

Growth after Crisis in Europe

An Interdependence of Macroeconomic and Structural Policies⁺

Roumeen Islam*

Economic Advisor, World Bank for Europe and Central Asia

Abstract

Greece, Ireland, Portugal and Spain entered a period of severe economic and financial stress in the aftermath of the 2008-9 crisis. This paper compares the recovery experience of these countries in light of recent policy debates and research on the growth impact of macroeconomic and structural reforms. It highlights, (a) the primacy of total debt, private or public, in affecting the onset of, depth of, and recovery from economic crisis; (b) that the quality of the policies adopted to stabilize economies in the short run affects growth recovery in the long run; (c) that the relationship between financial system development and growth is complex; (d) that macroeconomic policies (fiscal and monetary) are most effective in supporting growth when they take into account structural conditions and country context; and (e) that policies must be adapted to global/regional conditions. A partial, rather than holistic, approach to policymaking may neglect to influence the binding constraints to growth and, thus, slow down recovery.

Keywords: Financial crisis, European debt crisis, Greece, Ireland, Portugal, Spain, Market risk perceptions, Product complexity, Labour intensity of GDP, Fiscal consolidation, Keynesian multipliers, Expansionary consolidation, Real effective exchange rates.

1. Introduction

Economics is the science of thinking in terms of models joined to the art of choosing models, which are relevant to the contemporary world. – John Maynard Keynes

The financial crisis of 2008-09 and the subsequent European debt crisis of 2010 led to debates in many areas of economics as scholars and practitioners asked how the crises may have been prevented and how economies could be best supported in their stabilization and recovery paths. New papers revisiting economic theory or policy and new supporting evidence have been produced. The experiences of Greece, Ireland, Portugal and Spain (GIPS) during the 2010

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* Address: Room MC-7157, 1818 H St. NW, The World Bank, Washington DC, 20433.

Email: rislam@worldbank.org

crisis and the years that followed are studied in this paper in light of these policy debates and new research. Their collective experience has reaffirmed that strong links exist between public and private indebtedness in the assessment of credit risk, particularly where both are growing fast, that policies aimed at short-term stabilization have long-term output consequences, that the long run impact of financial system growth are more complex than previously understood and that macroeconomic policies are more effective when they account for market structure and differences among economic agents.

When financial markets crashed in 2008, the ECB put in place measures to stabilize the financial system and many European governments, including those of the GIPS, undertook anti-cyclical fiscal policy to mitigate the drop in private demand. By 2010, with deteriorating public finances, and facing banking crises these countries entered the European sovereign debt crisis period. The four governments faced the need to manage their finances while their private sectors were doing the same. They reversed the expansionary fiscal policies they had previously adopted. In this period, a primary challenge of macroeconomic and financial policies was how to manage debt, while simultaneously adopting policies to support growth. This task was complicated by the concerted slowdown in regional and global trade, and in financial flows. Soon, the EC and the ECB had to face new challenges in the form of deflation and high and persistent unemployment. The policies of pan-European institutions, in particular, the financial oversight and monetary mechanisms of the ECB, and the fiscal oversight of the EU were challenged and some underwent changes albeit gradually, during the last few years. Along with other factors, these developments affected the paths the countries took.

In some respects, the crises in GIPS had similar roots, primarily a borrowing and spending boom in domestic and global markets. During 2010-2012, a financial crisis would quickly turn into either an expensive fiscal one or a fiscal crisis into a financial/economic one. Ireland and Greece are well known as opposite examples. The former entered the crisis with a fast-rising and large private sector debt stock and the latter with a high public debt - to- GDP ratio. The links between banking and the sovereign were demonstrated dramatically in Ireland. During the 2008 financial crisis, the authorities in Ireland responded to the revelation of banking sector problems by proposing a blanket guarantee.^{6,7} While intending to calm financial markets, and stabilize its financial sector, Ireland put its public finances under stress and its risk premium jumped. Strained public finances then put additional pressure on the financial system by raising Ireland's sovereign risk premium. Spain, with a private sector led credit boom and a strong fiscal position resembles Ireland. Portugal falls somewhere in-between, having both unhealthy fiscal accounts and a highly indebted private sector. It did not have the large boom experienced by the other countries in the years immediately preceding 2009, but both private and public sector debt had been high and rising steadily over a period of time. Large deteriorations in external and internal balances were observed for all, though only Greece and Portugal had consistent fiscal deficits. In all cases, a large decline in output led to jumps in the debt- to -GDP ratio.

As their experiences demonstrate, risks propagate swiftly from banks to the sovereign and vice

⁶ Eichengreen (2015) contends that the Irish crisis was a classic case of contagion growing out of asymmetric information and the authorities' desire was to make that asymmetry irrelevant.

⁷ Ireland recapitalized by issuing bonds to the ELA that required €3.1 billion annually to be paid as interest and principal.

versa. Research confirms that a larger banking sector, greater reliance on wholesale or foreign funding, and higher leverage are associated with deeper and longer post-credit boom recessions, larger increases in the fiscal deficit and larger public debt (IMF, 2015a). Research covering the Eurozone countries during 2007-2010, confirms strong interlinkages between perceptions of bank risk and sovereign risk. As examined through banks' credit default swap (CDS) spreads and sovereign spreads they are driven by the same risk factors (Acharya et al, 2011). Espinoza and Segoviano (2016) derive the probability of sovereign distress conditional on bank stress (bank to sovereign contagion). The higher the ratio of bank loans to GDP, and the higher the share of sovereign debt instruments held on banks' balance sheets, the higher is contagion. Higher capital to asset ratios and higher price to book valuations, higher projected GDP growth, better initial fiscal position, lower short-term debt/GDP of government, and lower global risk aversion – all positively reduce contagion.

Once an economic crisis is triggered (or starts or provoked) due to debt accumulation, macroeconomic and structural policies must come together to stabilize the economy and support economic recovery. This paper examines the performance of GIPS in the context of a number of policy areas that have been of primary concern in the recovery process after the onset of the European sovereign debt crisis and which have been extensively researched since then. These include fiscal, monetary and financial policies as well as selected structural policies.⁸ The main messages are presented in the form of “lessons”. Section 2 begins with the situation prevailing pre-2010 and the first two lessons. Section 3 discusses economic performance during the sovereign debt crisis period. Research that sheds light on the GIPS' economic progress, both theoretical and empirical, is discussed in the relevant sections.

2. Leading up to the sovereign crises

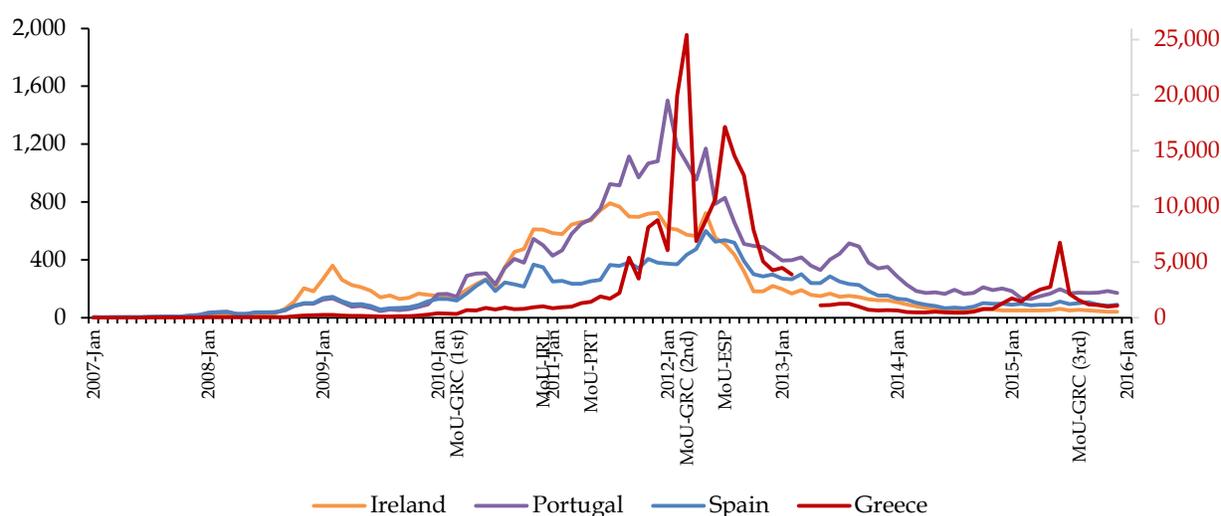
Lesson 1 - Debt is all-important and structural factors are irrelevant in provoking a sovereign debt crisis; particularly when global risk aversion is high. Market perceptions of sovereign risk and creditworthiness, and thus fiscal space, can change suddenly. High-income levels and low initial public debt levels are not sufficient to prevent risk premia from jumping when debt is rising fast.

Before 2008-09, GDP growth was buoyed by low and declining interest rate spreads that supported relatively fast credit expansion as markets viewed GIPS as low risk investments. A number of papers examining the determinants of spreads in the euro area before 2008 found that markets understated the role of macro-economic fundamentals in the determination of sovereign risk in Europe (Bernoth et al. 2012, Von Hagen et al. 2011, Afonso et al. 2015). The interest differential of GIPS' bonds with the German 10-year bund decreased dramatically during 2000-2006, so that by 2007, the interest rate differential was 0.28, 0.09, 0.21 and 0.09, respectively, and CDS spreads were low (Figure 1). Suddenly, from the end of 2009 until the middle of 2011, global risk aversion as measured by the VIX and CDS spreads for GIPS were moving in opposite directions, the latter having risen dramatically. These differentials were to rise to 21, 6.99, 9.05 and 4.35 during 2011-2012. At the time that each of these countries faced

⁸ The paper mostly deals with developments until 2014/2015 (and in some cases, 2014). However, the lessons and conclusions remain valid for the most part.

rising risk premia, all four had something in common: debt of various types was high and increasing fast (Figures 2 and 3). Measured by CDS spreads, Greece's risk premium was lower than Ireland's until the end of 2009. A sudden stop in access to capital meant that policy choices were severely constrained. Estimations of debt sustainability and thus "fiscal space" changed rapidly. The shift in expectations, by reducing policy choices, also deepened the immediate downturn. However, even when reforms are first adopted market perceptions can continue to move in ways that worsen outcomes on the ground. The quality (feasibility) of the packages and signaling commitment is key to regaining access.

FIGURE 1
Sovereign credit default swap (CDS) spreads (basic points)



Note: Monthly data for 5-year tenor. Values for Greece are on the right axis.
Source: Bloomberg, CMA, data as of Apr. 29, 2016.

The private credit boom and rise in private debt. Fueled by global liquidity, the financial sector grew fast in GIPS, but exhibited some important differences. In 2008 domestic bank credit to the private sector accounted for over 160% of GDP in Ireland and Spain, and over 140% in Portugal. Greece, less financially developed than the others, is an outlier as this ratio was around 100% of GDP. However, Greece is not an outlier in terms of the rate of increase in the credit to GDP ratio; this ratio doubled for Greece, Ireland and Spain during 2000-2007. In this case, Portugal is the "outlier", as its credit growth was substantially slower, though it started at a much higher ratio.⁹ Portugal's was a slow brewing crisis. When the global financial crisis struck and GDP fell, private debt ratios jumped further.

