

# Putting the Budget on a Sound Footing

Antonio Fatás  
INSEAD

**Abstract:** This paper analyzes fiscal policy developments in Ireland during the last six years. Despite the large fiscal progress during the 1985-2007 period, the large increase in government debt after 2008 led to a full-blown sovereign debt crisis and the need for a large fiscal consolidation. The adjustment that followed, while necessary, led to a debate between those who argued that it was too fast and others who believed that it was not aggressive enough. This paper presents the arguments as well as empirical evidence to assess the costs and benefits of different speeds of fiscal consolidation. We conclude with some insights on the fiscal path ahead.

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# 1. Introduction.

By 2007 Ireland was the poster child of fiscal discipline because its performance during the early years of the Euro. Together with other economies in the periphery (e.g. Spain), its government debt had fallen faster than in any of the core Euro countries and reached levels unthinkable a couple of decades before. There was very little doubt about the commitment of the Irish government to fiscal sustainability and the potential risks seemed manageable.<sup>1</sup>

By 2010 the Irish government found its commitment to fiscal sustainability questioned to the point that private capital suddenly stopped being a source of funding. The combination of a large crisis and the support to the banking sector increased debt by a factor of four. This combined with increasing pessimism regarding future growth rates left a very large fiscal consolidation as the only policy option.

This paper analyzes the speed of consolidation during the last six years. There are clearly many areas where the adjustment should be considered a success. The Irish government has regained access to capital markets and is able to borrow at low interest rates. Growth is returning faster than anticipated and the debt-to-GDP ratio has stabilized or started to fall. In addition, the government has delivered on its promises regarding the size of the adjustment, despite difficult economic conditions both in Ireland and abroad.

But there are also areas where there are questions about whether alternative policies could have produced a better outcome. Despite the agreement that a consolidation was needed, there has been an ongoing debate, which is likely to continue over the coming years or decades, about the optimal speed of consolidation. While there are many interesting dimensions about the timing and magnitude of the adjustment (fairness, credibility, support to the financial sector), this paper focuses on the macroeconomic debate around the consolidation that took place during the crisis and the potential negative effects that the fiscal contraction had on GDP growth.

We present evidence that the negative growth effects of fiscal consolidation have been very persistent and that they have had an effect on potential output. The value we estimate for these effects suggest that from a macroeconomic point of view the fiscal consolidation was too fast because as it probably became self-defeating through its effects on potential output. It is very likely that the persistent negative

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<sup>1</sup> In its 2007 Article IV consultation with Ireland, the IMF Executive Board praised “Ireland’s sustained strong fiscal performance, and the authorities’ firm commitment to fiscal discipline” and “welcomed the indicators confirming the soundness of the Irish banking system, including the stress tests suggesting that cushions are adequate to cover a range of shocks even in the face of large exposures to the property market.” (International Monetary Fund (2007)).

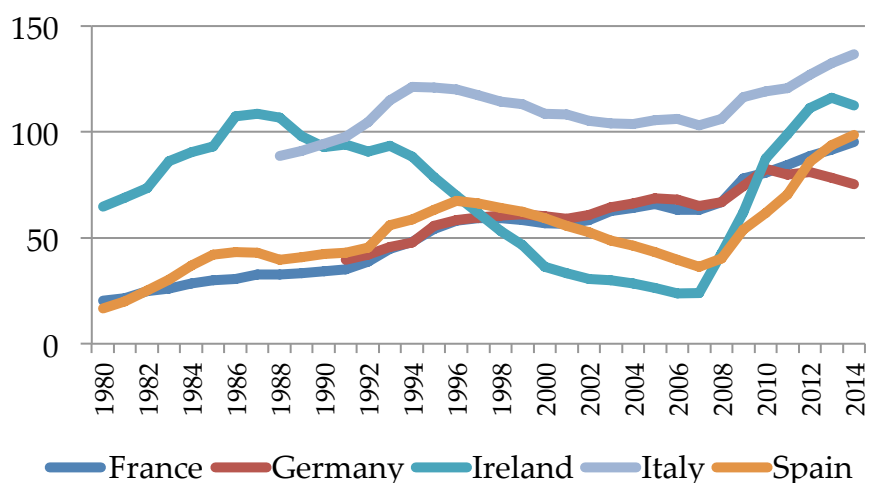
effects on growth more than compensated the reductions in spending and increases in taxes.

The structure of the paper is as follows: In Section 2 we provide some overview of the debt evolution of Ireland before and after the crisis. We follow in Section 3 with a theoretical analysis of the costs of government debt and a discussion of when debt reduction should happen and its optimal speed. In Section 4 we analyze in detail the data for the Irish fiscal consolidation and see how it compares to other Euro countries. Section 5 discusses the policy options ahead and concludes.

## 2. The Debt Surprise.

In 1987 the Irish government had one of the highest debt-to-GDP ratio of all future Euro members. At a level of 110% of GDP it was similar to Italy and just below Belgium. In the 20 years that followed, the Irish government managed to reduce its debt at a pace that was not matched by any of the other countries. The debt ratio reached a level of 24.6% in 2007, representing a reduction in more than 80 percentage points over two decades. In contrast, during those years Germany and France increased their debt-to-GDP ratio by more than 30 percentage points and reached levels as high as 65%, not far from the experience of many other core Euro countries (See Figure 1).<sup>2</sup>

Figure 1. Gross Government Debt (% of GDP)



<sup>2</sup> The data presented in all figures and tables of the paper (unless a different source is specified) comes from the IMF World Economic Outlook online database from October 2014. Because of recent changes to national and fiscal accounts, there are some significant differences to earlier releases of the same database. It also differs from the data available in the AMECO database of the European Commission. An appendix to the paper compares the three sources of data and explains the origin of differences for the debt-to-GDP ratio values.

During the six years that followed, from 2007 to 2013, the Irish government debt climbed back to 116% of GDP, and reached one of the highest levels among Euro countries together with Cyprus, Greece, Italy and Portugal. While in the case of Italy the debt level had remained very high throughout most of these two decades, in the other countries in the periphery the 2008 crisis caused a very sharp increase in the indebtedness of the government, after years of fast reduction. And Ireland was the country where this U-shape pattern was the most dramatic.<sup>3</sup>

The large increase in government debt was the outcome of several factors that are not independent from each other. First, a very large recession with a fall in real GDP of more than 9% and as high as 16% in nominal terms during 2007-2010, not only raised automatically the debt-to-GDP ratio but also led to a large fall in tax revenues and an increase in the budget deficit. In the case of Ireland, the fall in revenues was especially large because of the strong reliance of the government budget on taxes associated to the booming real estate market.<sup>4</sup> In addition, the recession became persistent and a cyclical phenomenon turned into a large downward revision of potential output. In practice this meant that despite the early fiscal consolidation efforts the debt-to-GDP continued to increase.

Second, the direct involvement of the government in the necessary adjustment of the banking sector with significant capital injections as well as broad guarantees was responsible for a large share of the increase in government debt.

Third, this shock to public finances in Ireland as well as in other Euro countries led to a sharp fall in confidence that resulted in higher interest rates that increased government spending and fed into a spiral of higher deficits and further debt accumulation.<sup>5</sup>

The sharp increase in government debt came to a surprise. The crisis was deeper and more persistent than what anyone would have imagined, the fragility of the financial system and the support provided by the government were unimaginable and all that combined with the reduction in potential GDP left the government with very few options except a series of fiscal consolidation plans.

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<sup>3</sup> Figure 1 plots *gross* government debt. While the evolution of net debt was similar, its increase during the crisis was larger because of the reduction in the financial assets held by the Irish government. A data appendix at the end of the paper discusses the difference between gross and net debt for Ireland and the role of government assets.

<sup>4</sup> See Kanda (2010) or Lane (2011).

<sup>5</sup> The interest rate change had a direct effect on countries that still had access to capital markets and faced increasing rates. For those who did not, it still affected the terms on which loans were negotiated with the EU and, in addition, it changed the sustainability of budgetary plans as future debt was likely to be issued at higher rate

The first plan of the Irish government during the years 2008-2010 represented an adjustment in the range of 6%-10% of GDP. This plan was followed by a new adjustment of similar magnitude over the coming four years that became the blueprint for the plan imposed by the Troika (IMF, EU and ECB) after November 2010.<sup>6</sup>

The combination of this succession of fiscal adjustment plans had as a goal to stabilize the debt-to-GDP ratio by 2014 and bring budget deficits under the 3% limit around the same time. Despite some setbacks, the Irish government has broadly managed to deliver on the planned fiscal consolidation. But given the final level around which the debt has stabilized, around 116% of GDP, the Irish government faces a situation where efforts to ensure fiscal sustainability will be required in the years or decades to come.

While there is no question about the need for a fiscal adjustment in response to the crisis and a continuation of the fiscal efforts going forward, there has been and still is an open debate about the size and speed of consolidation. Was it too fast or too slow? What were the consequences of the size and composition of the fiscal adjustment? Were there any alternatives? We first present the theoretical arguments in favor of debt reduction and discuss the optimal speed of adjustment before we look in detail at the data.

### 3. Need for Fiscal Consolidation and Optimal Debt.

The debt surprise described in the previous section made obvious the need to modify government spending and revenue plans relative to those before the crisis. The need for an adjustment can be justified in two different ways. First, a higher level of debt and the pre-crisis budgetary plans are not anymore consistent with a sustainable fiscal policy. The higher debt burden requires an adjustment towards lower spending or higher taxes, more so if the crisis has changed our forecast of future growth rates. Second, the higher level of debt might be seen as costly in itself and, in order to reduce the debt, there is also the need to implement spending cuts or tax increases.

