
| 2007/09 | 1.90%   | 8.30%  | 12.60% | 7.90%   | 18.30%  | 3.20%  | 8.40%    | 16.10% |
| 2010/14 | -0.10%  | -1.80% | -2.20% | -23.10% | -7.20%  | -2.40% | -9.80%   | -6.40% |

**A 3: Annual Impact of Fiscal Policy Using QS Multiplier**

| Year | Germany | UK     | US     | Greece | Ireland | Italy  | Portugal | Spain  |
|------|---------|--------|--------|--------|---------|--------|----------|--------|
| 2007 | 0.05%   | 0.10%  | 0.80%  | 0.57%  | 2.37%   | -0.11% | -0.16%   | 1.09%  |
| 2008 | 0.50%   | 1.10%  | 1.40%  | 0.20%  | 2.50%   | 0.20%  | 0.30%    | 2.30%  |
| 2009 | 0.70%   | 0.90%  | 0.70%  | 2.70%  | 0.30%   | 0.10%  | 1.60%    | 1.80%  |
| 2010 | 0.20%   | -0.40% | 0.20%  | -3.90% | -2.30%  | 0.20%  | -0.60%   | 0.10%  |
| 2011 | 0.10%   | -0.70% | -0.10% | -3.80% | -0.60%  | -1.20% | -2.20%   | -0.40% |
| 2012 | 0.10%   | 0.00%  | -0.10% | -2.30% | -0.20%  | -1.00% | -3.70%   | -2.10% |
| 2013 | 0.20%   | -0.10% | -0.10% | -2.10% | -0.10%  | -0.50% | 0.20%    | -0.40% |
| 2014 | 0.20%   | 0.10%  | 0.00%  | 0.00%  | 0.20%   | -0.40% | -0.10%   | 0.00%  |

#### A 4: Cumulative Impact of Fiscal Policy Using QS Multiplier

| Year    | Germany | UK     | US     | Greece  | Ireland | Italy  | Portugal | Spain  |
|---------|---------|--------|--------|---------|---------|--------|----------|--------|
| 2007    | 0.05%   | 0.10%  | 0.80%  | 0.57%   | 2.37%   | -0.11% | -0.16%   | 1.09%  |
| 2008    | 0.50%   | 1.17%  | 2.21%  | 0.81%   | 4.91%   | 0.13%  | 0.10%    | 3.44%  |
| 2009    | 1.19%   | 2.11%  | 2.88%  | 3.48%   | 5.19%   | 0.25%  | 1.70%    | 5.23%  |
| 2010    | 1.36%   | 1.71%  | 3.05%  | -0.42%  | 2.87%   | 0.48%  | 1.13%    | 5.28%  |
| 2011    | 1.48%   | 0.98%  | 2.91%  | -4.24%  | 2.26%   | -0.73% | -1.04%   | 4.92%  |
| 2012    | 1.62%   | 1.01%  | 2.82%  | -6.53%  | 2.10%   | -1.71% | -4.69%   | 2.77%  |
| 2013    | 1.79%   | 0.89%  | 2.70%  | -8.65%  | 2.01%   | -2.17% | -4.50%   | 2.35%  |
| 2014    | 1.99%   | 0.97%  | 2.70%  | -8.69%  | 2.19%   | -2.56% | -4.62%   | 2.33%  |
| Year    | Germany | UK     | US     | Greece  | Ireland | Italy  | Portugal | Spain  |
| 2007/09 | 1.19%   | 2.11%  | 2.88%  | 3.48%   | 5.19%   | 0.25%  | 1.70%    | 5.23%  |
| 2010/14 | 0.80%   | -1.14% | -0.18% | -12.10% | -2.99%  | -2.81% | -6.32%   | -2.90% |