A spending spree by government and rising public indebtedness. Governments were also spending, though large differences were visible in the budget positions of Ireland and Spain on the one

⁹ The numbers are even higher if total credit from all sources is considered: during the years 2000-2007, credit ratios from all sources to the private sector increased by 49 pp, 97 pp, 55 pp and 87 pp respectively in Greece, Ireland, Portugal and Spain.

hand, and Greece and Portugal on the other. In 2007, Greece and Portugal had budget deficits of 6.7% and 3% while Ireland and Spain had budget *surpluses* of 0.3% and 2%, respectively. However, a warning bell in Ireland's case was that *real government expenditures grew 82%* (11 percentage points of GDP) between 2000 and 2008, compared with 40% for Greece and Spain and less than half of that for Portugal (the non-boom country).¹⁰ Greece and Ireland, the first two to experience debt stress had continually *deteriorating* budget positions at -15.1% and -13.8% of GDP, respectively, in 2009. Portugal's attempts at budget control were intermittent, but Spain, the only one not to require an IMF programme, was distinguished by rising surpluses, until 2007.

Cyclically adjusted deficits show a similar pattern. However, estimates of revenue were biased upwards because the cyclical component of asset booms, particularly housing booms, was not accounted for in the estimates, meaning that the structural deficits were underestimated. Rising tax revenues in Ireland and Spain led to underestimation of the structural deficit. Kanda (2010) finds that in Ireland, with house prices soaring, stamp duty, capital taxes and VAT on property grew well above GDP growth. After accounting for these factors, he finds an almost 4 percentage points (pps) reduction in structural revenues during 2000-08. Thus, in reality, the structural primary deficit rose to over 10% of GDP in 2008, but was hidden by property revenues.¹¹ Consistently high deficits meant that the public sector debt-to-GDP ratio was the highest in Greece, by far. On the eve of the 2009 financial crisis, it was over 100% of GDP, over four times the ratio in Ireland. Portugal, with 68%, was a distant second and Spain was closer to Ireland (Figure 3). These debt ratios are much higher than either the EZ or EU averages. During the 2009 recession, debt ratios jumped.

Worsening external accounts and rising external debt for all. The boom in aggregate demand led to strong import growth particularly in the two years immediately preceding the crisis¹². In 2008, the level of the overall current account deficit was particularly high in Greece (15.1% of GDP), followed by Portugal (12.1% of GDP) and Spain (9.3% of GDP). However, the deteriorations in Ireland and Spain were dramatic, the current account deficit worsening by over 100% (Figure 4). In Ireland, a 2003 surplus changed to a deficit of 6.5% of GDP in 2008¹³. Increases in domestic demand, rising wages and prices and consequent real effective exchange rate appreciation was associated with rising external imbalances (Figure 5). In Greece and Spain, the gross external debt-to-GDP ratio rose to 150% of GDP in 2007 (rising by 40%). Portugal, highly indebted to begin with, only experienced half that increase. Ireland, with its booming financial services sector, recorded almost a doubling of its gross debt/GDP ratio between 2004 and 2007, reaching a whopping 841 % in 2007. Though Ireland's net debt was negative, at -204% of GDP in 2007, previous research indicates the need to consider gross external debt in order to assess financial vulnerability given the possibility of high risk in the

¹⁰ At the same time, the number of public servants increased 35%, and wages rose 60% during 2000-08 in Ireland. Relative to GDP, government size grew much less in the other countries, the next highest being 4.5 percentage points in Greece.

¹¹ See also Eschenbach and Schuknecht (2002), Girouard and Price (2004) and Morris and Schuknecht (2007) for more on biases in estimation of structural fiscal deficit without accounting for asset price bubbles.

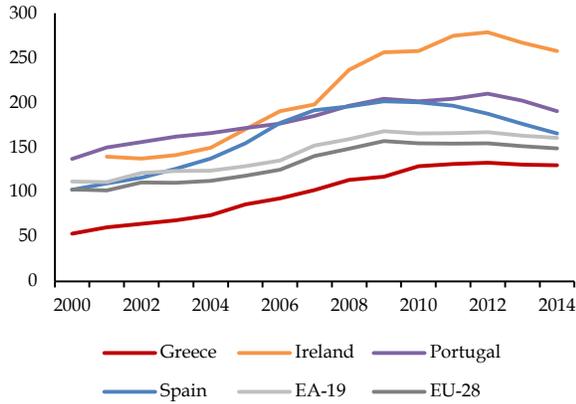
¹² Transfers dropped from 6.5% of GDP in 1995 to 1.5% in 2008 in Portugal representing a secular trend; as Portugal became richer, remittances and transfers dropped (Felke and Eide, 2014).

¹³ Net interest income/workers remittances and current transfers were important- the net outflow was large enough to turn the positive trade balance into a current account deficit.

presence of substantial maturity and currency differences for assets and liabilities.

FIGURE 2

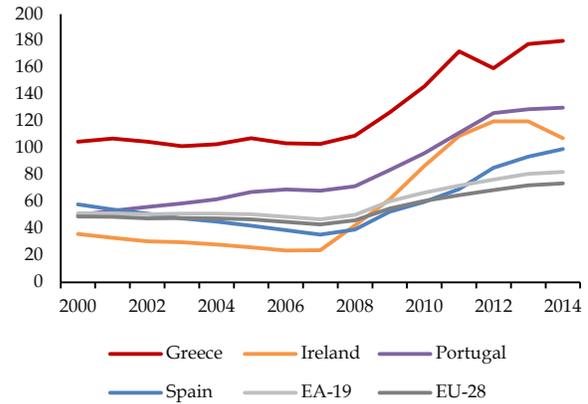
Private debt to GDP (%)



Note: Consolidated debt covering debt securities and loans of non-financial corporations and households. EA-19 and EU-28 are simple averages.
Source: Eurostat, data as of Feb. 12, 2016.

FIGURE 3

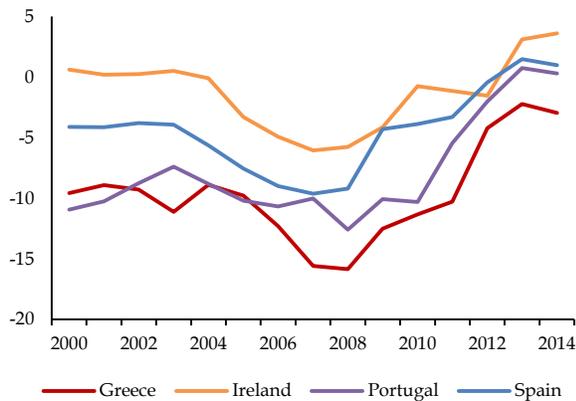
Public debt to GDP (%)



Note: Consolidated debt covering gross general government debt. EA-19 and EU-28 are simple averages.
Source: Eurostat, data as of Feb. 12, 2016.

FIGURE 4

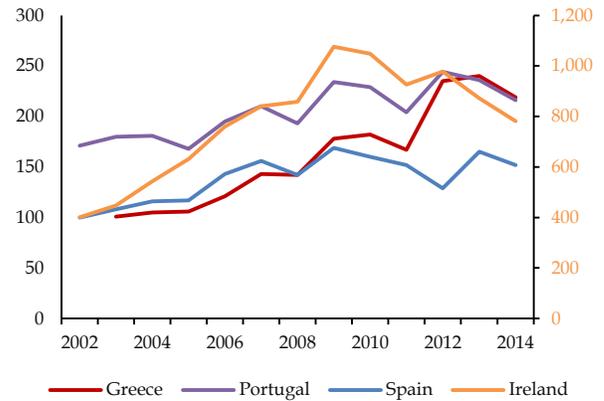
Current account balance as a share of GDP (%)



Source: European Commission, Annual macro-economic database, data as of Mar. 10, 2016.

FIGURE 5

External debt to GDP (%)



Note: Values for Ireland are on the right axis.
Source: The World Bank, Quarterly External Debt Statistics and World Development Indicators (for GDP data), data as of Feb. 2, 2016.

Yet structural conditions varied substantially. Four very different countries- whether it be in terms of openness, export composition or labour market dynamics- entered the 2010 sovereign debt crisis. Real GDP growth averaged 4%, 6%, 1.5% and 3.8%, respectively, in GIPS during 2000-07 compared to 2.2% for the Eurozone and 2.5% for the EU.¹⁴ Ireland's economy was distinguished from that of the others by the presence of large multinational corporations and global financial institutions that produce much of value-added in the country. The economies of Greece, Portugal and Spain have been more reliant on domestically-owned and smaller firms. At the same time, there were substantial differences in the business climate or governance; these did not matter in terms of preventing a crisis. The World Bank's Doing Business ranking placed Ireland 7th and Greece 109th in 2010. On the Global Competitiveness Indicator, Ireland placed 29th and Greece 83rd. Portugal (48th, 46th respectively), with a lower GDP per capita and Spain (62nd, 42nd), with a similar GDP per capita in 2010, had a far better performance on several measures of the business climate and institutional quality than did Greece (Table 1).

Cost developments and export composition provide insight into domestic structural differences that affect the post (2010) crisis path the countries took. Labour costs, as measured by compensation per employee (in US\$ PPP), rose by an amazing 47% in Greece during 2000-08, as compared with 27% for the aggregate Eurozone. Spain was the only one among the four to contain labour compensation around the Eurozone average. In Ireland, the increase was over 48% and in Portugal 32%. Juxtaposing the evolution of labour compensation against the type of products exported by each country gives a broader picture of how structural differences and competitiveness evolved relative to the others and thus how recovery may have been affected. On the presumption that more complex products use more skilled (and thus more expensive) labour and/or more capital, higher labour compensation would tend to be associated with these products. Using a ranking developed by Hidalgo and Hausman (2007), Abdon et al. (2010) and Felipe and Kumar (2011), Table 2 shows that for the period 2001-07, almost 40% of Germany's exports were in group 1 (the most complex products) and only 3.4% in group 6.¹⁵ It is also the most diversified exporter in the sample below, second only to Italy in the original sample. Ireland closely resembles Germany, with 39% of its exports in group 1 and only 1.3% in group 6. By contrast, Greece has 3.8% in group 1 and a whopping 33% in group 6. The complexity of Greece's exports lags behind that of China.¹⁶ Spain and Portugal are in-between, Spain having substantially more exports that are complex than Portugal.