In some circumstances, both of these two arguments could become indistinguishable, for example when the government faces a crisis of confidence. Its budgetary plans are seen as unsustainable and the resulting crisis of confidence leads to high interest rate and a full-blown debt crisis. In this case, the sustainability argument appears to be directly linked to the argument about the level of debt being too high and both require an adjustment.

But it is important to understand that a need for fiscal adjustment in the form of lower spending and higher taxes (today or in the future) does not always require a

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<sup>6</sup> Lane (2011).

reduction in debt levels. It all depends on whether the current level of debt is seen as costly in itself.

*How high is too high? Optimal government debt.*

What constitutes an appropriate level of government debt? The academic literature does not provide many concrete insights on this question. The starting point is to recognize that debt is not per se a tool but an instrument to adjust differences between taxes and government spending over time. In other words, it is not the level of debt that fundamentally matters but the level of spending and taxes and how they are spread over time. This is not always well understood. As an example, the argument that high debt imposes a large cost through the necessary taxes to pay for interest payments does not immediately call for a reduction in debt. The cost of debt has to be covered with either current or future taxes. What really matters is how the timing of those taxes affects the overall level of distortion. Raising taxes to pay for the debt today (instead of waiting for future taxes) could potentially be suboptimal by imposing more distortions in the economy.

It is in this context that the seminal work of Barro (1979) suggests that spreading the negative effects of distortionary taxes across many years is optimal. This does not mean that adjustment is not necessary after a shock, but it means that the adjustment needs to be thought of in terms of optimal levels of spending and taxation rather than in terms of specific levels of debt. Barro (1979)'s main result is that under scenarios where government spending and income grow at similar rates, tax rates should be constant over time to minimize its potential distortionary effects. In this environment, a sudden change in the initial level of debt, such as the one we described above for the case of Euro countries and Ireland in particular, does not require any reduction in debt. Debt should be allowed to remain at the new level. In other words, government debt should be a random walk. This result is also present in models with price rigidities such as Schmitt-Grohé and Uribe (2004).

There are several key assumptions that drive this extreme result; in particular it requires Ricardian equivalence, which is normally associated with a representative-agent model. When we deviate from this model as in Leith, Moldovan, and Wren-Lewis (2011), reducing debt levels today could potentially reduce distortionary taxation in the future and it is optimal.<sup>7</sup>

But beyond the distortionary effects of taxes, isn't debt costly because it crowds out private spending and results in a lower level of the capital stock? While fiscal policy can be a source of crowding out, this argument mixes the effects of debt and the effects of government spending. Government spending and not debt is a measure of the resources that the government appropriates. In that sense, the possibility of

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<sup>7</sup> An alternative model where the level of debt matters is one where governments cannot commit to a certain fiscal policy as in Leith and Wren-Lewis (2013).

crowding out by governments might be calling for a reduction in government spending, but not in government debt.

But the interest payments on debt are part of government spending, isn't this an argument to reduce debt? Not always. As we just argued, for a given level of debt, the burden that it imposes on the economy cannot be eliminated. Yes, interest payments on debt need to be financed but this is also true for a quick reduction in the level of debt. The resources required to pay back the debt are unavoidable and, under some assumptions, they do not depend on the timing of debt repayment.

This argument could be valid if the interest rate paid on the debt is higher than the rate at which the government and citizens use to discount the future. Given the circumstances in 2010 and 2011, this is likely to be a reasonable assumption, as the government could not raise any funding in capital markets. But the assumption needs to be made explicit and dependent on the access to capital rather than as a general argument of interest payments displacing other forms of spending.<sup>8</sup>

#### *Costly debt? Empirical evidence.*

In the absence of any clear consensus from theoretical models regarding the optimal level of debt, it is natural to look at the empirical evidence. The empirical literature does not attempt to measure all possible costs of debt but focuses on the potential growth effects of high debt. This literature has recently become a source of dispute among academics and policy makers. While Reinhart and Rogoff (2010) present evidence that levels of debt above a certain level can be detrimental to growth, the evidence has been disputed and some believe that the effects are much smaller or inexistent (Herndon, Ash, and Pollin (2013)).

Despite the inconclusive nature of both the theoretical and empirical literature on the need to keep government debt low, policy makers and international organizations (such as the OECD or the IMF) take a cautious approach to the issue of optimal debt and they use the concept of a "prudent" debt target. The notion of a "prudent" debt target can either be related to the idea that high levels of debt might be costly from a macroeconomic point of view or simply to the notion that for high levels of debt, governments are unable to generate the necessary primary surpluses to ensure debt sustainability. And given that there will be future crisis, debt levels should remain within a "prudent" range to allow for potential future adjustments.<sup>9</sup> While there is not always an explicit discussion on what this number should be, typically the OECD or the IMF tend to set values around 50% to 60% as a target for medium-term debt in

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<sup>8</sup> Leith, Moldovan, and Wren-Lewis (2011) present a more general case for why the interest rate faced by governments could be different than the discount rate and therefore justify a reduction of debt.

<sup>9</sup> See Merola, Hoeller, and Sutherland (2012) as an example of the OECD approach to this issue or International Monetary Fund (2014) for an analysis from the International Monetary Fund.

their simulations. In addition, 60% happens to be the level set by the Maastricht Treaty in the Euro context. It is also the case that 60% level is sustainable under reasonable assumptions of interest rates, growth and historical levels of primary balances.

Compared to these benchmarks, the current level of Irish gross debt is too high. At about 110% of GDP (and even higher as a % of GNP), this is one of the highest levels among advanced economies. Both because of the EU norms as well as the own rules set by the Irish government, this debt will have to be on a downward trajectory over the coming years.

*The effort to reduce and stabilize government debt.*

What does it take to stabilize and reduce the level of government debt? The answer depends first on the level of debt that is being targeted. If we represent by  $d^*$  this level, the primary balance (as a % of GDP) that is consistent with this level of debt in the steady state is equal to

$$pb^* = \frac{r - g}{1 + g} d^*$$

Where  $r$  is the interest rate paid on government debt and  $g$  is the growth of GDP.

If we start at an initial level ( $d_t$ ) that is higher than  $d^*$ , we will be moving towards our goal as long as or current primary balance satisfies <sup>10</sup>

$$pb_t > \frac{r - g}{1 + g} d_t$$

Given current projections for interest rates and growth rates, it is expected that the difference between the two will be small for most advanced economies, including Ireland. As an example, the OECD projects for Ireland effective nominal interest rates of 4.7% and nominal growth rate of 4.3% over a medium term.<sup>11</sup> Under this scenario, the required primary balance to keep the debt at current levels (around 110%) is very close to zero. Any increase in interest rates by a percentage point will require an increase in this balance of about 1.1 percentage points of GDP.

The goal of the Irish government is not to maintain the debt level but to reduce it steadily over the coming years. Under the EU debt rules, and given that Ireland is above the 60% framework, it is required that the excess is reduced by at least 1/20 per

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<sup>10</sup> For a complete set of equations that characterize the dynamics of debt and budget balances see Escolano (2010).

<sup>11</sup> See Merola, Hoeller, and Sutherland (2012)



year on average.<sup>12</sup> This is likely to be met when Ireland meets its Medium Term Objective (a structural balanced budget). And during the transition towards the MTO, given that EU rules require an improvement in the structural balance of at least 0.5 percent of GDP, the debt-to-GDP ratio will also be declining (under reasonable assumptions about growth and interest rates).

The government does not have established a concrete target and date for the debt-to-GDP ratio, but its current projections of primary surpluses do point in the direction of a continuous reduction over the coming decades. As an example of potential paths going forward, using the growth rates and interest rates from the OECD projections, if the Irish government were to maintain 3% primary surplus going forward, the debt-to-GDP ratio will fall to about 68% by 2030 and to about 11% by 2050. With a less ambitious but still difficult level of 2% for the primary balance the ratio will reach 85% by 2030 and 50% by 2050.

#### 4. The Speed of Adjustment During the Crisis.

Fiscal consolidation in Ireland started in the early days of the crisis. The government implemented during 2008-2010 adjustments between 6% and 10% of GDP, followed in the years 2011-2014 by a second fiscal consolidation of similar magnitude.<sup>13</sup> The motivations for such a large fiscal contraction were the ones discussed in the previous section. First there was the need to reestablish sustainability under a new economic scenario, and, second, it was the result of the need to bring debt levels down and re-establish credibility. As the crisis deepened, the loss of credibility became central to the consolidation efforts as it led to a complete stop of private capital flows and the need to access institutional sources (EU, IMF, ECB), for Ireland but also for other Euro periphery countries.<sup>14</sup>

Was fiscal consolidation too fast or too slow? In this paper we take a very specific approach to this question, by focusing on the macroeconomic debate and ignoring some of the other issues that are also relevant for the debate. For example, there is a possible interpretation that argues that the speed of adjustment was what it was because of the sudden loss of credibility and, to some extent, it was imposed by market conditions. In other words, there was no choice. While there is no doubt that the sudden stop of private flows forced a faster adjustment in some of these countries, ultimately the speed of adjustment was the outcome of the negotiations

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<sup>12</sup> Because there is a transition period this rule only applies three years after the correction of the excessive deficit. Given that this is likely to happen in 2015, the debt reduction rule is only effective from 2019.

<sup>13</sup> The Irish government and the Fiscal Policy Council estimate the total fiscal effort over the two periods to be very close to 20% while the IMF suggests that the efforts were closer to 14%. The IMF uses a less optimistic budget for the years were the consolidation started.