#### A 5: Actual GDP Growth

| Year    | Germany | UK     | USA    | Greece  | Ireland | Italy  | Portugal | Spain  |
|---------|---------|--------|--------|---------|---------|--------|----------|--------|
| 2007    | 3.20%   | 2.50%  | 1.80%  | 3.50%   | 4.80%   | 1.50%  | 2.50%    | 3.70%  |
| 2008    | 1.10%   | -0.30% | -0.30% | -0.40%  | -2.60%  | -1.00% | 0.20%    | 1.10%  |
| 2009    | -5.60%  | -4.30% | -2.80% | -4.40%  | -6.40%  | -5.50% | -3.00%   | -3.60% |
| 2010    | 4.10%   | 1.90%  | 2.50%  | -5.40%  | -0.30%  | 1.70%  | 1.90%    | 0.00%  |
| 2011    | 3.60%   | 1.60%  | 1.60%  | -8.90%  | 2.80%   | 0.60%  | -1.80%   | -0.60% |
| 2012    | 0.40%   | 0.70%  | 2.30%  | -6.60%  | -0.30%  | -2.80% | -4.00%   | -2.10% |
| 2013    | 0.10%   | 1.70%  | 2.20%  | -3.90%  | 0.20%   | -1.70% | -1.60%   | -1.20% |
| 2014    | 1.60%   | 2.80%  | 2.40%  | 0.80%   | 4.80%   | -0.40% | 0.90%    | 1.40%  |
| Year    | Germany | UK     | USA    | Greece  | Ireland | Italy  | Portugal | Spain  |
| 2007/09 | -1.40%  | -2.10% | -1.30% | -1.40%  | -4.20%  | -5.10% | -0.30%   | 1.20%  |
| 2010/14 | 9.80%   | 8.70%  | 11.10% | -24.00% | 7.10%   | -2.60% | -4.70%   | -2.50% |

**A 6: Annual Impact of Fiscal Policy Using QS Multipliers with Output Gap-based Definition of Recession**

| Year | Germany | UK     | US     | Greece | Ireland | Italy  | Portugal | Spain  |
|------|---------|--------|--------|--------|---------|--------|----------|--------|
| 2007 | 0.10%   | 0.20%  | 0.44%  | 1.14%  | 1.33%   | -0.21% | -0.20%   | 0.95%  |
| 2008 | 0.55%   | 0.73%  | 0.78%  | 0.20%  | 1.42%   | 0.29%  | 0.18%    | 1.30%  |
| 2009 | 1.82%   | 1.60%  | 1.15%  | 1.49%  | 0.48%   | 0.20%  | 2.74%    | 3.05%  |
| 2010 | 1.05%   | -0.68% | 1.03%  | -2.17% | -3.99%  | 0.40%  | -0.97%   | 0.09%  |
| 2011 | 0.24%   | -1.25% | -0.87% | -6.51% | -1.04%  | -2.07% | -3.71%   | -0.62% |
| 2012 | 0.92%   | 0.19%  | -0.52% | -3.91% | -0.62%  | -1.66% | -6.24%   | -3.66% |
| 2013 | 1.04%   | -0.76% | -0.78% | -4.41% | -0.52%  | -0.78% | 0.72%    | -1.12% |
| 2014 | 1.21%   | 0.51%  | 0.02%  | -0.24% | 1.15%   | -0.67% | -0.74%   | -0.14% |

**A 7: Annual Impact of Fiscal Policy Using GR Multipliers with Output Gap-based Definition of Recession**

| Country | Germany | UK     | US     | Greece | Ireland | Italy  | Portugal | Spain  |
|---------|---------|--------|--------|--------|---------|--------|----------|--------|
| 2007    | 0.02%   | 0.06%  | 0.36%  | 0.15%  | -3.62%  | -0.20% | 0.04%    | 0.18%  |
| 2008    | 0.07%   | 0.16%  | 1.99%  | -0.09% | -7.58%  | 0.44%  | -0.13%   | 1.19%  |
| 2009    | 2.44%   | 4.70%  | 7.06%  | 0.67%  | -1.96%  | 2.48%  | 4.70%    | 7.26%  |
| 2010    | 0.60%   | -0.34% | 2.01%  | -0.69% | -0.49%  | 0.20%  | 2.12%    | 0.51%  |
| 2011    | 0.17%   | -0.84% | -2.01% | -5.22% | -0.12%  | -1.23% | -3.99%   | -1.75% |
| 2012    | 0.29%   | 1.00%  | -1.14% | -3.74% | 0.98%   | -1.31% | -4.75%   | -3.76% |
| 2013    | 0.54%   | -0.58% | -1.02% | -5.61% | 0.32%   | -0.05% | 0.85%    | -1.05% |
| 2014    | 0.86%   | 0.79%  | -0.13% | 1.96%  | 2.30%   | 0.23%  | -1.34%   | -0.11% |