Confirming the presence of large structural differences, the relationship between growth and employment varied substantially among the countries. Table 1 shows the elasticity of employment creation with respect to GDP growth for the pre-crisis period. Spain and Ireland, with their fast expanding private sectors, stand out. Spain's labour intensive growth is remarkable. Greece had relatively poor performance, particularly given that its GDP growth rate was the second highest. Portugal had a very low GDP growth rate, but also exhibited no significant relationship between GDP and employment growth. Portugal's slow brewing crisis was clearly visible in the labour market long before 2007 as its unemployment rate increased by

¹⁴ The largest *increase* in GDP per capita terms was in Greece, the GIPS growing 29%, 24.4%, 6.2% and 14.5% from 2000 to 2007 respectively, compared with 10.9% for the Eurozone and 14.4% for the EU28.

¹⁵ Germany has second place in terms of complexity, following Japan.

¹⁶ Yet, in terms of costs, labour compensation in euros was higher in Greece than in Portugal, and 78% of Ireland's. Minimum wage regulation as well as taxes affected labor compensation. Though Greece exported the simplest of products, by 2008, its minimum wage in euros was higher than that of either Spain or Portugal.

4 percentage points *before* the sovereign debt crisis.^{17, 18}

TABLE 1
Structural Differences

Indicator	Year	Greece	Ireland	Portugal	Spain	EA-19 Mean	EA-19 Median
GDP per Capita (€)	2010	20,300	36,700	17,000	23,200	26,579	23,300
Private Debt to GDP (%)	2010	128.9	259.2	201.5	200.3	165.7	140.4
Public Debt to GDP (%)	2010	146.2	86.8	96.2	60.1	66.7	60.1
Total Debt to GDP (%)	2010	275.1	346.0	297.7	260.4	232.4	229.5
Export to GDP (%)	2010	22.1	103.1	29.9	25.5	64.7	53.7
Doing Business Rank ⁱ	2010	109	7	48	62	41	31
Global Competitiveness Index	2010-2011	83	29	46	42	36	40
Control of Corruption Rank ⁱⁱ	2010	54	93	82	81	81	81
Complexity of Exports Rank ⁱⁱⁱ	2001-2007	51	11	52	27	22	17
Median Hourly Earnings (€)	2010	9.1	18.3	5.1	9.4	10.5	9.4
Monthly Minimum Wage (€)	2010	863	1,462	554	739	854	737
Increase in Labor Costs ^{iv} (%)	2001-2008	47.0	48.5	32.2	27.9	45.8	32.7
Employment/GDP Relationship ^v	2000-2008	0.374***	0.647***	-0.008	0.916***	0.390	0.321

Notes: EA-19 mean and median are respectively simple average and median for the 19 countries in the Eurozone.

i: The Eurozone mean and median do not include Malta which was not assessed in Doing Business 2010.

ii: Percentile Rank (0 lowest rank, 100 highest rank).

iii: The Eurozone mean and median do not include Cyprus, Estonia, Luxembourg and Malta which were not assessed by Felipe et al. (2012).

iv: Increase in annual labour compensation per employee (\$US PPP, adjusted) for the total economy from 2000 to 2008. EA-19 mean and median do not include Cyprus, Lithuania and Malta which are not covered by OECD.Stat, Unit Labour Costs.

v: Simple OLS regressions are used. *, **, *** respectively indicate significance level at 10%, 5% and 1% level. The coefficient indicates the estimated percent change in total employment associated with 1 percent increase in GDP. The EA-19 mean and median are simple average and median of the coefficients for all 19 countries and thus not applicable to significance tests.

Source: Eurostat; Global Competitiveness Report 2010-2011; Doing Business 2010; Worldwide Governance Indicators 2010; OECD.Stat; Felipe et al. 2012

Lesson 2 - In the recovery from crisis, signaling commitment of both national authorities and creditors to a credible debt strategy is essential in stabilizing market risk perceptions. Such a package will involve measures to reduce the debt burden directly, but also credible policy measures to support growth recovery.

¹⁷ The unemployment rate declined in both Greece and Spain, with Spain's decline being almost 6pp between 2000 and 2007 and Greece's about 3pp.

¹⁸ Despite the differing dynamics, Greece, Portugal and Spain had similar UE rates on the eve of the crisis – around 8%. Ireland, with its flexible labour market, had 4.7%.

The adoption of *fiscal* consolidation programmes endorsed by the ECB, IMF and EC did not reduce risk perceptions at the time that the programmes were adopted (Figure 1). The delayed response of markets may be explained by the following: (a) reforms still had to be implemented; (b) markets were not convinced that monetary conditions would be conducive to growth recovery until 2012; (c) Eurozone growth was weak, rendering the growth strategy less credible. The ECB announcement of 2012, signaling its commitment to stand behind Eurozone members, together with the implementation of fiscal and structural reform served to reduce spreads. Yet, by the third quarter of 2015, Greek CDS spreads had risen again to levels not seen before as a result of continued uncertainty regarding its future in the Eurozone. These factors resulted in widening and volatile risk premia, despite the fact that Greece actually implemented some substantial policy changes, particularly on the fiscal front. Investor perceptions of risk were probably heightened by past actions. For example, in 2009, the stated value of the Greek deficit underwent several modifications, a situation that affected market perceptions of the credibility and transparency of government (Featherstone, 2011). In mid-November 2009, the Greek deficit was revised to more than double the initial value stated to reach 12.7% of GDP. In April 2010, it was revised again to 13.6% of GDP and finally stood at over 15% of GDP. In contrast, by 2014, Ireland's spread had dropped almost to levels seen before 2008. Moreover, Ireland's much swifter growth recovery, even as it reduced government deficits, probably mitigated market concerns about the sustainability of its economic framework. Employment recovery is expected to follow faster in countries where growth recovers faster, bolstering confidence that political commitment to reforms will be easier to maintain, backsliding will be less likely and that reforms have begun to take effect.

TABLE 2

Share in a Country's Total Exports by Complexity of Products

	No. of products (RCA>=1)	Complexity Rank	Share in country's exports							
			Top 10	Top 100	1	2	3	4	5	6
Greece	1,060	51	0.01	0.39	3.82	14.78	12.50	17.21	18.60	33.09
Ireland	421	11	0.13	2.28	39.06	26.27	15.60	13.79	3.97	1.32
Portugal	1,188	52	0.02	0.42	15.32	9.84	22.09	15.57	15.53	21.66
Spain	1,745	27	0.02	1.89	24.18	20.80	16.53	12.77	14.46	11.25
China	1,962	50	0.02	0.53	5.71	13.90	20.75	19.52	15.59	24.53
Germany	2,113	2	0.19	7.90	39.62	24.50	16.01	10.85	5.61	3.40
Belgium	1,470	9	0.23	3.84	27.81	20.30	15.55	11.26	12.12	12.96

Notes: Figures are based on the averages of export values for 2001-2007. Rank is the ranking of the country (in a total of 124 countries) according to the measure of country complexity. Top 10 and Top 100 correspond to the most complex products. Products are divided into six complexity categories: 1 is the most complex product group. An RCA >1 implies that the product accounts for a larger share of a given country's export basket than it does in the world export basket.

Source: Felipe and Kumar (2011) and Felipe et al (2012) based on Abdon et al (2010) using a measure of complexity based on Hidalgo and Hausmann (2009).

3 The recovery years and the economic debates that influenced policies

All four countries adopted fiscal stimulus packages in 2009 in response to the global financial crisis, widening their fiscal deficits. In May 2010, Greece entered an ECB/EC/IMF programme; in December 2010, Ireland followed and in May 2011, so did Portugal. Spain fared much better and the explanation probably lies in its substantially better fiscal position. Spain's public debt was 60% of GDP in 2010, even after the post-2008/9 expansionary fiscal policy (though it jumped the most in 2012 by 15 percentage points of GDP). In 2012, Spain did not borrow from the IMF/EU, but did receive support from the EU for its banking sector.¹⁹

For Ireland and Spain 2009 was the worst recessionary year. Yet for the two countries that began with the highest public debt and deficits, Greece and Portugal, the largest GDP drops were in 2011 and 2012, respectively. As at end-2014, none of the countries had regained their 2007 GDP per capita levels. In fact, the size of Portugal's economy was back to around the 2000 level, and Greece was 1.6% smaller. Consistent with the lack of an asset price cycle of similar magnitude, Portugal had the smallest decline in GDP (-3%) in 2009, but has had the second worst performance since 2008 after Greece; Portugal continued its historical pattern of relatively poor macroeconomic performance with ever-worsening debt indicators (EC, 2015b).

TABLE 3

Real GDP Growth and Projections (%)

	2009	2010	2011	2012	2013	2014	2015	2016	2017		2018	
									IMF	EC	IMF	EC
Greece	-4.3	-5.5	-9.1	-7.3	-3.2	0.4	-0.2	0.0	2.2	2.7	2.7	3.1
Ireland	-4.6	2.0	0.0	-1.1	1.1	8.5	26.3	5.2	3.5	3.4	3.2	3.3
Portugal	-3.0	1.9	-1.8	-4.0	-1.1	0.9	1.6	1.4	1.7	1.6	1.5	1.5
Spain	-3.6	0.0	-1.0	-2.9	-1.7	1.4	3.2	3.2	2.6	2.3	2.1	2.1
EA-19	-4.5	2.1	1.5	-0.9	-0.3	1.2	2.0	1.8	1.7	1.6	1.6	1.8
EU-28	-4.4	2.1	1.7	-0.5	0.2	1.6	2.2	1.9	2.0	1.8	1.8	1.8

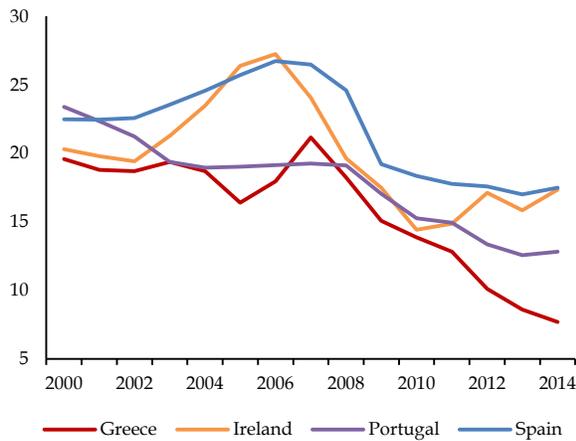
Sources: Eurostat, data as of Apr. 7, 2017; IMF World Economic Outlook, April 2017; EC, European Economic Forecast Winter 2017.

A uniform investment collapse. The double crisis led to a sustained reduction in investment in all countries, beginning in Ireland in 2007, and by 2014 no country had recovered the public and private investment ratios seen at the *beginning* of the decade (Figure 6a). While Greece's investment collapse is striking, private investment having fallen by over 60% as a ratio to GDP between 2007-14, the others have also had declines of 30% or more from peak to trough (in Ireland and Spain the peak was in 2006- at the height of the housing boom). Portugal's experience is different in that it is the only country where the (public and private) investment rate has been falling since 2000 with the decline accelerating in the crisis.

¹⁹ Spain used about €38.9 billion for bank recapitalization, under restructuring and resolution plans approved by the European Commission (EC) under State-aid rules, and around € 2.5 billion for capitalizing Sareb (the Spanish asset management company). See also Veron (2016).