<sup>14</sup> See International Monetary Fund (2013) or European Commission (2013) for details on the fiscal adjustment.

with those who were providing the necessary funds until the government could access private funding again. It is in that context that we can still ask here the question of whether the speed of adjustment that we witnessed was the right one.

An issue that we will not analyze is whether there were alternatives to the large support to the financial sector. The path of consolidation and the need to consolidate were clearly a function of this support. Was there an alternative feasible policy? Given the weakness of the European financial sector there was the fear that any imposition of losses to bank debt holders would represent a risk to the rest of the European banks. We could imagine solutions that did not go as far in terms of the support provided to Irish banks but they could only have happened with the strong support of the other EU members.

Also, by tackling the question of speed mainly from a macroeconomic point of view we are ignoring redistributive or efficiency arguments as well as interactions between the speed of adjustment and its composition. Being away from an optimal level of debt does not simply involve a decision on the timing of debt reduction. Typically the shock that led to a realization that there was a need for adjustment also has implications on the size of the government or the spending side and taxation. Although we will mostly focus on the overall size of the adjustment, we will provide some data on the choices in terms of composition.

*Too slow or too fast? The macroeconomic debate.*

What is the basis for the argument that consolidation was too slow? The speed of consolidation might be too slow when the government is unable to put the budget on a sustainable path and one that allows room for potential negative surprises in the future (another crisis).

What is the basis for the argument that consolidation was too fast? The main argument is the possibility that the adjustment in fiscal policy has a negative effect on economic growth. There are two sides to this argument. First, the impact that fiscal consolidation has on economic growth has welfare implications that might not be spread evenly over different years or generations or that simply do not minimize the welfare costs because of the abrupt nature of the crisis. Second, the output consequences of fiscal consolidation can affect its effectiveness. If fiscal consolidation results in a lower level of output, this will have an impact on tax revenues as well as on any ratio that is measured relative to GDP (such as debt). Theoretically, fiscal adjustment could be even self-defeating as the GDP effects are large enough to make the debt-to-GDP ratio move away from its target level. DeLong and Summers (2012) make this argument in the context of what they call a depressed economy where interest rates are close or at the zero lower bound. Eyraud and Weber (2013) presents similar arguments and Berti, de Castro, and Salto (2013) produce estimates of the potential effects of fiscal consolidation on output and debt for the European context.

*The Irish fiscal adjustment.*

Let's start with some basic analysis of the magnitude of the Irish fiscal policy adjustment. In 2007, the Irish government had a balanced budget, which followed more than a decade of surpluses. The gross debt as a ratio to GDP was on a consistent downward trajectory and had gone below 25% by the end of that year (Figure 2).

By 2008, real GDP growth collapsed by more than 7 percentage points and the balance moved to a deficit of 7.1%. In 2009 real GDP declined by more than 6% and it further increased the deficit to 13.3% out of which 2.3% was related to banking assistance (Figure 3).

Figure 2. Government Balance and Gross Debt Before the Crisis.

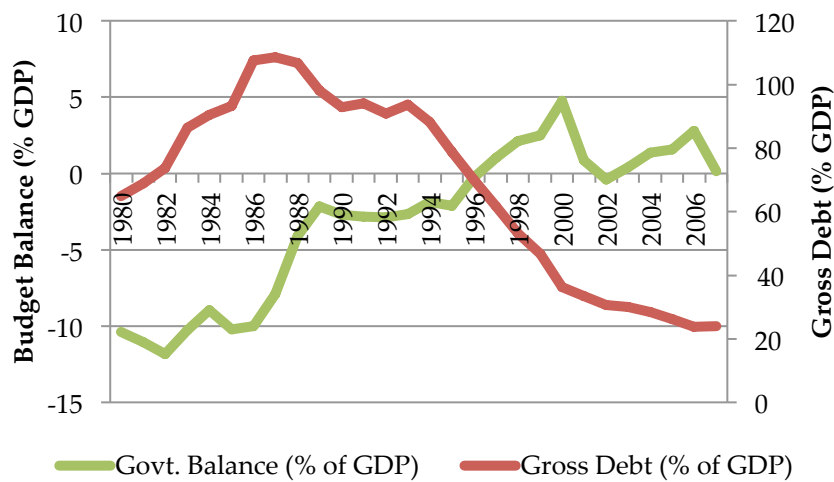
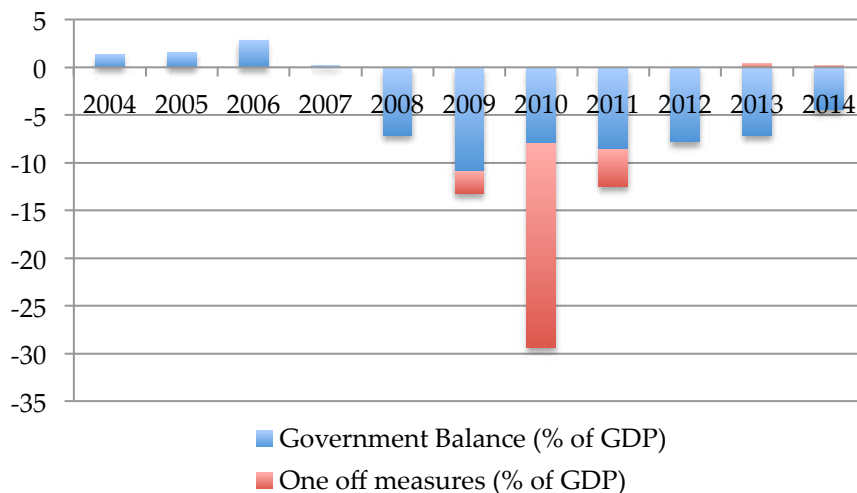


Figure 3. Budget Balance (% of GDP) During the Crisis.



The large budget deficit was the result of a deep recession with real growth rates of -2.2% and -6.6%. But it was also the outcome of deflation in those years: nominal GDP growth rates were much lower at -5.1% and -10.5% during 2008 and 2009. Deflation is likely to generate a larger budget deficit and, in addition, it automatically raises the debt-to-GDP ratio.

In the case of Ireland another relevant factor was the collapse of revenues that were associated to the real estate boom that dominated the early years. The nature of these revenues meant that the elasticity of tax rates relative to the cyclical conditions was unusually high.

The government responded with a series of budgetary measures during 2008 and 2009. While the Irish government or the Irish Fiscal Policy Council estimate the adjustment in the order of €12-15 (about 10% of GDP), IMF calculations offer a smaller figure for the budgetary measures were of around 6.2% of GDP.<sup>15</sup>

In April 2009 the European Commission put the Irish government under the Excessive Deficit Procedure requiring additional consolidation measures for the next years in order to bring the deficit under the 3% limit by 2013. Additional consolidation measures were originally presented in the National Recovery Plan, which was unveiled by the Irish government in November 2010. This plan was replaced by the IMF program approved three weeks later on December 16, 2010. The 3% deficit objective was postponed to 2014 and later 2015 as part of the agreement with the Troika. During the years that followed the adjustment was of similar magnitude to the one of 2008-09, in the order of 8%-10% of GDP.

#### *From plans to outcomes: The size of fiscal consolidation*

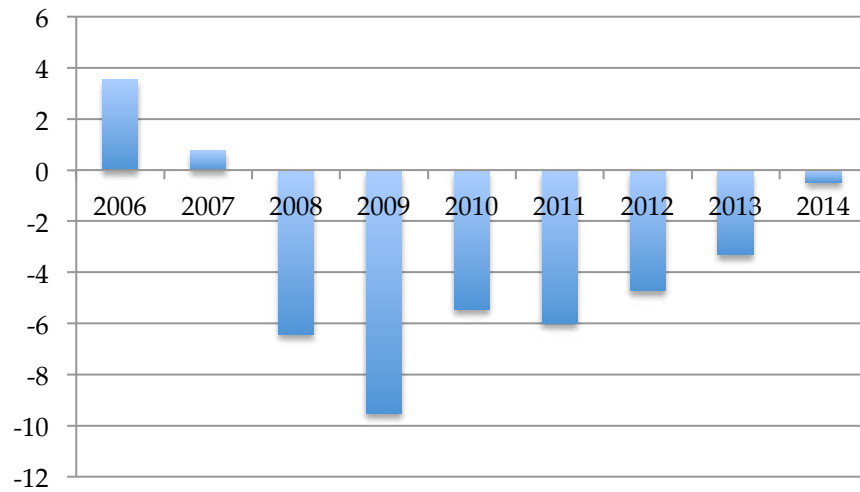
Calculating the size of the fiscal consolidation during a crisis is not an easy task because all fiscal variables react to the cycle. If we exclude the one-off measures that took place in the years 2009-2011 we see that the primary deficit grew from 6% in 2008 to close to 10% in 2009 before starting a steep decrease towards 0% by 2014 (Figure 4).

But because the evolution of the primary balance is influenced by cyclical factors, in order to assess the true discretionary changes in fiscal policy, those unrelated to the business cycle, we want to look at a structural measure of the budget balance. In the case of Ireland, and because of the unusually high levels of taxes related to real estate transactions in the pre-crisis years this is a difficult task.

