

# Economic Watch

## Europe

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Economic Analysis

Developed Economies

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## Fiscal adjustment and economic growth in Europe<sup>1</sup>

### Introduction

One of the most controversial issues since the start of the economic crisis has been the effect of fiscal policies on economic growth. In late 2008, attention was focused on the effects of the expansionary policies that began being applied to contain the sharp decline in activity that was occurring at the time. Since 2010, interest has shifted in quite the opposite direction: given the risk of fiscal non-sustainability that many European countries are facing, which has given rise to the debt crisis in Europe, the economic authorities started a fiscal retrenchment that has resulted in a contraction of economic activity.

The stabilizing effects of fiscal policy on economic activity are typically measured using the **fiscal multiplier**, which is defined as the change in **GDP relative to the change in public deficits due to discretionary policies** (increase in expenditures,  $G^*$ , less increase in revenues,  $T^*$ , discretionary):

$$\Delta PIB / (\Delta G^* - \Delta T^*)$$

The interpretation of the fiscal multiplier is therefore quite immediate: it shows how much GDP varies for each unit of discretionary increase or decrease in public spending or revenues.<sup>2</sup>

In an interesting article in 2009, during the debate on the appropriateness of applying fiscal policy to combat the free fall in developed economies, Robert Barro clearly explained **the meaning of a multiplier greater or less than one**. When the multiplier is equal to one, if the government purchases an airplane or builds a bridge, the economy's total production increases exactly enough as to manufacture that airplane or construct that bridge without reducing the production of other goods, keeping private-sector consumption and investment unchanged. If the multiplier is greater than one, according to Barro "the process is even more amazing"; in addition to increasing production in that airplane or bridge, GDP grows even more because private consumption and/or investment do so as well. That is, an increase in public-sector demand has positive external effects, triggering other additional mechanisms that end up using idle production capacity and increasing private-sector demand.

Why does it matter whether the multiplier is higher or lower? If the multiplier is very high, the negative effects of fiscal austerity on GDP will be quantitatively significant, causing a decline in revenue through automatic stabilizers, which might exceed the ex ante projected savings from the adjustment. In this situation, fiscal consolidation in times of crisis would be self-defeating, and thus some economists (e.g., De Long and Summers, 2012) have even gone so far as to defend the notion that under these circumstances, to reduce the deficit, the appropriate measure would be to increase public spending.<sup>3</sup>

1: We thank the valuable comments and suggestions made by O. Blanchard and D. Leigh.

2: Discretionary is understood as the change in public revenue and spending in response to an economic policy decision, i.e., an active fiscal policy. By contrast, when the change in public revenues and spending is the result of automatic stabilizers that result from changes in economic activity, without adopting any economic policy decision, we speak of passive fiscal policy.

3: Boussard, de Castro and Salto (2012) show that multipliers higher than one do not necessarily imply self-defeating fiscal consolidation. With high fiscal multipliers, debt may even increase in the first and second years of the consolidation, but except in very extreme cases, the consolidation is effective starting in the third year. These results depend upon the value of the multiplier as well as the sensitivity of public deficits to the economic cycle and the financial markets' response.

## A brief review of the literature

In practice, **what is the value of the fiscal multiplier?** There has been a lot of research on this topic, and the positions among some schools of economic thought differ quite sharply from one another. For some, who identify themselves with the most Keynesian proposals to use short-term fiscal stimulus policies as actively as possible, the multiplier exceeds 1.5. At the other extreme, in the view of the "supply-side" school, the multiplier is clearly less than one in the best of cases.

One reason for such sharply contrasting positions in the value of the fiscal multiplier is that **the available empirical evidence and the simulation exercises provide a wide range of values.** This happens, first, because it is hard to isolate the effects of policies of fiscal stimulus from other factors (shocks) that simultaneously affect the economy. Second, because **the multiplier's value depends upon the composition of the fiscal stimulus** (changes in government spending, taxes, transfers, etc.) **and the specific characteristics of each economy that may vary over time:** the exchange rate regime, the response of monetary policy, the health of public finances, the level of households and firms access to the financial markets, the availability of bank lending, the level of external and private-sector debt, or whether a short-term stimulus is announced simultaneously with long-term consolidation measures.

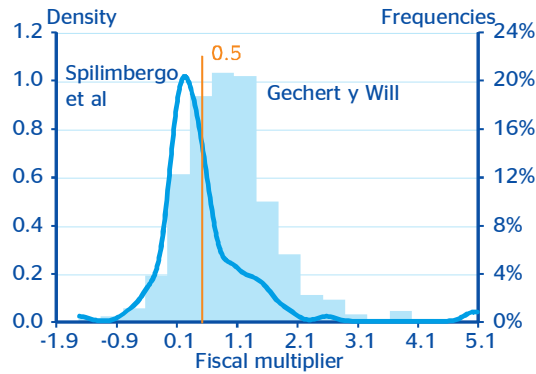
As an example of how much these factors may matter, **Corsetti, Meier and Müller (2012)** find that in the first year of application of an expansionary spending policy, the fiscal multiplier can range from -0.7 (if the level of public debt is high) to 2.3 (if the economy is suffering from a severe financial crisis). In their baseline scenario (an economy with flexible exchange rates, a public debt of less than 100% of GDP and a public deficit less than 6%, and with no financial crisis), the multiplier is zero.