FIGURE 6a

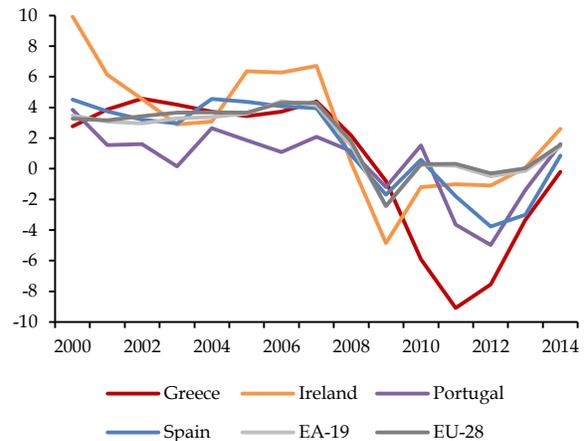
Private Investment to GDP (%)



Source: Eurostat, data as of Feb. 12, 2016.

FIGURE 6b

Real Growth in Private Consumption (%)



Note: Final consumption expenditure of households.
Source: Eurostat, data as of Apr. 18, 2016

Slow consumption recovery. Private consumption growth typically becomes positive about 3 years after a recession following the peak. In Spain, private consumption fell back to around 2000 levels and consumption growth has just turned positive after 7 years, while in Ireland and Portugal consumption turned positive 6 years after the peak of 2008. As households have deleveraged, low real wages have added to deleveraging pressures. Fiscal consolidation during the last few years has also constrained public sector wage and employment growth.

Varying export performance. An important source of variation in growth performance in GIPS is export performance. Greece had the largest drop (-19%) in exports (measured in constant euro) in 2009, compared to -10% in Portugal and -1% in Ireland. It had almost no growth in exports in real terms (with an average annual growth rate of 0.1%) during 2008-14, compared with 3.4% for Ireland, 2.9% for Portugal and 2.2% for Spain. What might be the reasons? All four countries diversified export destinations after the crisis, but Greece's adjustment is remarkable in this measure and far larger than that of the other countries. The share of Greece's exports going to EU28 countries was the same as Ireland's in 2007 (64% of their respective totals), but fell 25% between 2007 and 2014 (Figure 7).²⁰ Ireland shows a similar trend with the share falling 14%. Moreover, the top five export destinations in Ireland, Portugal and Spain amount to 60% of their exports, whereas for Greece, the number is generally under 40% over the years. Thus, Greece was not only initially diversified in terms of trading partners relative to the other three countries, it also diversified faster in the wake of the crisis.²¹ Ireland is distinguished by the fact that 40% of its exports go to the UK and the USA – the two countries that rebounded the fastest from the financial crisis. It also exports to other resilient non-euro countries such as Switzerland. Ireland's export-to-GDP ratio rose an amazing 32 pps during 2008-14. Though

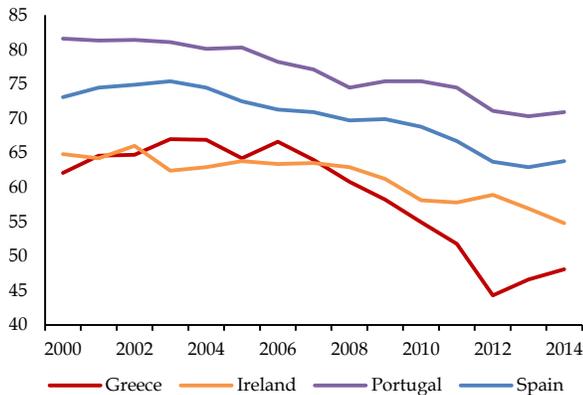
²⁰ Spain and Portugal differ from the other two in that the share of their exports going to the EU28 began a steady decline pre-crisis, but is still high (71% and 64%).

²¹ The top five trading partners for Greece are different from those of IPS, though all four countries share Germany as an important export destination and have among them, France, the UK, the US, and Switzerland in varying importance.

Portugal's most important trading partner is Spain, a country with a banking crisis, Portugal has had much better export performance than Greece. Portuguese exports recovered immediately and have risen 9 pps of GDP. Reforms to boost exports were important in Portugal (Gros et al 2014) (see Lesson 5).²²

FIGURE 7

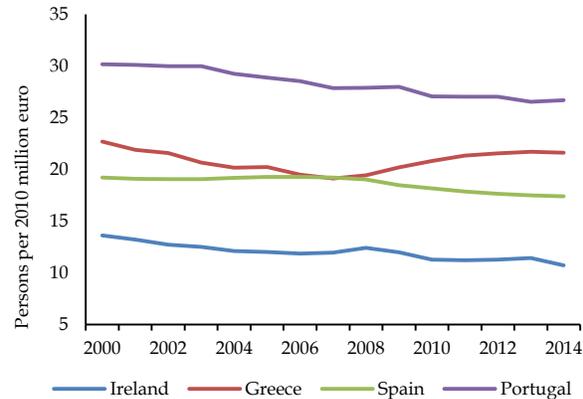
Share of exports going to EU28 countries



Source: Eurostat, data as of Apr. 22, 2016.

FIGURE 8

Labor Intensity of GDP



Source: Eurostat, data as of Apr. 7, 2017

A number of factors help explain Greece's dismal performance, among them: deteriorating institutional quality (including political uncertainty), a substantial decline in access to finance, specifically trade credit (Figure 11a), increased taxes on producers during fiscal adjustment, and real exchange rate appreciation well into 2012. The real effective exchange rate depreciated the least for Greece during this period. These factors raised the cost of exporting.

How did this play out in the labour market? GIPS had large changes in unemployment and labor force participation rates. By 2014, labor force participation rate had fallen steeply in Ireland (4 pps) and Portugal (3 pps) compared to 2007 levels. Only Spain had a slight increase. At the same time, unemployment rates rose steeply - rising the most in Greece, from 8.4% in 2007 to 27.5% by 2013, where output also fell the most. Remarkably, the increase in the unemployment rate in Spain, where the decline in growth was much lower than that in Greece, and where recourse to the IMF and EU bailout schemes was not necessary, was similarly astronomical - rising from 8.2% to 26.1% by 2013

Unemployment rates also rose steeply in Ireland and Portugal between 2007/08 and 2012/13 though, with labour force participation falling steeply, the levels were lower. Table 4 shows the relationship between GDP and employment in OLS regressions for the four countries before and after 2009 (see Table 1). Noteworthy is the changed relationship between growth and employment in three of the four countries. In Portugal, there is a strong positive relationship after the crisis, picking up the effect of continuously falling employment with negative growth, in contrast to the lack of a relationship before the sovereign crisis. Accordingly, labour intensity

²² Exports are about 30% of GDP in Portugal. With 30% of GDP in exports, 6% growth in exports alone would contribute 1.8% of GDP.

of output post-crisis, fell markedly (Figure 8). For Greece, the relationship also strengthened substantially during the crisis. Greece is the only country where labour intensity of output has risen, despite large employment declines, probably reflecting the large declines in other inputs. In Ireland's case—the country with the strongest growth recovery (the only one with a positive average growth rate) and a strong record of employment growth – the relationship was a third as strong as before (Table 4).²³ Only Spain maintained the relationship between employment and output.

TABLE 4
*Relationship between Employment and GDP across GIPS**

Dep. Var.: ln_Employment	2009-2014 Period					
	Greece	Ireland	Portugal	Spain	EA-19	EU-28
ln_GDP	0.659*** (0.000)	0.208*** (0.004)	1.050*** (0.000)	0.903*** (0.000)	0.379*** (0.000)	0.243*** (0.002)
Constant	1.230** (0.027)	5.333*** (0.000)	-2.762** (0.020)	-1.427 (0.257)	3.964*** (0.000)	5.433*** (0.000)
# of obs.	24	24	24	24	456	672
R-squared	0.853	0.157	0.667	0.447	0.423	0.240
# of countries	1	1	1	1	19	28
Prob > F	0	0.004	0.000	0.000	0.000	0.002

Notes: Simple OLS model is used for individual countries. Country fixed effects are added for EA-19 and EU-28 estimates.

Robust p-values are shown in parentheses, and significance at the 1% (***), 5% (**), and 10% (*) levels are indicated.

ln_Employment: natural log of quarterly total employment, thousand persons.

ln_GDP: natural log of quarterly GDP, chain linked values (2010), million units of national currency.

Source: Eurostat, data as of Apr. 7, 2017.

Lesson 3 - “Expansionary” fiscal consolidations are not so common after all; Keynesian effects of fiscal consolidation are very much alive. Keynesian multipliers are larger than previously thought, particularly when there is a synchronized slowdown and monetary policy ratios are at or near zero. Complementary policies are needed to support output revival during periods of fiscal restraint. Quick and large adjustment is even more evident.

Anti-cyclical fiscal policy turns procyclical for GIPS. All four countries undertook expansionary fiscal policy. The general government deficit to GDP ratio jumped dramatically in 2009 –ranging from just over 15% in Greece to just under 10% in Portugal, reflecting a jump in expenditures, a large decline in GDP, and a fall in revenues to GDP. Table 5a below shows that the budget deficit and particularly the primary balance in Table 5b, deteriorated substantially in the GIPS. Ireland and Spain showed the worst deterioration during 2007-09, though both had surpluses in

²³ Ireland's growth recovery in 2014, close to 5%, was impressive compared with that of the others, being more than 4-5 times greater and occurred much earlier. However, its unemployment rate continued to increase until 2013 as the link between growth and employment changed from that in the pre-crisis period.

2007. From 2009-14 (except for the case of Ireland, where the deficit rose to above 30% of GDP in 2010 due to bank recapitalization expenditures), deficits have been falling.²⁴ In structural terms (Table 5d), the total adjustment in the primary deficit during 2010-14 was 10.4 pps of GDP for Greece, 7.4 pps for Ireland, 8.7 pps for Portugal and 7.0 pps for Spain. Greece had a large adjustment and the most front-loaded one, while Spain and Portugal had slower and smaller ones. Ireland's adjustment on this measure was comparably large, but less front-loaded; also its large consolidation between 2011-2012 occurred after growth had recovered (Table 3).

TABLE 5a

General government net lending (+) or net borrowing (-) as a share of GDP (%)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Greece	-4.1	-5.5	-6.0	-7.8	-8.8	-6.2	-5.9	-6.7	-10.2	-15.2	-11.2	-10.2	-8.8	-13.0	-3.6	-7.2
Ireland	4.9	1.0	-0.3	0.4	1.3	1.6	2.8	0.3	-7.0	-13.8	-32.3	-12.6	-8.0	-5.7	-3.8	-2.3
Portugal	-3.2	-4.8	-3.3	-4.4	-6.2	-6.2	-4.3	-3.0	-3.8	-9.8	-11.2	-7.4	-5.7	-4.8	-7.2	-4.4
Spain	-1.0	-0.5	-0.4	-0.4	0.0	1.2	2.2	2.0	-4.4	-11.0	-9.4	-9.6	-10.4	-6.9	-5.9	-5.1
EA-19*	-0.3	-2.0	-2.7	-3.2	-3.0	-2.6	-1.5	-0.6	-2.2	-6.3	-6.2	-4.2	-3.7	-3.0	-2.6	-2.1
EU-28*	-	-	-2.6	-3.2	-2.9	-2.5	-1.6	-0.9	-2.4	-6.7	-6.4	-4.5	-4.3	-3.3	-3.0	-2.4

Note:* weighted average.