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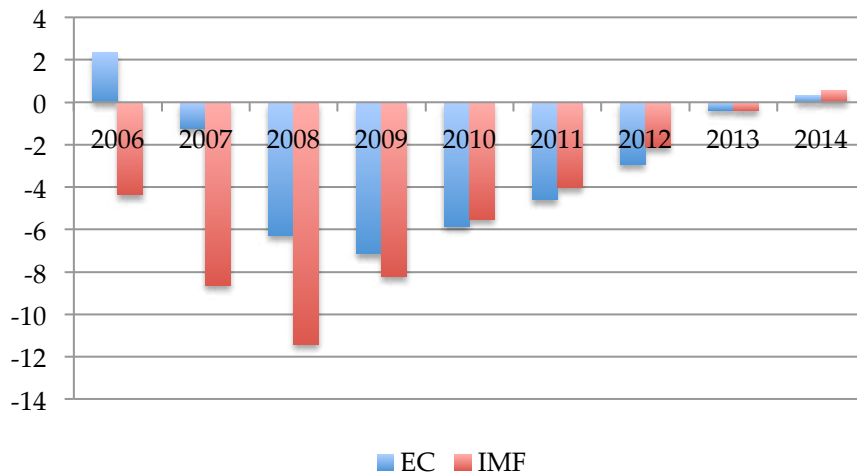
<sup>15</sup> See International Monetary Fund (2013) and International Monetary Fund (2012). The difference is due to the use of a different baseline over which the fiscal changes are calculated.

Figure 4. Primary Balance (% of GDP). Ireland.



In Figure 5 we show the cyclically-adjusted balance as produced by the IMF and the European Commission (AMECO Database). The IMF measure of the structural balance counts as cyclical most of the revenues associated to the real estate boom in 2007 and 2008 estimating the structural deficit those years at a much higher level. For this reason, consolidation from 2008 to 2014 represents above 10 percentage points of GDP using the IMF indicator but less than 7 percentage points using the European Commission indicator.

Figure 5. Cyclically-Adjusted Primary Balance.



*The Irish adjustment compared to the Euro periphery.*

How does this fiscal adjustment compare to some of the other Euro countries that were subject to a similar process of fiscal consolidation? We will compare the Irish experience to that of Portugal, Spain and Greece.

Figure 6. Primary Balance (% of GDP).

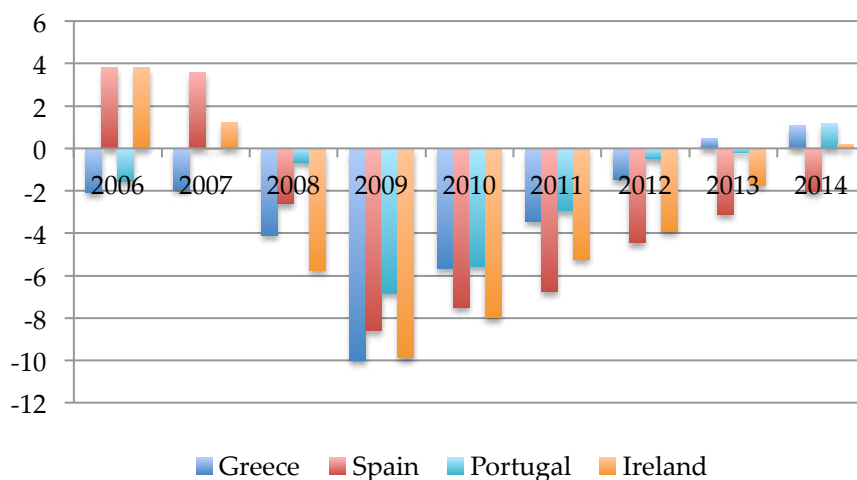
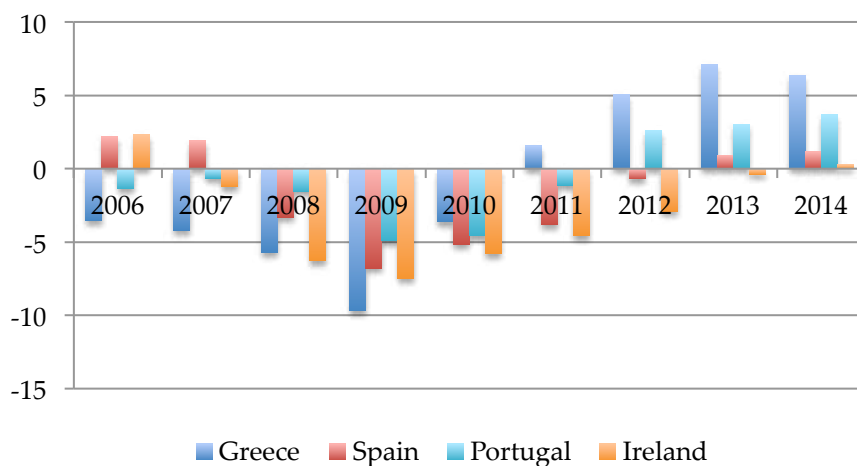


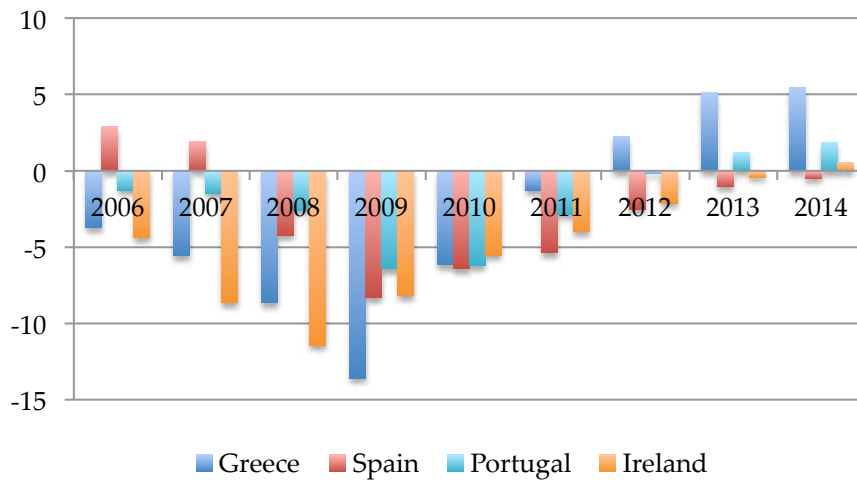
Figure 6 shows the evolution of the primary balance for the four countries. Spain is the country that is the closest to Ireland, starting with surpluses in 2006-2007 followed by a jump to a deficit of about 10% by 2009 and then a reduction towards zero by 2014. In contrast, Portugal and even more Greece both start with small deficits in 2006-2007, later see their balance deteriorate to 7-10% and then see a faster reduction in the early years.

Figure 7. Cyclically-Adjusted Primary Balance. Source EU.



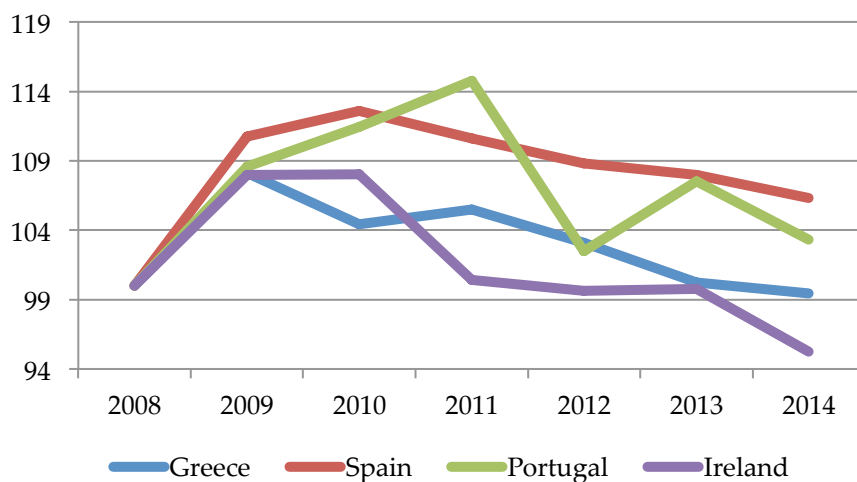
How much of this increase is structural versus cyclical? Using both the measure of the European Commission (Figure 7) and the IMF (Figure 8), Ireland seems to be adjusting at a similar or slower pace than the other countries. Once again Spain is the country with the most similar profile and both Greece and Portugal display much larger adjustment during the crisis years. According to the calculations produced by the European Commission, by 2012 Portugal, and Greece had managed to turn their structural primary deficits into surpluses. Once again the adjustment in Greece is by far the largest, given that the initial deficit level back in 2009 was by far the worst.

Figure 8. Cyclically-Adjusted Primary Balance. Source IMF.



What about the composition of the adjustment? Did it take place via expenditures reduction or increases in taxes? We provide a quick analysis by simply plotting the ratios of expenditures (including interest payments) and taxes to GDP.

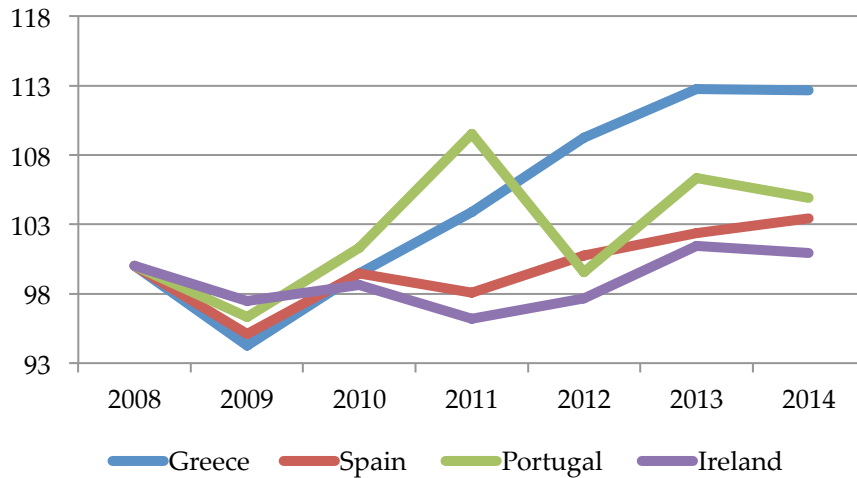
Figure 9. Government Expenditures (% of GDP). Index 2009=100. Source: EC.