In a survey of the empirical literature **Spilimbergo, Symansky and Schindler (2009)** find a range of multipliers, from -1.5 to 5.2, although it is very rare to find multipliers higher than 2. The line in **Chart 1** (left scale) represents the density function of the 131 multipliers appearing in this survey, **the average of which is 0.54.** As may be seen, the most frequent values are positive, although slightly below average.

**Gechert and Will (2012)** analyze a broader sample of 89 studies, with which they perform a meta-analysis of 754 fiscal multipliers, the frequency distribution of which is represented in the bars of Chart 1 (right-hand scale). The **average of these multipliers ranges from 0.5 to 1.0,** depending on the fiscal instrument and the estimating method. This meta-analysis yields the conclusion that **the multiplier ranges from 2.82** (the maximum impact of military spending in neo-Keynesian general equilibrium models when interest rates reach the zero limit) and -1.3 (the effect of an increase in transfers in a Real Business Cycle model when imports account for 50% of GDP).

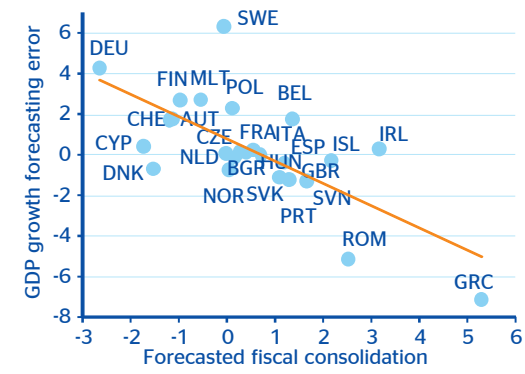
As an example of this variety among the values of fiscal multipliers, it is helpful to note two contrasting positions on fiscal policy during the recent economic crisis. On one extreme is the survey of literature conducted by **Alesina (2010)** for the April 2010 Ecofin meeting, according to which fiscal consolidation may end up being expansionary (a negative fiscal multiplier). At the other extreme are the lessons drawn by **Romer (2012)**, in whose view short-term multipliers are positive and quantitatively high; hence, the US's expansionary fiscal policy during the crisis (American recovery and Reinvestment Act of 2009) had significant stabilizing effects.

Chart 1  
Fiscal multipliers :  
Density function and distribution of frequencies  
of two surveys of the literature



Source: authors' estimate based on the surveys of Spilimbergo, Symansky and Schindler (2009) and Gechert and Will (2012)

Chart 2  
Anticipated fiscal consolidation and GDP  
growth forecast error, 2010-11



Source: Blanchard and Leigh (2013)

For the Spanish economy, the REMS general equilibrium model (see Boscá, Doménech, Ferri and Varela, 2011) yields a public spending multiplier equal to 1.0 in the first quarter and 0.52 over the entire first year.

Based on the evidence that has just been presented, before the crisis a **fiscal multiplier equal to 0.5** used to be commonly accepted as a rule of thumb. This was the multiplier typically used by the IMF to evaluate fiscal consolidations in previous years, based on an analysis of the historic evidence and simulation exercises using its GIMF model (IMF, 2010).

## Blanchard and Leigh's results

The debate over the effects of fiscal policy on GDP, particularly as a result of the tightening measures adopted to reduce the enormous public deficits, has been shaken by the analysis conducted in the IMF's *World Economic Outlook* (October 2012), which was later expanded by Blanchard and Leigh (2013) in a very attractive and thorough research.

**Blanchard and Leigh found that in 2010 systematic errors were committed in the 2010 and 2011 GDP growth forecasts, which were negatively correlated to the forecasts for fiscal consolidation for those two years. The evidence is summarized in Chart 2<sup>4</sup>. The horizontal axis shows the fiscal consolidation projected in 2010 by the IMF for 2010 and 2011, and the vertical axis shows the forecast error in GDP growth for those two years, for a sample of 26 European countries. Assuming an efficient use of the available information when making economic forecasts, forecast errors should not have shown any relationship with the projected fiscal consolidation. As Chart 3 shows, this is not the case: the regression coefficient between both variables is -1.095 and is statistically significant (with a t-ratio equal to -4.85).**