Source: Eurostat, data as of Feb. 12, 2016.

TABLE 5b

General government primary fiscal balance (% of GDP)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Greece	2.8	0.8	-0.5	-2.9	-4.0	-1.5	-1.5	-2.2	-5.4	-10.1	-5.4	-3.0	-3.7	-9.0	0.4
Ireland	6.8	2.4	1.0	1.6	2.4	2.6	3.8	1.3	-5.7	-11.8	-29.3	-9.2	-3.9	-1.4	0.2
Portugal	-0.2	-1.8	-0.5	-1.8	-3.6	-3.6	-1.6	-0.1	-0.7	-6.8	-8.2	-3.1	-0.8	0.0	-2.3
Spain	2.1	2.4	2.2	1.9	1.9	2.9	3.8	3.6	-2.9	-9.3	-7.5	-7.2	-7.5	-3.5	-2.5
EA-19*	3.5	1.6	0.7	0.0	0.1	0.3	1.3	2.2	0.8	-3.5	-3.4	-1.2	-0.6	-0.2	0.1
EU-28*	-	1.8	0.5	-0.3	-0.2	0.1	1.0	1.7	0.3	-4.1	-3.8	-1.6	-1.4	-0.6	-0.4

Note:* weighted average.

Source: European Commission, Annual macro-economic database, data as of Feb. 4, 2016.

Another way to look at the size of the adjustment governments made is to consider actual expenditure decisions (a policy variable), abstracting from the fall in GDP (not a policy instrument). Greece's performance is striking. During 2010-2014, real expenditures fell by 25% to a level lower than that in 2000. Only if the spike in bank related expenditures in 2010 is included does Ireland exceed this rate of decline. Without this item, Ireland's expenditures saw the lowest decline of the three and Spain's the second highest (-11.6% and -14.4% respectively).²⁵ In contrast, Portugal had an even lower decline at 8.6%. Greece also had the largest revenue decline since 2009 - another indication that its post-2009 fiscal adjustment has been very large. Portugal's deficits continue to be much higher relative to their magnitude in the pre-crisis

²⁴ The total adjustment in the budget deficit during 2010-2014 was 7.6 pp of GDP for Greece (including a decrease of 9.5 pp between 2013 and 2014), 7.2 pp for Ireland (not including recapitalization; including it makes the adjustment from 2010, 28.4 pp), 4.0 pp for Portugal (which had an increase in 2014), and 3.4 pp for Spain.

²⁵ If Ireland's adjustment is taken from the 2010 peak when expenditures rose due to bank recapitalization, it is 36% and Portugal's is 10.0%.

period and the government began running arrears in 2014.²⁶

FIGURE 5c

General government structural balance as a share of potential GDP (%)

	2010	2011	2012	2013	2014	2015
Greece	-10.2	-6.3	-0.3	1.6	1.0	0.5
Ireland	-8.9	-7.5	-6.2	-4.0	-2.7	-2.2
Portugal	-8.0	-6.2	-3.1	-2.5	-1.4	-2.0
Spain	-7.1	-6.4	-3.4	-2	-1.9	-2.9
EA-19*	-4.2	-3.6	-2.1	-1.4	-1.0	-1.0
EU-28*	-4.6	-3.8	-2.7	-1.8	-1.7	-1.6
EA-19**	-3.9	-3.6	-2.3	-1.3	-1.5	-1.4
EU-28**	-3.9	-3.6	-2.2	-1.2	-1.6	-1.8

FIGURE 5d

General government primary balance as a share of potential GDP (%)

	2010	2011	2012	2013	2014	2015
Greece	-4.4	0.9	4.8	5.6	5.0	4.3
Ireland	-5.9	-4.1	-2.1	0.2	1.3	1.0
Portugal	-5.1	-1.9	1.8	2.3	3.5	2.6
Spain	-5.2	-3.9	-0.5	1.4	1.5	0.2
EA-19*	-1.5	-0.6	0.9	1.4	1.6	1.4
EU-28*	-1.9	-0.9	0.2	0.9	0.8	0.7
EA-19**	-1.5	-0.4	0.0	0.5	0.8	0.7
EU-28**	-1.8	-1.2	0.0	0.5	0.6	0.7

Notes: * weighted average. **: median. Adjustment based on potential GDP excessive deficit procedure. Estimates start after 2014.

Source: European Commission, Annual macro-economic database, data as of Feb. 4, 2016.

TABLE 6

General government consolidated gross debt as a share of GDP (%)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Greece	104	107	105	101	103	107	104	103	109	127	146	172	159	177	179
Ireland	36	33	31	30	28	26	24	24	42	62	87	109	120	120	108
Portugal	50	53	56	59	62	67	69	68	72	84	96	111	126	129	130
Spain	58	54	51	48	45	42	39	36	39	53	60	70	85	94	99

Source: Eurostat, data as of Dec. 17, 2016.

Expansionary consolidation. What was the underlying rationale for these adjustments? In the 2008-09 crisis, policy debate centered on: (a) whether fiscal consolidations could be expansionary (non-Keynesian effects) when countries had high debt levels, market perceptions of default risk were very high, and risk premia had jumped, constraining borrowing and investment; or (b) whether fiscal consolidation would lead to such a sharp drop in output in the short term that debt sustainability could not be achieved by lowering deficits. Later, as the growth recovery stalled, the debate moved to the possibility of hysteresis and the corresponding need for fiscal stimulus to minimize effects on potential output growth. The debate on whether fiscal consolidations are expansionary is relevant to the extent that countries have a choice about the size and phasing of consolidation packages. The role of official creditors is key to supporting a fiscal adjustment that does not undermine short-term growth to such an extent that it also undermines medium-term growth prospects. However, creditors may be short sighted, governments may lack commitment, and Keynesian effects may be underestimated. In these instances, governments are required to adopt more stringent consolidation packages than might be appropriate in terms of the effect on output and employment.

²⁶ They were reduced by end 2014 and rose again in early 2015 (IMF, 2015e).

A number of empirical studies have examined the impact of fiscal consolidation episodes on private aggregate demand and thus growth (in the short and long runs), and debt sustainability. They have tried to identify conditions under which non-Keynesian effects outweigh Keynesian ones, so that consolidations are expansionary. Blanchard (1990) and Sutherland (1997) show that tax increases at high levels of government indebtedness or a sustained reduction of government expenditures may lead to higher private wealth, may lower interest rates and improve business confidence.²⁷ If fiscal consolidation is read by the private sector as a signal that the debt ratio will be permanently reduced, then their estimate of permanent disposable income rises and both temporary and permanent consumption should increase. Giavazzi et al. (2000) show that both consumption and investment may increase. For example, Giavazzi and Pagano (1990), Alesina and Ardagna (1998) among others, find a positive relation between fiscal consolidation and output growth.²⁸ The size of this wealth effect depends on whether households are liquidity constrained and on the efficiency of the financial sector. For non-Keynesian effects to dominate investment behaviour, the credibility argument must apply so that the fall in risk premia is sufficiently large to raise demand. They also contend that the monetary stance (which may take the form of a small devaluation) is critical for the expansionary impact.

Disagreement on the size of the Keynesian multiplier. The overall effects of fiscal consolidation depend on the size of the Keynesian multiplier, which may vary over time. Recent papers estimating fiscal multipliers for the four countries find substantially varying magnitudes depending on the timeframe and method used. In a recent paper, Blanchard and Leigh (2013) conclude that fiscal multipliers had been underestimated in the IMF's 2012 World Economic Outlook projections in which they had assumed a multiplier of 0.5 on average for advanced economies. The actual values were in the range of 0.9-1.7 in the post-financial recession period. Fatas and Summers (2016) find that the multipliers for the 2011 fiscal consolidations were 1.8 for Europe overall and 2 for the Eurozone members. European Commission research on the topic finds more modest multipliers between 0.5 and 0.7 for a balanced composition adjustment, although they conclude that where the private sector is liquidity constrained, multipliers tend to be larger.

Revisiting the conditions under which output multipliers are larger is important to understanding the impact of consolidation on GIPS. Among recent papers, Ilzetski et al. (2011), for a sample of 44 countries, find that the effect of changes in government consumption is small in the immediate run, but in economies with fixed exchange rates or those that are closed to trade, these multipliers are large over the long run. Baum et al. (2012) find that fiscal multipliers vary according to the business cycle, being larger in downturns. Larger values dominate when countries are in recession, when monetary policy is constrained by the zero lower bound, when there is synchronized fiscal adjustment among a group of countries, and when there is substantial economic slack.²⁹ Christiano et al. (2011) have shown that when the lower bound on the nominal interest rate is binding, multipliers can be as large as 3. Cugnasca and Rother (2015) find fiscal multipliers around 1.6 for 27 economies when interest rates were at or near the zero lower bound. In addition, a poorly functioning financial system means that demand is more dependent on current income and multipliers are larger (Eggertsson and Krugman, 2012). Fatas

²⁷ Bertola and Drazen (1993) and Perotti (1999) provide a theoretical perspective while Briotti (2005) provides an overview.

²⁸ Their analysis pertains to the short run effects of fiscal consolidation; they do not analyze the long run growth effects of fiscal policies.

²⁹ Auerbach and Gorodnichenko, 2012; Batini et al, 2012; IMF, 2012; Woodford, 2011.

and Summers (2016) also note that their estimate of the magnitude of multipliers would be boosted by the fact that the latest recession occurred when monetary policy was at the zero lower bound or exchange rate policies were not available (Euro area countries). They discuss conditions under which fiscal consolidations are self-defeating, defining a “hysteresis parameter” or the degree to which potential output changes in relation to changes in temporary output falls. The larger the value of the fiscal multiplier and the tax rate, the larger will be the loss in permanent tax revenues, and the more likely that fiscal consolidations will be self-defeating, by increasing the debt to GDP ratio. Aghion et al. (2011) find that anti-cyclical fiscal policy will boost productivity enhancing investment when firms are credit-constrained.

Moreover, recent research found that the magnitude of the Keynesian/non-Keynesian impact depends on the level of debt. When debt is high, and during a fiscal consolidation period, social transfers are found to have a negative (non-Keynesian) effect on private consumption in both the short and long runs.³⁰ Some research (e.g., Ko, 2015) indicates that the expansionary (contractionary) effect of tax reductions (increases) and expenditure increases (decreases) are muted when debt/GDP is high. Giavazzi et al. (2000) examine the experiences of OECD countries (fiscal consolidation episodes from GIPS are included) and find nonlinearities in the household response to tax increases. They find that when the public debt to income is low, an increase in taxes increases national savings (Keynesian), but when it is high, the response of national savings can be negative. They explain this by concluding that households revise their expected net lifetime income upwards and so they increase consumption.