While this analysis is partial and it does not take into account the different evolution of GDP growth in each country, comparing the relative change in taxes and spending across the two figures we can see that Ireland was the country that relied the most on spending reductions versus tax increases.

In comparison with the other countries in the periphery, Ireland is the one where the ratio of government spending to GDP fell the most, as Figure 9 shows. And in terms of taxes it is the country that has relied the least on increases on taxes, measured as a ratio to GDP (see Figure 10).

Figure 10. Government Revenues (% of GDP). Index 2009=100. Source: EC.



*The divergence between the narrative of fiscal adjustment and the outcome.*

We have seen after the crisis the consolidation efforts via a large reduction in both the primary and structural deficit in all these. While automatic stabilizers were working during those years, there was an adjustment to structural balances in a magnitude that is around 10 percentage points of potential GDP for Ireland, Spain or Portugal and substantially higher (between 15 and 20 percentage points) in the case of Greece.

But while these numbers might look large, when compared to the narrative of the discretionary measures undertaken during these years, they are small. The apparent effort to reduce the budget deficit seems much larger than the resulting change in the structural balance.

According to the Irish government, the efforts to reduce the deficit were in the order of €12-15 billion (about 10% of GDP) during the first two years and a similar magnitude under the EU-IMF program that extended over the period 2011-14.<sup>16</sup> Other sources, such as the IMF estimate the fiscal measures to be smaller, around 14-15% of GDP across the two consolidation plans.<sup>17</sup> Both of these figures are significantly larger than the documented change in the structural balance (between 7% and 12% depending on the adjustment used to adjust the budget balance for the cycle). Where is the gap coming from?

The first reason why consolidation plans might not lead to a reduction in the deficit of the magnitude expected is that fiscal consolidations are likely to have an impact

<sup>16</sup> Irish Fiscal Advisory Council (2014) also estimates the adjustment to be about 20% of GDP. See also Lane (2011), International Monetary Fund (2013) or Weymes (2012).

<sup>17</sup> The main reason being the use of different baseline budgets for the year when the adjustment is started.



on GDP itself. While some of this effect could be taken care by the use of cyclically-adjusted measures of the balance, under certain circumstances this will not be the case. To understand when cyclical adjustment might fail to capture this change in GDP we go back to the equations that represent the dynamics of deficits.

Some notation, which follows closely the analysis of DeLong and Summers (2012): Let  $B_t$  be the balance of the government budget,  $G_t$  spending,  $T_t$  taxes and  $Y_t$  the level of GDP in year  $t$ . Imagine a government that introduces a fiscal consolidation plan that involves a decrease in spending.

$$\Delta G_t = G_{t+1} - G_t$$

where  $G_{t+1}$  refers to the level of government spending planned for next year which we will assume matches its execution. Typically this is expressed as a ratio to GDP or potential output. To avoid mechanical effects coming from GDP (this year's level or future's level), we will express it as a ratio to potential GDP ( $Y^p$ ).

$$\frac{\Delta G_t}{Y^p} = \frac{G_{t+1} - G_t}{Y^p}$$

But the change in spending is likely to affect negatively GDP next year. The change in GDP will depend on the fiscal policy multiplier ( $\mu$ ).

$$\Delta Y_t = \mu \Delta G_t$$

Because of this change in output, the budget balance next year will be affected. For simplicity, let's assume that taxes are the only component of the budget that is affected by the cycle and let  $\tau$  be the (marginal) tax rate. If we now calculate the change in the budget balance we get

$$\Delta B_t = \Delta G_t - \Delta T_t = \Delta G_t - \mu\tau\Delta G_t = (1 - \mu\tau) \Delta G_t$$

And we can always measure this change as a % of potential output.

$$\frac{\Delta B_t}{Y^p} = (1 - \mu\tau) \frac{\Delta G_t}{Y^p}$$

So the actual change in the budget balance will be reduced relative to the announced plan by a factor that relates to the fiscal multiplier as well as the cyclicity of taxes.

Two important things to notice in the expression above: First, we are including potential output in the denominator. If we were to include actual GDP, and measure the budget balance each year relative to the GDP of that year, there would be a change in the ratio because of the fall in GDP but this magnitude is likely to be small in practice. Second, as long as the impact that fiscal consolidation has on GDP is cyclical in nature, the second term on our equation should be captured by the cyclical adjustment of structural measures of the budget balance. So if we were to look at the

cyclically-adjusted balance we would fully see the consolidation plans as captured by  $\Delta G_t$ .

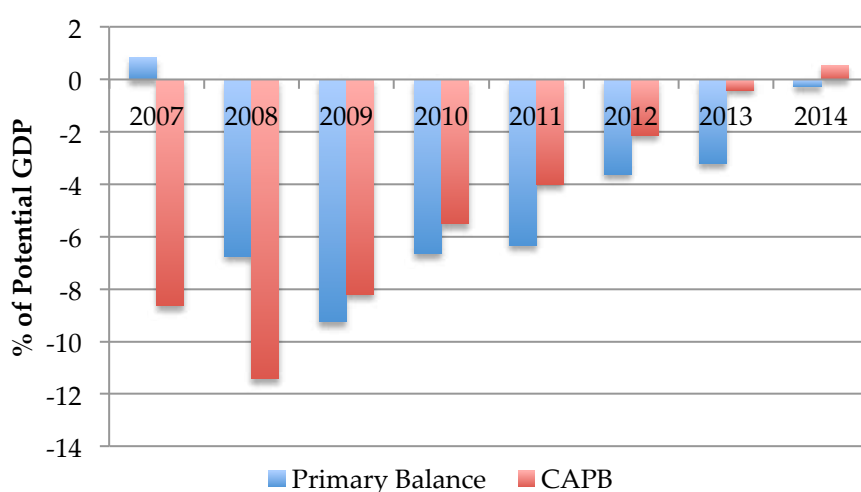
$$\frac{\Delta CAB_t}{Y^p} = \frac{\Delta G_t}{Y^p}$$

But this is not happening in Ireland or the other Euro periphery countries. We find the structural balance to change by an amount that is smaller than the announced plans.

To get an insight on how much the cyclical adjustment of the balance is taken care of these effects, Figure 11 plots the evolution of both the primary balance as well as the cyclically-adjusted primary balance in Ireland since 2007, measured as a % of potential output (and excluding one-off measures such as the support to the banking sector). If we focus on the post-2009 period we start with a 10% primary unadjusted deficit. From 2009 to 2014 the deficit is being reduced almost to 0%.

When we look at the cyclically-adjusted primary balance we see that since 2009 until 2014 there has been a reduction of about nine percentage points, very similar in magnitude to the change in the primary balance.<sup>18</sup>

Figure 11. Primary Balance (% of Potential GDP). Ireland.



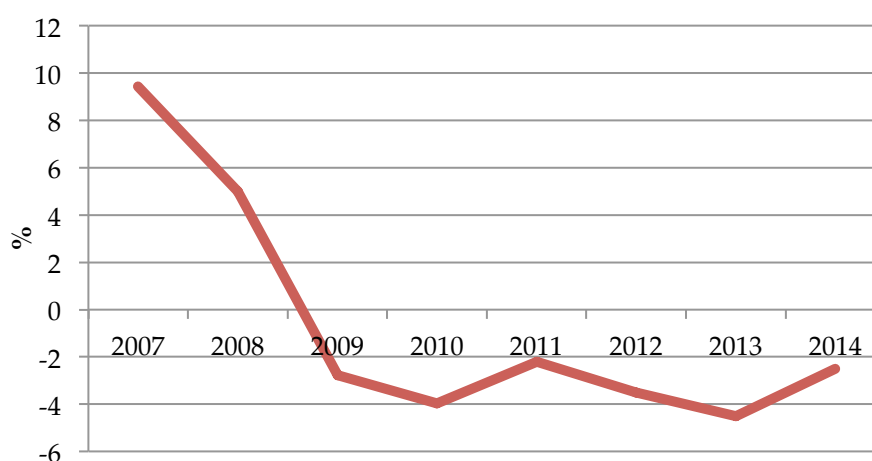
There are two potential puzzles in this chart. First, why is it that both measures show a similar change over these years? Second, why are the two measures much smaller than what the narrative of fiscal consolidation tells us?

<sup>18</sup> The reason to start the comparison in 2009 and not 2008 is that the cyclically-adjusted balance produced by the IMF for 2007 and 2008 is very dependent on certain assumptions about potential GDP and the output gap those years. As we have seen from the alternative measure produced by the European Commission, the change in the structural deficit between 2008 and 2009 is seen as increasing as opposed to the large reduction observed using IMF data.

The fact that the change in the structural deficit matches that of the unadjusted balance is a surprise as we expected the fiscal consolidation to have negative effects on output and therefore an impact on the primary balance via automatic stabilizers. One way to reconcile these two statements is to argue that while there are negative effects of fiscal policy consolidation on GDP and the budget, these effects are being compensated by improvements in the cyclical position of the economy (independent of the fiscal policy consolidation). This seems to be the case, at least after 2009, if one looks at the evolution of the output gap as estimated by the IMF (Figure 12). While there is a clear deterioration of cyclical conditions from 2007 to 2009, in the years that follow we see a stable or even improving output gap that results in no additional cyclical adjustment to the budget balance.