What is the implication of this correlation between the forecast error and the projected fiscal consolidation? Since the IMF's GDP forecasts take into account the projected fiscal adjustments, the conclusion drawn by Blanchard and Leigh is that, at least during this crisis, the fiscal multipliers were higher than those used when those economic forecasts were made. If, on average, the multiplier used was 0.5 (*World Economic Outlook*, October 2008 and October 2010), **Blanchard and Leigh's evidence suggests that the impact of the fiscal consolidation in 2010 and 2011 was actually equivalent to what would have been expected with a multiplier of 1.6 (0.5+1.095).**

4: Blanchard and Leigh (2013) kindly provide their data and estimation codes at <http://www.imf.org/external/pubs/ft/wp/2013/Data/wp1301.zip>

How robust are these results? In response to a criticism from Giles (2012a and b), Blanchard and Leigh conducted various robustness checks. First, they **excluded Germany and Greece** from the sample. Although the estimated coefficient declined by almost 30%, to 0.776 - which is the same as an implicit multiplier of 1.3- it remained statistically significant. Second, they used **robust methods in the presence of outliers** (robust regression, quantile regression, and Cook's distance measure). Again, the coefficient remained statistically significant and even higher, because the observation with the highest residual was Sweden, and excluding it helped increase the correlation between the forecast growth error and the projected fiscal consolidation. Third, **they expanded the sample with 10 advanced economies** (the coefficient fell to a half and was no longer statistically significant) **and analyzed the evidence of 14 emerging economies** (the estimated coefficient was equal to zero). Fourth, in the sample of 26 European economies **they controlled for various characteristics of the fiscal, financial, banking and private-sector debt situations and the foreign sector**. Fifth, they conducted the same exercise for **other years from 2009 to 2012**, showing that their argument worked better precisely in the 2010-11 period. Finally, in addition to other tests, they analyzed whether similar results were obtained when the forecast errors of the **European Commission, the OECD or the Economist Intelligence Unit** were used instead of the IMF's. Although the estimated coefficients were lower (which may have resulted from the fact that the fiscal multipliers those institutions used were higher), in all cases the relationship between growth forecast errors and the projected fiscal adjustments was negative and statistically significant. These various exercises show that **the results depend upon the countries and periods analyzed**, but for the case of the European countries, the robustness of the estimated coefficient in 2010 and 2011 appears to suggest that the fiscal multiplier is considerably higher than one.

Although Blanchard and Leigh interpret these results with considerable caution, what is certain is that the reading of these results, particularly in the European media, **has led a broader majority of observers, analysts and experts to accept the fact that fiscal multipliers are significantly higher than one and that the fiscal austerity that some European countries are pursuing must be deeply questioned**.

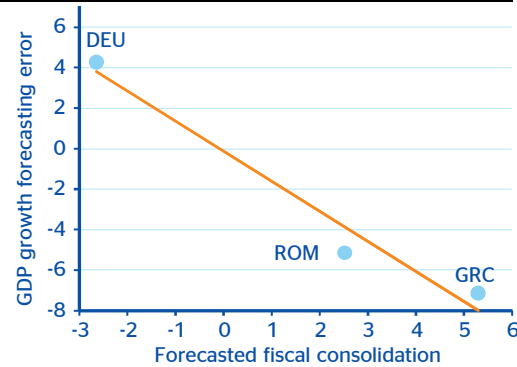
Blanchard and Leigh's work has been very timely because their findings lend empirical support to some previous results that **had called into question the speed of fiscal adjustment in a financial crisis**, particularly in European countries. The evidence of Auerbach and Gorodnichenko (2012) already showed that in a recession, multipliers tend to increase. This increase is particularly significant in the case of a financial crisis, due largely to the fact that distortions in the financial markets restraint inter-temporal substitution by consumers, and thus their marginal propensity to consume increases significantly (Eggertsson and Krugman, 2012). However, the effects of private debt on the multipliers is more complex, since the need to accelerate deleveraging may have the opposite effect, and thus the fiscal stimulus might end up increasing the private-sector savings rate.

However, the stress situation currently being experienced by public finances may have the opposite effect on the multiplier. Leeper and Walker (2011) show that many advanced economies may be **near their "fiscal limit,"** which consequently has two important effects. First, the effects of the monetary and fiscal policy instruments become unpredictable, and specifically, fiscal policy announcements lose credibility and central banks may lose control over inflation. Second, risk premiums tend to increase non-linearly with debt volumes (Bi, 2012). These results are consistent with the estimates of Corsetti, Meier and Müller (2012), who find that **fiscal multiples in times of weakened public finances** are negative, although not statistically significant.