In general, the evidence on the expansionary effect of contractions is weak (IMF, 2011) and Keynesian effects on output are found to dominate. In fact, the recent spate of fiscal consolidations are estimated to have had a persistent and even permanent negative effect on output. By all measures, the countries undertook substantial fiscal adjustments as shown in Tables 5c and 5d. Greece’s primary structural budget was in better shape than those of Ireland, Portugal or Spain in every single year and the pace of adjustment was faster during 2010-2012. The heavily front-loaded Greek adjustment, on the heels of the financial crisis, induced recession, and tightening monetary policy (the ECB raised its reference rate during this time (Figure 12a)), had all the conditions for a strong negative impact on output. Comparison with the EU and EZ averages shows the much larger adjustment the GIPS adopted. For non-Keynesian effects to be important, the fall in sovereign risk premia would have to be large enough to raise private investment. Risk premia continued to be high and monetary policy was loosened with a delay.

It is clear that fiscal adjustment of these magnitudes would have large output effects. Slower fiscal adjustment and greater openness probably partly explains better output outcomes in Ireland, Portugal and Spain. A slower adjustment would also have been easier, perhaps more politically acceptable, and thus would have strengthened market perceptions of “commitment”, encouraging investors. Also Greece’s adjustment showed “bumpiness”; a large deterioration is visible in 2013 when the other countries were showing consistent improvements. A more consistent pattern of adjustment in Greece might have been better in terms of raising confidence and reducing the eventual output cost. It is noteworthy that relative to 2007, Greece’s debt ratio when the sovereign crisis struck in 2010 had risen by 42% (similar to Portugal). In contrast,

³⁰ In the absence of consolidation episodes, the short run effect of social transfers is positive on private consumption. However, in the presence of fiscal consolidation and high debt, even the short run effect is negative.

Ireland's by 2011 had risen 357% and Spain's in 2012 had increased by 141%, but the actual levels (Table 6) were lower than Greece's in 2007. These numbers indicate that both the level and rate of increase in debt ratios matter in their impact on risk premia substantially – and countries are particularly vulnerable when global risk is high.

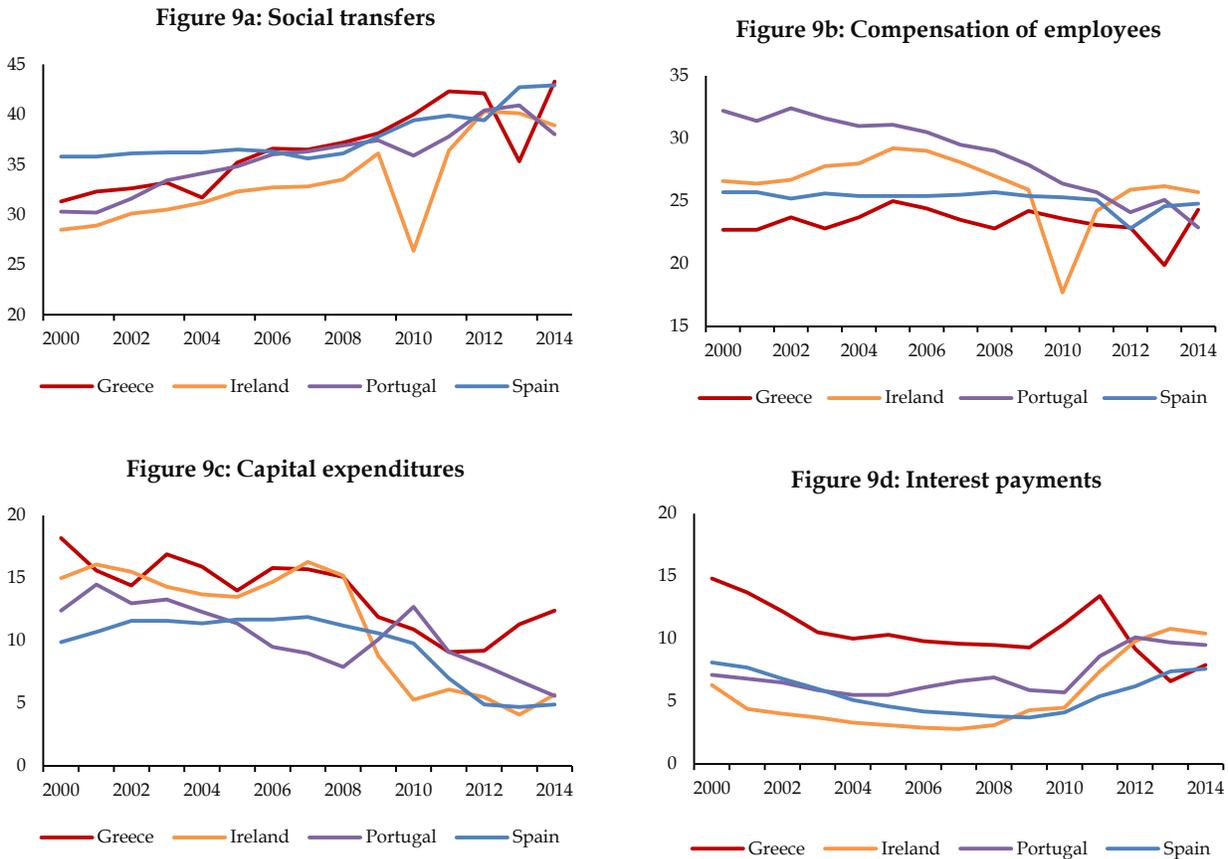
Lesson 4 - Successful fiscal consolidations are differentiated by the composition of the package. Current expenditure reductions are the most effective in minimizing output costs, cuts in public investment and increases in (labor/investment related) taxes do not minimize output/employment costs.

Changing composition of government expenditure. All four countries had the largest declines in capital expenditures, relative to social transfers, subsidies or compensation of employees. From their peaks in 2008-2010, capital expenditures fell around 60% for Ireland, Spain and Portugal, so that in 2014, both Ireland and Spain have real capital expenditures below the level supported in 2000, while Portugal's is about 46% lower. Greece also reduced capital expenditures more than other categories, by just 41%. These declines come after a period during which capital expenditures rose substantially (except in Portugal, where they increased little). In contrast to capital expenditures, social transfers have risen dramatically. These developments are remarkable in all countries; in the preceding years 2000-07, social transfers had increased by 143%, 71% and 65% in Ireland, Portugal and Spain and they increased further during the financial crisis and the onset of the sovereign debt crisis. Only in Greece, the worst hit country, have social transfers declined substantially, by 22%, since the start of the financial crisis. Ireland only had a 2.5% decline and Portugal had an increase of 3.6%. All four countries reduced compensation of public employees in the aftermath of the crises with Greece having the largest decline (over 30%) by far.³¹

Figures 9a to 9d below show the change in the composition of government expenditures over the years. Though most research finds that the multiplier effect on output is largest for capital expenditures, these are also the most likely to be cut during fiscal consolidation phases. An indication of how much fiscal flexibility the countries have lost in the crisis is provided by the much higher share of interest expenditures in Ireland, Portugal and Spain. In Greece, the share of interest expenditures rose until 2011, then fell as debt was restructured so that its share is much lower now, below the level of 2000 and comparable to that of Spain whose debt ratio is about half. In terms of its impact on the economy, however, Greece transfers 4% of GDP, as does Ireland. (Portugal transfers 5% and Spain, less.) This is another way in which the crisis has affected debt dynamics.

³¹ However, as a ratio to GDP, compensation of employees is still quite high in Greece. Note that the large dips in the 2010 ratios for Ireland reflect the fact that expenditures rose temporarily in 2010 for bank recapitalization (about 20% of GDP).

FIGURE 9
 General government expenditure: share of total general government expenditure, %



Source: Eurostat, data as of Jan. 22, 2016. ESA 2010 definitions.

Changing tax structures and rising tax rates. In an effort to reduce deficits in the face of lower tax revenues and high expenditures, GIPS' tax structures and rates have changed. . GIPS raised VAT rates, excise taxes and personal income taxes to bolster revenues, with Spain having the largest adjustment in the VAT rate and Ireland a large adjustment in the PIT over time. Ireland and Spain did not alter their corporate tax rates, but Greece and Portugal did (Figures 10a and 10b). Ireland, with a smaller government and presumably better tax collection, has much lower income and corporate tax rates than the others; its VAT rates are comparable. The Greek government reduced the corporate and personal income tax rates in 2010, only to raise them substantially as the crisis hit them later. Implicit tax rates on labour increased in all countries after 2009 (Eurostat estimation). All of them raised property taxes.

Composition affects "success" in the long term. A line of research related to the longer run impact of fiscal consolidation asks if the composition of the adjustment package (Giavazzi and Pagano, 1990, Alesina and Ardegnà 1998) stabilizes or reduces the debt ratio. Alesina and Perotti (1995) and Alesina et al. (1998) find that fiscal consolidations are more likely to stabilize the debt/GDP ratio when the budget improvement occurs through cuts in public wages and transfers, as cutting these items affects expectations. Government's efforts become more credible, signaling a regime shift. Large spending cuts on current expenditures tend to be more successful, especially if preceded by a large increase in the deficit prior to adjustment (Lambertini and Tavares, 2003).

They also find that non-successful adjustments rely mostly on public investment cuts. For the EU15 countries, Afonso (2006) finds fiscal contraction is expansionary in the long-run, if done through cuts in government consumption but not tax increases. He also finds that social transfers have a negative effect on output during fiscal consolidations in the long-run, but with debt *above* the EU threshold, social transfers have a negative effect on output both in the short and long runs, during fiscal consolidations.³² Alesina et al. (2014) find that spending cuts are less costly in terms of output losses than are tax increases, the difference being due to the responses of business confidence and investment, rather than accompanying monetary policy.³³

FIGURE 10a
Standard VAT rate (%)

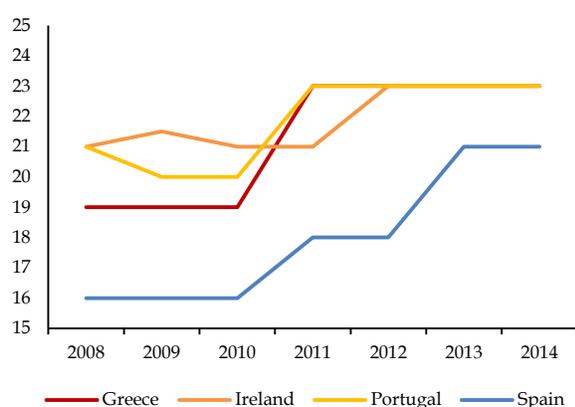
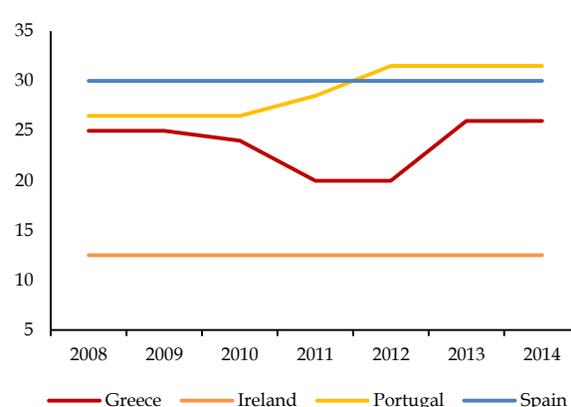


FIGURE 10b
Corporate income tax rate (%)



Source: OECD, Revenue Statistics - Comparative tables.