But there is a second puzzle that is more interesting: Why is it that after correcting the budget balance for the cycle we still see a large divergence with the consolidation efforts? The answer has to be that either we are getting the cyclical adjustment wrong or potential GDP keeps changing over time. If potential GDP goes down this means that the necessary adjustment keeps getting larger, the target keeps moving.

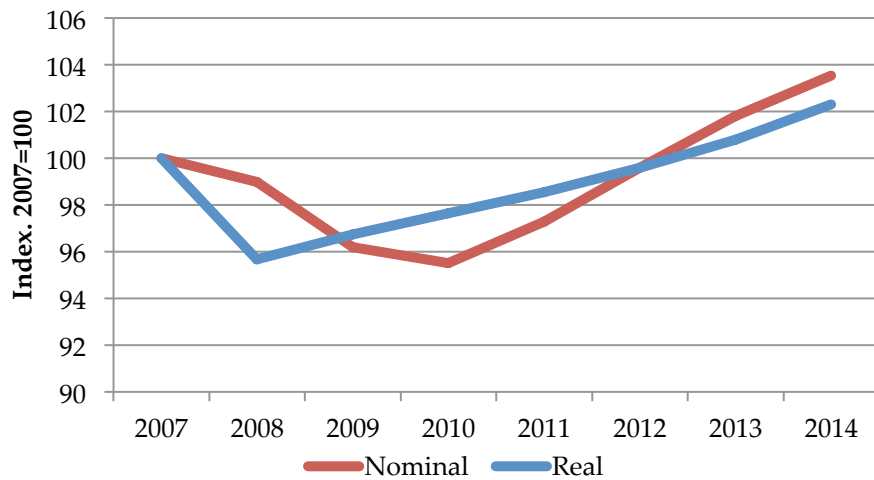
Figure 12. Output Gap (IMF). Ireland.



We know that potential output fell during the crisis. Some partial evidence in favor of this hypothesis is captured in Figure 13. Potential output in 2014 is just 2% higher than in 2007 in real terms and significantly lower than its pre-crisis trend. In addition, because of deflation, potential output grew at almost the same rate (3%) in nominal terms during these seven years.

In terms of its shape, potential output was clearly falling during the first three years in nominal terms and while it increased slowly in the years that followed, it is still growing at a very low rate.

Figure 13. Potential Output (IMF). Ireland.



But the fall of potential output as captured in Figure 13 underestimates the true shock to potential output during the crisis. The figure is built using data from the latest IMF World Economic Outlook (October 2014). But the data on potential output for 2007 has been revised downwards significantly ex-post. This means that the fall in potential output in the figure is much smaller than what was witnessed with real-time data. If we were to make use of real-time data for potential output, potential output in 2014 would be lower than what we thought potential output was in 2007 (for that same year, 2007). And, of course, the 2014 level is a lot lower than any forecast made at that time for the year 2014. How much of the revision of potential output in 2007 reflects a better estimate of the supply side of the Irish economy and how much is an ex-post validation of the devastating effects of the crisis remains an open question.

The possibility that the structural balance does not properly capture the amount of fiscal effort has been acknowledged by the European Commission in its 2013 report on public finances in the Euro area (European Commission (2013)). As a result, they propose an alternative indicator (DFE, discretionary fiscal effort) that “combines the top-down and bottom-up approaches”. By those two approaches they mean the structural balance and the narrative one. This indicator is supposed to be useful in periods of uncertainty around cyclical adjustment and also when there are changes in potential output.

Uncertainty in changes in potential output and errors in cyclical adjustment are clearly related. If our estimates of potential output are too pessimistic then the evolution of the output gap is overestimating the improvement in cyclical conditions. If we used the more optimistic numbers for potential output we would be getting a much larger cyclical correction and the structural balance would be improving faster.

The discretionary fiscal effort indicator proposed by the European Commission combines a narrative approach for the treatment of taxes and unemployment benefits

with a standard cyclical adjustment for other forms of spending. So the tax effort is measured using the bottom-up approach (all announced and implemented revenue measures), while expenditures are not changed relative to the standard cyclical adjustment. This new indicator gets closer to the narrative of the fiscal adjustment. For example, in the case of Ireland and for the year 2012, structural revenues declined by about -0.15% of GDP, signaling a fiscal expansion (not a consolidation). But the discretionary indicator suggests that taxes increased by about 1%, capturing the actual consolidation.

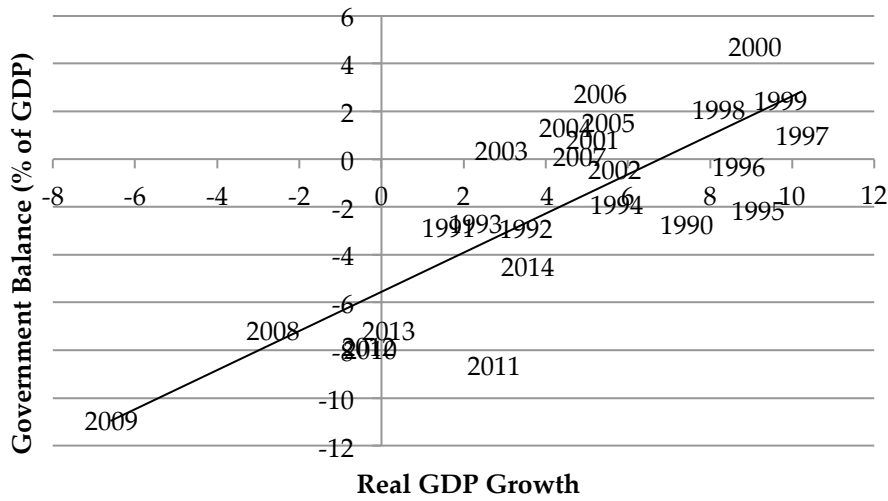
But the analysis of the DFE indicator is partial, as it leaves expenditures out. It also does not fully capture the effects that changes in potential output might have on measures of the fiscal policy stance. The fundamental question is how changes in potential output affect the budget balance. And we are not simply talking about the mechanical effect that happens when we measure the balance relative to the level of potential output, but about the responses of taxes and spending that are triggered by changes in potential.

*Cyclical adjustment in the presence of permanent shocks.*

The cyclical sensitivity of the budget to GDP is always calculated in terms of the output gap so we do not adjust for changes in taxes and spending in the presence of permanent shocks. Imagine a change in GDP that is matched by a change in potential output, it should have no cyclical effect on the budget balance (output gap does not change). But in reality, taxes and to some extent spending depend on GDP (not on cyclical changes to GDP). A 1% fall in GDP that is permanent in nature is likely to generate a similar change in the budget balance as a change that is transitory (at least in the first years). This means that the change in fiscal balance in the presence of a permanent shock is entirely seen as a decrease in the structural balance (i.e. expansionary policy). There is also the complication that potential output tends to trend upwards so this logic applies not only when potential output decreases but also when it increases at a rate lower than before. Is it the level that matters or the growth relative to trend?

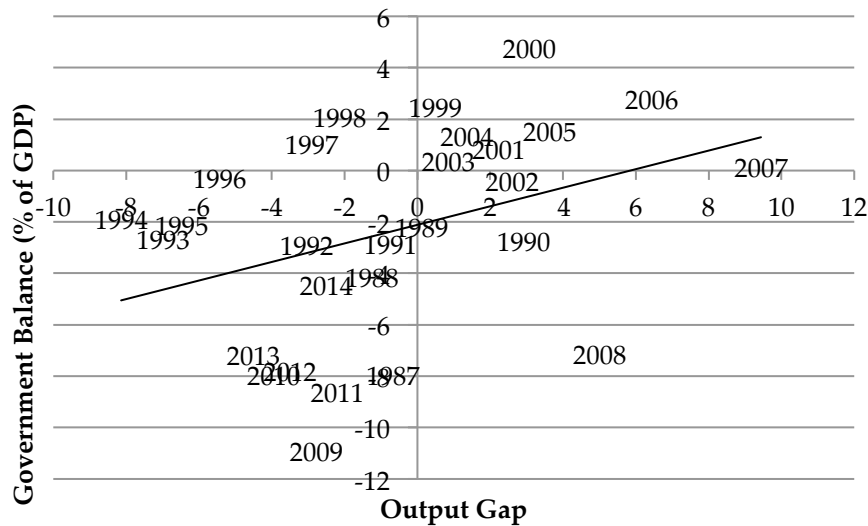
The data for Ireland validates our logic. We plot in Figure 14 the relationship between real GDP growth and the overall budget balance (as % of GDP). The relationship is, as expected, quite tight and what is interesting is that the years 2007-2014 do not look too different from the other ones. What is key in the chart below is that changes in GDP have a large effect on the balance regardless of the cyclical nature of those changes.

Figure 14. The Reaction of the Budget Balance to GDP Growth



If instead of using GDP growth we use the output gap, the relationship is still there but it is not as tight and linear. And the years from 2007 to 2014 are all clearly below the line. In other words, the deficit is “too large” in relationship to the output gap, it seems as if fiscal policy is expansionary in those years. And this is true despite the fact that fiscal consolidation is taken place (we expected these years to be above the line).

Figure 15. Reaction of Government Balance to Output Gap.