## The importance of specific cases

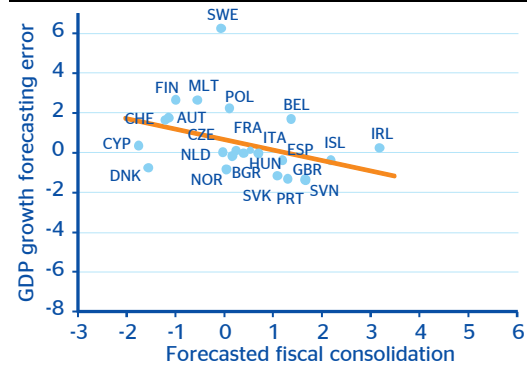
As Blanchard and Leigh show, their results are influenced by some countries and periods, although their analysis of robustness continues to yield statistically and economically significant results, **As an further illustration of the sensitivity of the results to the presence of some countries in the sample, Chart 3** analyses the relationship between the projected fiscal consolidation and economic growth forecast error when Romania is added to the two countries analyzed by Blanchard and Leigh (Germany and Greece), yielding a clearly negative relationship (the slope is equal to -1.49).<sup>5</sup> **Chart 4** shows the regression for **the remaining 23 countries**. In this case the correlation is again significant but smaller (the regression coefficient falls to -0.527).

Chart 3  
Forecast of fiscal consolidation and GDP growth forecast error, 2010-11



Source: own estimate based on Blanchard and Leigh data (2013)

Chart 4  
Forecast of fiscal consolidation and GDP growth forecast error, 2010-11



Source: own estimate based on Blanchard and Leigh data (2013)

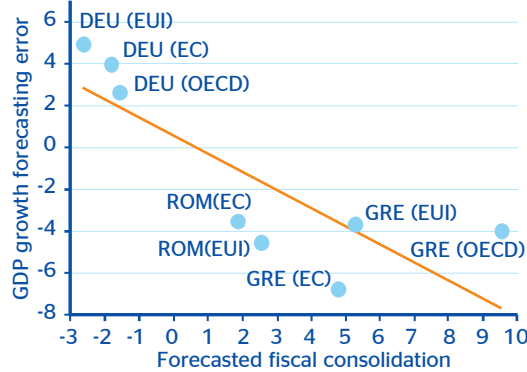
Blanchard and Leigh's results, when Germany and Greece are excluded, and the additional evidence of Chart 3 and 4 suggest that the estimated effects of fiscal adjustments on growth are sensitive to the sample of countries. For the sample of 23 European countries, including Spain, one cannot conclude that the fiscal multiples are different from one (0.5+0.527). The results for Germany, Greece and Romania suggest that a more detailed analysis must be performed as to why forecast errors are so large. Something similar occurs with Sweden (Chart 4).

The dependence of the results on the sample of countries considered can also be illustrated using the data provided by Blanchard and Leigh for the estimates of the **European Commission, the OECD and the Euro Intelligence Unit** for 2010 and 2011. Charts 5 and 6 replicate previous results in Chart 3 and 4. The observations of **Chart 5** for Germany, Greece and Romania show a negative relationship (although in this case the coefficient is slightly lower: -0.87, compared to -1.49 using the IMF forecasts). By contrast, for the other countries (**Chart 6**), the correlation between fiscal consolidation and forecast growth error is again much weaker (and even slightly positive in the case of the Euro Intelligence Unit).<sup>6</sup>

These results cannot be interpreted as to question the robustness of the results of Blanchard and Leigh. On the contrary, they are an illustration of the sensitivity of fiscal multipliers to the specific characteristics of different economies, corroborating the idea that any country-specific fiscal consolidation should be evaluated by its own merits. In fact, Blanchard and Leigh explicitly state that their results must not be used to defend specific fiscal policies in any country in particular, nor do they imply that fiscal consolidation is undesirable.

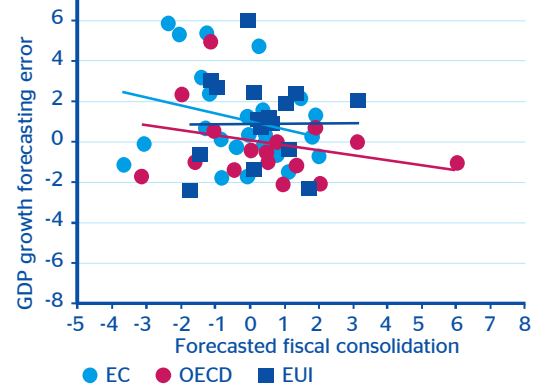
5: We have checked recursively all the results after adding country dummies and then excluding from the sample those countries with a significant one. After excluding Germany, Greece and Romania, the only country with a significant dummy was Sweden, although in this case its forecast error has no relationship whatsoever with the predicted fiscal consolidation.  
6: The largest negative coefficient is obtained using the European Commission data (-0.36).

Chart 5  
Predicted fiscal consolidation and GDP growth forecast error, 2010-11



Source: in-house estimate based on Blanchard and Leigh data (2013)

Chart 6  
Predicted fiscal consolidation and GDP growth forecast error, 2010-11



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