Lesson 5 - Supporting export growth to counter lower domestic demand during fiscal consolidations is important. But exports do not just depend on lower wages (and may not even be strongly affected by changing them). Non-wage factors (such as financial markets and the institutional/regulatory framework) may be the true constraint on exports.

Exchange rates during consolidations. During the post-sovereign debt crisis period, the role of monetary and exchange policies during fiscal consolidation came under the spotlight. Research on expansionary consolidations stresses the importance of exchange rate depreciation in promoting exports and output during fiscal consolidation. Recent IMF research (IMF, 2015d) confirms the importance of real exchange rate dynamics in this regard, but also its complementarity with other policies. It finds that globally, a 10% real effective depreciation is associated with a rise in net exports of 1.5 percent of GDP on average. However, there is substantial cross-country variation. Countries with the largest slacks in terms of the extent to which output is below potential, and those with normally functioning domestic financial sectors, should get the largest effects from real depreciation.^{34, 35}

³² The negative effect is ascribed to the non-Keynesian impact of consumers reducing spending as they expect higher taxes in the future.

³³ They cover 17 OECD countries, not including Greece, during the period 1978-2009.

³⁴ The effect varies between 0.5% and 3.1% of GDP. Their estimates refer only to the direct effects of depreciation and do not include the impact of indirect effects, such as inflation expectations and interest rate movements, domestic demand etc.

Examining fiscal adjustment in OECD countries, Lambertini and Tavares (2003) find that successful adjustments (ones where debt/GDP fall) are preceded by large nominal depreciations and that depreciations have a significant and quantitatively large impact on fiscal adjustment. Giavazzi and Pagano (1990) highlight the important role played by monetary and exchange rate policies in Denmark and Ireland in earlier fiscal consolidation episodes. In Ireland, for example, devaluation of the currency enhanced the credibility of government reforms and also boosted net exports. In Denmark, monetary/ exchange rate policy was used to enhance the credibility of government reforms as well.

GIPS did not have recourse to nominal exchange rate depreciation nor could they implement monetary/exchange policies in the timeframe, direction and magnitude needed to support their specific fiscal and economic situations. Research by Farhi et al. (2011), among others, contend that a fiscal devaluation may be used to simulate effects similar to those of an exchange rate devaluation. A fiscal devaluation is generally of two types: (a) a uniform increase in the import tariff and an export subsidy or (b) a uniform increase in the VAT with a reduction in the payroll tax. In order to mimic a full fiscal devaluation, generally an investment subsidy and a capital income tax are also needed (otherwise firms have an incentive to substitute labour for capital).³⁶ The authors do a calibration based on the features of Spain's economy in 2008, and find the fiscal devaluation to mimic a nominal devaluation in terms of welfare effects (changes in composition). The higher the wage rigidity, the larger the benefits from a fiscal devaluation whether full or incomplete, relative to no intervention.

However, none of the countries adopted this policy. Instead, the focus was on wage reductions to achieve internal devaluations. In this regard, the average annual wage fell 20% in Greece during 2009-14; Portugal and Spain had much lower declines at 7% and 6% respectively. At the same time, Greece was the only country where the minimum wage was substantially reduced. Figure 11 shows the real effective exchange rate adjustments (of which wage costs were a part) of GIPS. Ireland was back at its 2004 value by 2010. By 2012, Portugal, which had the lowest appreciation, had undone the appreciation witnessed since 2003, and Spain, by 2010, was back to the level of mid-2000s with a depreciation of 3.7%. Despite wage reductions, Greece's real exchange rate continued to appreciate the longest, and its minimum wage continued to increase, before finally depreciating 6% from 2011 to 2014. While Greece exported the least "complex" products among the four (Table 1), and substantially less than Portugal, its average annual wage and its minimum wage were both higher than that of Portugal in every year before and after the crisis. Non-wage labour costs were also higher (except in 2014) in Greece.

Movements in the real exchange rate (and wages) are not the only important factor for export growth. Not only did Ireland's real effective exchange rate adjust substantially, but other factors also supported export growth. It was the only one among the four where export financing was not substantially affected in real terms. As Figure 12a below highlights, GIPS show substantial increases in export credit during 2006 and 2007 while during 2008-09, export credits (a proxy for the availability of trade finance) fell substantially in GPS by 18% on average, and much more than for the EU28 (14% on average). Only Ireland, whose economy is dominated by

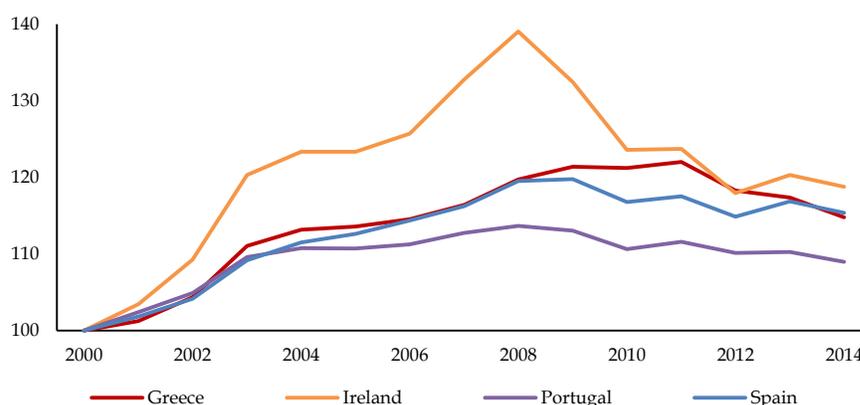
³⁵ Guajardo et al (2011) find fiscal contractions to have contractionary effects on domestic demand in OECD countries regardless of exchange rate systems. Note that this does not imply that exchange rate adjustment may not mitigate the effects.

³⁶ Depending on the circumstances, as discussed in the paper, other tax adjustments may also be needed.

multinational corporations that were presumably less affected by domestic financial market conditions, had a relatively small fall in export credits.

FIGURE 11

Real effective exchange rate (index 2000=100)



Source: IMF, International Financial Statistics, data as of Nov. 10, 2015.

The most striking differences occur in later years. During 2010-2012, at the height of the sovereign debt crisis, trade finance fell around 30% a year in dollar terms for Greece, while it fell a bit more than 1% per year in Portugal, and rose, on average, in Ireland and Spain. This dramatic decline in trade finance is probably a significant reason for Greece's worse export performance. Looking at levels compared to 2007, Greece had less than half its original value (Portugal has 30% less and Spain 20% less) in 2014. Only Ireland has more. The evolution of trade finance may also explain some of the diversification in partner countries. Following the 2009 and 2010 crises, the share of Greece's exports going to Turkey rose and Bulgaria, Italy, Cyprus and Germany were in the top five. The US and UK shares dropped substantially. In contrast, both Portugal and Spain maintained their top five destinations (each being in the other's top 5 countries with banking sector links) and exports to the UK were maintained (for Spain, the USA followed closely). The US, UK and Belgium remained the strongest export destinations for Ireland.³⁷

Another factor that explains Greece's relatively worse export performance is its weaker institutions and substantial deterioration post-2009. Figure 12b shows one measure of weakening institutional quality for the GIPS. Bower et al (2014), using a rich data set of exports of goods and services, find that Greece exports 33% less than what would be predicted on the basis of Greek GDP, the size of its trading partners and geographical distances, due to its institutional quality. Mitsopoulous and Pelagidis (2014) conclude that oligopolistic market structures are the main factors holding back growth/exports, not wages.³⁸ Also new policy risks overcame gains from lower wages. For example, Greece had to raise excise taxes on energy

³⁷ The US and UK also provided more wholesale/arms-length financing- a source more likely to dry up in risky times. There were/are Greek banks in Bulgaria and Turkey. Some Greek banks have subsidiaries in Cyprus and Germany. There are many Greek firms in Bulgaria. Since 2009, about 10,000 Greek companies have moved to Bulgaria.

³⁸ Greek wages in competitive tradable sectors such as food and manufacturing are much lower than in state-controlled sectors such as electricity production or water utilities and that there is rent-seeking,

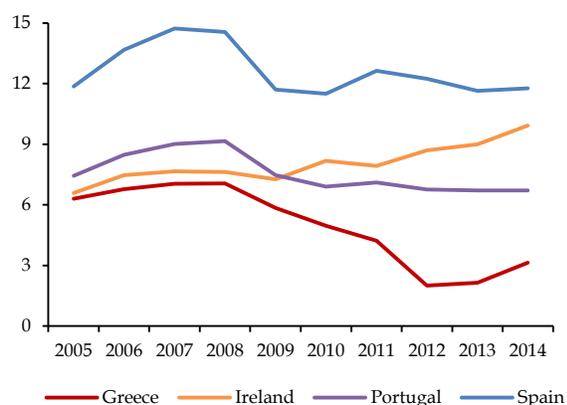
substantially, so that industry in Greece had to pay 80% more for energy than companies pay in other EU countries, while the path of further fiscal reforms was not certain. Portugal and Spain also saw deterioration in institutional quality.

Lesson 6 - Monetary policy's impact on output is stronger than originally envisaged and central banks have many tools. In crisis- recovery periods, monetary policy should (consistently) focus on output growth. It is better to overshoot and incur inflation costs than to undershoot and incur long-term output costs, especially when fiscal policy is tightened.

Monetary policy: a slow awakening, delaying recovery. The ECB's primary mandate is price stability.³⁹ The main tool through which the ECB traditionally conducted monetary policy was the refinancing rate it charged banks on short-term loans, though like other central banks in 2008/2009, it also changed the size and composition of its balance sheet through direct interventions.

FIGURE 12a

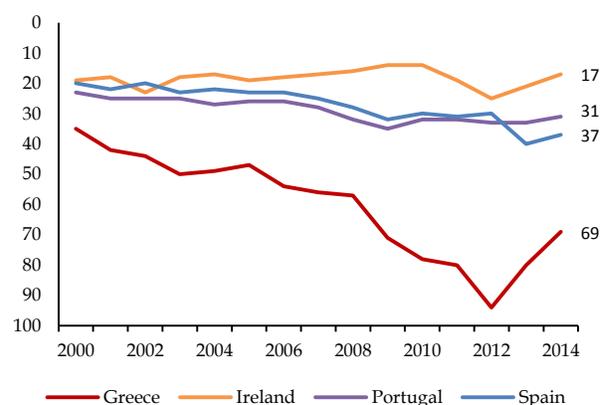
*Insured export credit
(constant 2005 euros)*



Note: Values for Spain are on the right axis.
Source: Berne Union via Joint BIS-OECD-IMF-WB External Debt Hub, data as of Apr. 18, 2016.