It is interesting that if one runs a regression in Figure 15 for the years prior to 2007, the slope is 0.6, which is not far from what the literature has assumed as the cyclical relationship of the budget balance relative to the output gap (although typically for Ireland the estimates are lower than that). For the years after 2007, the slope is as

high as one. So the measured cyclicality of the budget balance has increased dramatically after 2007.<sup>19</sup>

There are several ways to interpret the patterns of the previous two figures with respect to the 2008-2014 years. One is that Ireland has indeed gone through a significant fall in potential output. As a result, while growth decreased dramatically the output gap remained small. The budget balance reacted to growth, not the output gap, at least in the short run because revenues depend on actual output and because spending trends are likely to have some inertia. This means that to maintain the structural budget from deteriorating the government needed to adjust revenues and spending by a significant amount. This justifies why actual consolidation measures are not reflected in changes in the structural balance, the fall in potential output is compensating for the consolidation efforts. From a policy point of view, there is nothing wrong with the policies adopted, it just happens to be the case that the environment is changing and it requires additional efforts to reach the same target.

There are, however, two other interpretations that support a more critical view of policy. The first one is that we are underestimating the output gap by incorrectly interpreting changes in GDP as changes in potential. Under this scenario, the fiscal adjustment is too fast because we are shooting for a target that is too ambitious.

And there is a third interpretation that can be even more damaging: potential output is indeed falling but it is falling as the result of the policy actions. So the fiscal consolidation is not only changing GDP growth but it is also changing potential output. And if in addition we are underestimating potential, then we would be making an even bigger mistake. Pessimism regarding potential output requires a larger fiscal adjustment that further depresses GDP and potential and reinforces our pessimism. Is there any evidence in favor of this hypothesis?

*The permanent effects of fiscal consolidation.*

The fact that cyclical events can affect long-term outcomes is at odds with some of the traditional macroeconomic models where business cycles and growth are treated separately and assumed to depend on independent models. However, from an empirical point of view there is strong evidence that large crisis (especially those that involve the financial and banking sector) tend to leave permanent scars on the level of output. The mechanisms for this persistence can be related to labor market outcomes, what Blanchard and Summers (1986) labeled hysteresis in the context of European labor markets. It can also be related to the process of capital accumulation and innovation (or technology adoption) as in Fatás (2000).

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<sup>19</sup> The slope of Figure 14 and Figure 15 can be seen as estimates of the cyclical elasticity of the budget balance to either growth or the output gap. Although a proper estimation of that elasticity would require controlling for other issues such as the level of debt and the interest rate paid on that debt.

If this interpretation is correct then our measures of fiscal consolidation can be distorted and the analysis of optimal speed of fiscal consolidation needs to take into account its effects on potential output. As DeLong and Summers (2012) argue, when this effect is large we have the extreme possibility that a fiscal consolidation is self-defeating.

Knowing whether this interpretation is right is very difficult to establish empirically. The issues that have made the literature on fiscal policy multipliers very contentious are all relevant for this analysis. In addition, potential output is not observed and as such depends on the perceptions and interpretations that are taken place at the time that the estimates are being produced. Fatás and Summers (2014) estimate the permanent effects of the fiscal consolidations of 2009-11 using the methodology of Blanchard and Leigh (2013) and provide evidence that those permanent effects are large for Euro countries. We reproduce below some of their results.

We take as a reference the years 2010-2011 to measure the amount of fiscal consolidation as in Blanchard and Leigh (2013). This is measured as the April 2010 forecast of the change in the structural balance as a percentage of potential GDP over those two years ( $\Delta SB_{i,t:t+1:t}^f$ ). Using this variable Blanchard and Leigh (2013) try to explain the forecast error in GDP over the same period ( $Y_{i,t+1} - Y_{i,t+1:t}^f$ ) in order to assess the size of fiscal multipliers. They run the following regression:

$$Y_{i,t+1} - Y_{i,t+1:t}^f = \alpha + \beta \Delta SB_{i,t:t+1:t}^f + \varepsilon_{t:t+1}$$

Our interest is in how fiscal consolidation changed not output but potential output. Given that potential output is by nature a long-term measure of activity and likely to be noisy at high frequencies, it makes more sense to select a longer horizon for our analysis. Using the same data source as Blanchard and Leigh (2013), the IMF WEO of April 2010, we compare the estimate of potential for 2014 with the potential output that appears in the most recent IMF WEO (October 2014). The difference is the 4-year forecast error for potential output for 2014 ( $PY_{i,t+4} - PY_{i,t+4:t}^f$ ). We then regress this variable on the fiscal consolidation of the years 2010 and 2011.

$$PY_{i,t+4} - PY_{i,t+4:t}^f = \alpha + \beta \Delta SB_{i,t:t+1:t}^f + \varepsilon_{t:t+1}$$

In the work of Blanchard and Leigh (2013) on the left hand side we have the forecast error for GDP growth. Under the assumption that the forecast had been made using the right fiscal policy multipliers, the coefficient  $\beta$  should be equal to zero. In the work of Fatás and Summers (2014) we also expect the coefficient  $\beta$  to be zero. The difference is that this coefficient is an estimate of the total effect of the fiscal consolidation on potential output given that the model assumes that potential output is not be affected by fiscal consolidation (the “long-term multiplier” is assumed to be zero).

The first column of Table 1 replicates the specification of Blanchard and Leigh (2013) for all Euro countries for which data is available. We obtain a coefficient of -1.17,



consistent with the results of Blanchard and Leigh (2013).<sup>20</sup> When we replace output with potential output, column 2, we obtain a coefficient of -1.376.

Table 1. The Effects of Fiscal Consolidations.

|                      | Dependent Variable: Forecast Error of |                      |
|----------------------|---------------------------------------|----------------------|
|                      | GDP Growth                            | Potential            |
| Fiscal Consolidation | -1.170**<br>(0.437)                   | -1.376**<br>(0.548)  |
| Constant             | 0.951**<br>(0.439)                    | -2.277***<br>(0.701) |
| Observations         | 15                                    | 14                   |
| R-squared            | 0.550                                 | 0.406                |

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

The interpretation of the coefficients is as follow: the IMF model has a fiscal policy multiplier of 0.5 built into it. So the fact that the coefficient of the first column is around -1.17 it means that the actual multiplier is about 1.7 (and this is the interpretation of Blanchard and Leigh (2013))

For potential output we also find a large coefficient (-1.376) that in this case should be interpreted as the long-term multiplier. In other words, the effect of a fiscal consolidation of 1% of GDP resulted in a decrease in potential output of 1.376%.

Using the logic of DeLong and Summers (2012), and given the size of our estimates multiplier, we would conclude that the change in fiscal policy during these years was self-defeating. Despite the consolidation efforts, the policy actions led to an increase in the debt-to-GDP ratio rather than a decrease because of the negative effects on potential output.<sup>21</sup>

The result that a large cyclical shock changes potential output is validated by Ball (2014) in his analysis of the long-term effects of the Great Recession. Also, International Monetary Fund (2009) finds that financial crises tend to have large and permanent effects on output as GDP never returns to previous trend due to the

<sup>20</sup> Notice that the results should not be identical because we are using a more recent IMF WEO database to calculate the actual change in GDP.

<sup>21</sup> It is not easy to map our coefficient into the hysteresis parameter  $\eta$  of DeLong and Summers (2012). The coefficient that we estimate is in some sense the product of the hysteresis parameter and the standard short-term fiscal multiplier. Given that the multiplier is estimated to be -1.7, and our coefficient is -1.3 this would imply a value for  $\eta$  around 0.8. This is much larger than the value required for a self-defeating fiscal consolidation in DeLong and Summers (2012), typically below 0.2.

permanent effects of the crisis on labor markets, capital accumulation and productivity. In addition, they find that “economies that apply countercyclical fiscal and monetary stimulus in the short run to cushion the downturn after a crisis tend to have smaller output losses over the medium run.” This is entirely consistent with our analysis of the Euro area data for the post 2009 sample.

A potential criticism of our results is that the IMF could be putting too much weight on actual output changes when estimating potential output, so the fall in potential output is exaggerated. There are two responses to this criticism. First, it is difficult to imagine that Euro countries will fully regain their pre-crisis trend level so some the losses are permanent. Second, if we are confusing cyclical movements in output with permanent ones, we are still implementing the wrong fiscal policy. As we judge the appropriateness of structural balances relative to potential GDP we are underestimating the true fiscal contraction and pushing for further consolidation when it is not needed.

#### *Too slow or too fast?*

Our analysis of the recent experience of the fiscal consolidation in Ireland has presented a mixed view on the policy path that was followed. Given the unfavorable circumstances that the Irish government faced during the crisis, a succession of fiscal plans managed to stabilize the debt-to-GDP ratio and as of 2014 put it in a downward trajectory. It has done so by requiring large sacrifices in terms of budgetary adjustments and the commitments of the government have all been fulfilled with minor delays. And this is remarkable given the constant downward revisions to the Euro and global macroeconomic outlook. The fact that the Irish government is now able to access international financial markets stands in stark contrast with what we witnessed a few years ago in the middle of the Euro sovereign debt crisis.

Despite its success, the Irish experience, as well as that of other countries in the Euro periphery, is marked by a deep crisis that was made worse by the fiscal contraction. While almost everyone agrees that the fiscal contraction must have had an impact on growth, the estimates of this impact are still up for debate. Our analysis of the data suggests that the impact was significant, more so if one is willing to concede that potential output was indeed affected by cyclical. Our estimates for Euro countries estimate that the size of these effects possibly put some of these countries into a self-defeating path of reductions in spending that caused potential GDP to fall and the debt to GDP ratio to increase. And the response to this was an even larger need for an adjustment the following years. In that sense, the speed of adjustment measured by the actions taken (not the outcome) was clearly too fast.

Our analysis is limited by the fact that it is impossible to produce a counterfactual of what would have happened if consolidation had followed a slower pace, although our econometric analysis offers a hint that this could have led to a faster reduction in debt. Also, we are assuming that there was indeed a choice when it came to the speed of adjustment. For countries that had no access to credit markets, this might

just be an illusion. But even if this is the case, we can argue that for the Euro area as a whole, there was a choice to allow for a different type of adjustment as long as there was a consensus among EU members (and the IMF) and that the policies implemented were credible enough in front of capital markets.

## 5. The Road Ahead.

Despite all the success, the road ahead is not an easy one. The high levels of government debt will require a sustained fiscal effort over the years and decades ahead. While growth in 2014 has surpassed expectations, the medium-term outlook for public finances remains challenging given the demographic pressures on government budgets. Ireland is not alone in this path, most Euro countries face the same or even bigger challenges and they will have to navigate this together using the EU and well as the national fiscal frameworks.

We have seen a similar situation before in the run up to the Euro. In that case, Ireland and several other Euro countries managed to reduce their debt at a very fast pace. But the countries that were successful did so in an environment of fast growth that is unlikely to be repeated. And Ireland was the best example with growth rates that were substantially faster than any other country and, as a result, witnessed a more dramatic reduction in debt. It is unlikely that we will see such large positive growth surprises in the coming decades. If any, demographic trends will reduce growth and at the same time increase pressure for additional spending.

What will then be the path of debt reduction? If we look at the previous experience of Euro members the answer is that it will heavily depend on both economic and political developments within those countries. As an example, Italy never managed to reduce its debt despite being part of the same EU fiscal framework with a debt ceiling of 60%. It is true that going forward the new EU rules are designed to avoid these high-debt level situations by imposing a path of adjustment towards 60%. But it is very unclear how situations such as Italy in the last 15 years (with very limited GDP growth) will be addressed in the future. The history of enforcement of rules under the EU framework shows that there is room for renegotiation and creative interpretation.

In the case of Ireland, although the government is committed to a reduction in debt, there is no explicit target on a particular debt level. EU-based fiscal rules (such as the MTO or the adjustment path condition, or the expenditure benchmark) provide a framework for a fiscal adjustment to be followed over the coming years that should lead to a reduction in debt. This framework is respected by the current medium-term government plans, although there are some areas where the margin is very small (or could even lead to non-compliance depending on the actual numbers as highlighted in Irish Fiscal Advisory Council (2014) ).

Is it possible to imagine a path of adjustment that is faster than that implied by EU framework? Yes but only if growth is strong and there is enough domestic

consensus. The discussions around the 2015 budget are a good example of the difficulties in going faster. While the 2015 budget is consistent with the previous plans of the Irish government and EU rules, there is a concern that the government is not taking enough advantage of the improvement in growth. The Irish fiscal policy council refers to the 2015 budget as a “missed opportunity to move the public finances more decisively into a zone of safety”.<sup>22</sup> The IMF argues that the 2015 budget plan “shows fiscal restraint but makes less progress than desirable”.<sup>23</sup> And the European Commission also expresses its concerns when arguing that “In turn, the tax cuts and expenditure increases included in the 2015 budget conflict with the part of the EDP recommendation that asks Ireland to seize opportunities, including from better economic conditions, to accelerate the reduction of the gross debt ratio back towards 60% of GDP.”<sup>24</sup> Given the sense of fatigue after six years of fiscal adjustment, it is not a surprise to see some relaxation of the pace of fiscal adjustment in the 2015 budget.

Is it possible to imagine a situation where the adjustment towards lower debt stops or slows down? Yes, if another large economic crisis happens in the short to medium term. The debt surprise in 2008 was directly linked to a single event: the global financial crisis. Can more be done to plan and manage risks associated to such large events? There are always ways to improve the budgetary process with stronger commitment and enforcement on multi-year plans that include targets for spending. But the reality is that planning for a very large crisis might not be technically possible or politically feasible because of the difficulty in estimating the probability of such an event and raising its visibility and attention in the political debate. And this is indeed one of the important lessons from our empirical analysis: fiscal sustainability depends heavily on our assumptions about potential growth. Excessive optimism leads to unsustainable behavior and excessive pessimism can lead to lower growth, especially during a crisis. And looking at the evidence it seems that we are, at best, guessing potential GDP growth rates, revising its history as new developments happen and relying too much on short-term forecasts of GDP growth. This makes it for a very difficult environment for a sensible long-term budgetary planning

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<sup>22</sup> See Irish Fiscal Advisory Council (2014).

<sup>23</sup> See International Monetary Fund (2014).

<sup>24</sup> See European Commission (2014).

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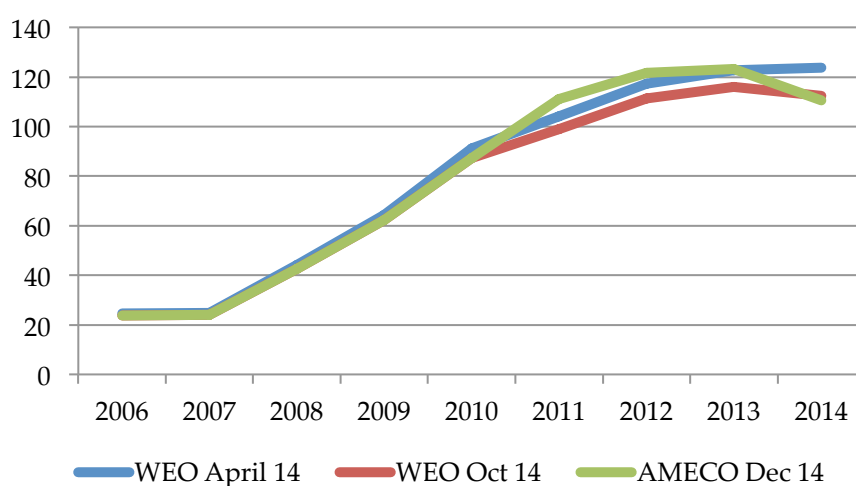
## 7. Appendix: Government Debt in Ireland

For consistency purposes all data used in the paper is coming from the October 2014 online database of the IMF World Economic Outlook. Because of several accounting changes over the latest years, the figures for the Irish government debt have been significantly revised. The chart below provides a comparison of three sources:

1. IMF World Economic Outlook from April 2014. This data does not include the shift to ESA 2010 national accounts.
2. IMF World Economic Outlook from October 2014. This data includes the shift to ESA 2010 accounts for GDP. Because this represented an increase in GDP, the ratio of debt to GDP is lower than in the earlier estimates.
3. AMECO database from the European Commission (December 2014). This data includes both the ESA 2010 changes to GDP as well as some related changes in the fiscal policy accounts. The most significant change is the inclusion of the Irish Bank Resolution Company in 2011 and its removal in 2013.

While there are differences between the three series, they are small and do not change much the analysis and prognosis of the fiscal situation. The upward revision of GDP figures has reduced the debt-to-GDP ratio by about 6 percentage points. The treatment of the Irish Bank Resolution Company in the government accounts modifies the data for the years 2011 to 2013 but it leaves the final number around 110% of GDP, consistent with the IMF WEO October 2014 data used in the paper.

Figure 16. Ireland Government Gross Debt (% of GDP).  
Comparison of sources.



The second issue with measurement of government debt is the potential difference between gross and net debt as a result of the sales of assets such as for example the use of the National Pension Reserve Fund.

Figure 17. Gross versus Net Government Debt (% of GDP).

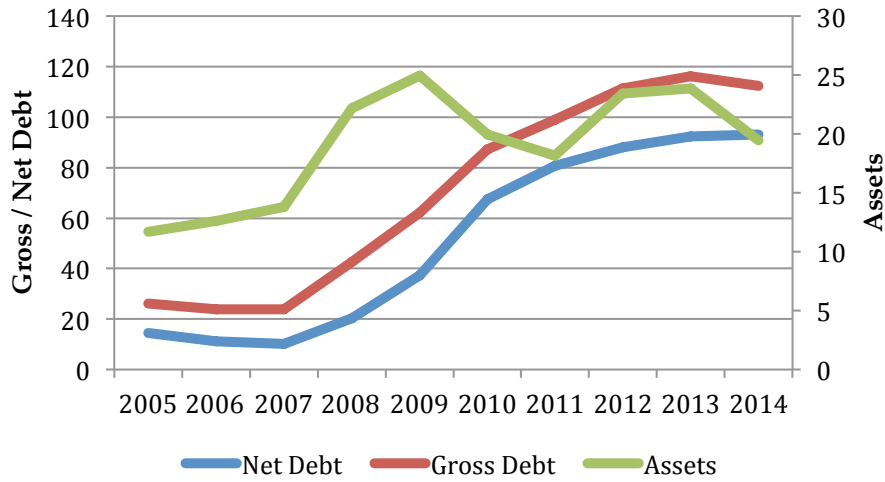


Figure 17 shows the evolution of gross and net debt as well as the difference between the two (labeled as 'assets' in the figure). While the evolution of gross and net debt is similar during the period 2008-2014 the difference between gross debt and net debt has increased by about 5 percentage points of GDP. The level of assets remains, however, higher than that of the pre-crisis years (such as 2005-2006) although the recent fall represents a clear break from the previous trend towards fast accumulation of financial assets.