FIGURE 12b

Institutional quality: corruption



Note: Corruption perception index.
Source: Transparency International.

However, after the 2008-09 crisis, Fed and ECB policies diverged. ECB policy was relatively tight in comparison (Figures 13a and 13b). In 2010, in response to the sovereign debt crisis, the ECB launched its Securities Market Programme (SMP) and the European Financial Stability Facility was announced by the European Council. SMP purchases began in 2010, and were mostly effected during May 2010 and end 2011- the period when GIP were under stress. However, SMP purchases were sterilized to avoid the risk of inflation, and between January and August 2011, they were put on hold.⁴⁰ The ECB monetary base did not increase for a year -

³⁹ In contrast, the Fed has an explicit dual mandate: price stability and full employment. The Fed has also had a wide range of supervisory and regulatory powers over financial institutions and activities.

http://www.federalreserve.gov/pf/pdf/pf_5.pdf

⁴⁰ There was some disagreement among members about the programme; Panico and Purificato (2013) conclude that the ECB did not do enough to indicate commitment to member countries.

between July 2010 and July 2011- even though the sovereign debt crisis had begun. The Fed's balance sheet expanded much faster than the ECB's until end-2011. Though its reference rate was already higher than that of the US Fed, the BOJ or the BOE (Figure 13a), the ECB raised its reference rate twice (Rodriguez and Carrasco, 2014), effectively tightening monetary policy. This happened despite growth remaining elusive and unemployment high in Europe, particularly in the periphery countries.

Around the same time, in Oct. 2011, European heads of state and governments announced that Eurozone banks would have to meet a 9% regulatory capital ratio (Micossi, 2015). Eurozone banks were now required to raise their regulatory capital at the same time as monetary policy was being tightened⁴¹. Dagher et al., (2016) find that transitioning to higher capital standards can have significant costs in terms of reduced lending volumes. To counter the added stress, the ECB reduced reserve requirements (from 2% to 1%) and, announced another CBPP, the 36 month Long-Term Refinancing Operations (VLTRO). Yet, market perceptions of risk remained high⁴². Market risk perceptions responded when the ECB publicly reaffirmed its commitment towards the Eurozone countries and the system.

Finally: quantitative easing, then negative interest rates. From end-2013 onwards, the ECB faced a new problem: deflation. Even though financial market tensions had abated somewhat by 2013, banks did not use the additional cash to lend. To counter potential deflation, the ECB adopted new measures. For the first time, in mid-2013, it began giving forward guidance to markets and it cut its reference rate, and interest rates were negative by the latter half of 2014. By January of 2015, the ECB had launched its €60 billion of quantitative easing (QE) per month, buying private and government securities.

In comparison with the central banks of the other major financial markets, the ECB was slower to act and did not signal its commitment as lender of last resort support (Panico and Purificato, 2013), even though the financial crisis, recession and the sovereign debt crisis had successively cast severe blows to the countries. Negative assessments regarding supranational authorities' commitment, and their delay in adoption of a consistent and comprehensive framework in times of market stress meant that risk premia remained high.

Theoretically and empirically, the effectiveness of monetary policy in raising output during recessions has been re-examined during the crisis. For example, Aghion et al. (2012) show how monetary policy anti-cyclicality has a positive and significant impact on labor productivity when industry is credit- constrained⁴³. A recent report, Ball et al. (2016), assesses past theories and recent empirical evidence on the tools available to central banks and their effectiveness, concluding that central banks are effective in raising aggregate demand (even in the presence of deleveraging), and easing credit supply. Both the bank credit channel and the bond market/risk premia channels (portfolio balance channel) are important for output recovery. Romer and

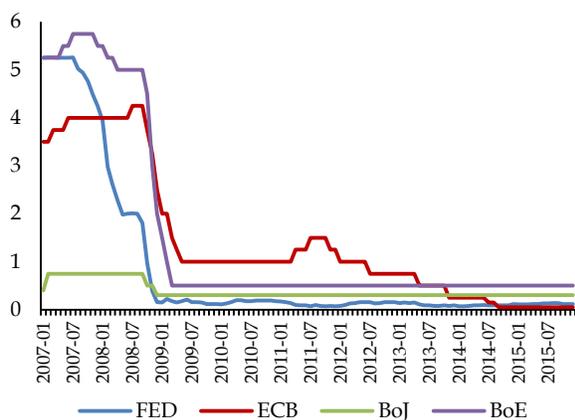
⁴¹ Micossi (2015). The increased capital requirements amounted to about €100 billion.

⁴² The Outright Monetary Transactions -OMT- were finally announced in September 2012 to replace the SMP, but were delayed in implementation due to disagreement among members. The OMT was designed such that the ECB would only purchase sovereign bonds of those who had aid from the ESM and abided by its conditions. It targeted short-term bonds and was held up because Germany challenged this policy as monetary financing of sovereigns to which it was opposed.

⁴³ The large literature on monetary policy non-neutrality is not considered here, but rather its impact on financial markets through the credit channel.

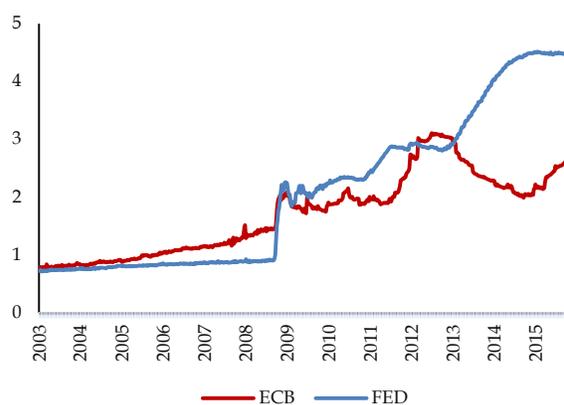
Romer (2013) demonstrate that it is dangerous to assume that monetary policy is not effective and should not be used.

FIGURE 13a
Official interest rates (%)



Notes: Weekly data as of Dec. 9, 2015.
 FED: FED, Federal funds (effective) rate
 ECB: European Central Bank, Main refinancing operations interest rate
 BoJ: Bank of Japan, Basic discount rate and basic loan rate
 BoE: Bank of England, Official bank rate
 Source: ECB and Federal Reserve Bank of St. Louis.

FIGURE 13b
Balance sheets, FED and ECB
(trillions of dollars or euros)



Source: FED, ECB, BoJ, BoE, data as of Jan. 7, 2016.

Lesson 7 - Monetary policy is only as good as the transmission mechanism. Structural features of financial markets and/or incomplete restructuring of balance sheets of firms, households and banks. Many reduce the intended impact of monetary policy.

Monetary policy’s ability to stimulate demand and manage inflation depends on the structure and incentives in the financial system as well as in the economy at large. Structural factors in the financial system include the degree of market competition or, the extent of information asymmetries, economic volatility and risk preferences, credit risk in the economy, the structure of the economy and property rights, or on the consumer side, costs for bank switching.⁴⁴ They also include household preferences or the financial health of lenders and borrowers. In a study of interest rate pass through in Portugal, Rocha (2012) finds that there is incomplete long run pass-through from interbank rates (an indicator of the monetary policy stance) to corporate lending rates in the long run.

The ECB, studying the four largest euro area countries, France, Germany, Italy and Spain, has also found that policy rate cuts since late 2011 have broadly lowered interest rates to NFCs in France and Germany, but the pass-through has been much less in the other two countries studied, Spain and Italy. This is in contrast to the situation in 2008-09 when bank lending rates in these countries tracked the ECB’s main refinancing rate closely. A recent study of the

⁴⁴ More competitive financial sectors, alternative sources of finance, good enforcement procedures, and good growth prospects would reduce lending rates.

Portuguese experience (Iyer et al, 2014) finds that banks that were more stressed tended to hoard the additional liquidity provided by the ECB (Acharya et al 2011, 2012). During the freeze of the European interbank market, banks that relied more on interbank borrowing before the crisis decreased their credit supply, particularly towards smaller and younger firms with weaker banking relationships (as measured by credit volume before the crisis).⁴⁵ They also find that this period of bank illiquidity had a stronger effect on credit supply in banks that had a higher ratio of non-performing loans. In a study of US banks, Santos (2011) found that loan spreads increased more for banks with larger losses and those, which faced higher capital requirements. Another study (Di Maggio et al, 2016) demonstrates that the transmission of unconventional monetary policy depends critically on the assets purchased and on the segmentation of asset markets. For example, significant purchases of certain mortgage classes increased mortgage originations in that class. Moreover, there were important complementarities between monetary policy and macro prudential housing policy. These experiences indicate that policy makers must actively address structural aspects of a country's financial and economic systems at the same time as monetary policy is changed in order to maximize the intended effect of monetary policy (see also discussion below).

Lesson 8 - Stabilization of large financial institutions and of public finances is only the first step in crisis recovery. Active restructuring of large and small creditors and borrowers is needed. The condition of smaller firms and households may be collectively significant at the macroeconomic level and matter for the speed of recovery.

Active stabilization and smaller financial sectors. Since 2008-09, Ireland has restructured, recapitalized and downsized its domestic banks, liquidating the banks that were insolvent so that domestic banking sector assets fell from 305% of GDP at end-2009 to 138% of GDP in 2014. At the same time, foreign banking fell dramatically in Ireland - deposit money banks' assets fell from 485% of GDP in 2009 to 128% in 2014. Ireland's public debt ratio jumped as the government recapitalized banks.⁴⁶ Greece lost most of its foreign banking - these assets fell from 44% to 6% of GDP. The decline in foreign banking was lower in Spain and Portugal and the sector was small to begin with (fell from 30% of GDP to 22%, and from 62% to 51% respectively).

Financial sectors still need help. In Ireland, nonperforming loans were around 25% in 2014. Ireland's deterioration was dramatic as in 2007 it had an NPL ratio of 0.6.⁴⁷ Banks had yet to restructure their household and SME debt, which at end-2013 accounted for 60% of the NPL stock. Greece's banks were in the worst position when considering the ratio of nonperforming loans- estimated at over 34% in 2014, rising from 4.6% in 2007. Gross NPLs in GIPS are shown in Figure 14. High as they are, NPLs on the books are not the whole story. Table 7 shows Gross Nonperforming Exposure, a measure that includes both on and off balance sheet liabilities (not considering the impact of collateral, which would reduce net exposure).⁴⁸ Among the countries listed, Ireland and Greece are in the most vulnerable position after Cyprus. Of particular note is the fact that Greece is the only one among the four where retail (including household debt)

⁴⁵ A 10% higher interbank borrowing before the crisis leads to a further 4% reduction in firm credit availability during the crisis.

⁴⁶ The non-bank financial sector, the largest in Ireland, also collapsed.

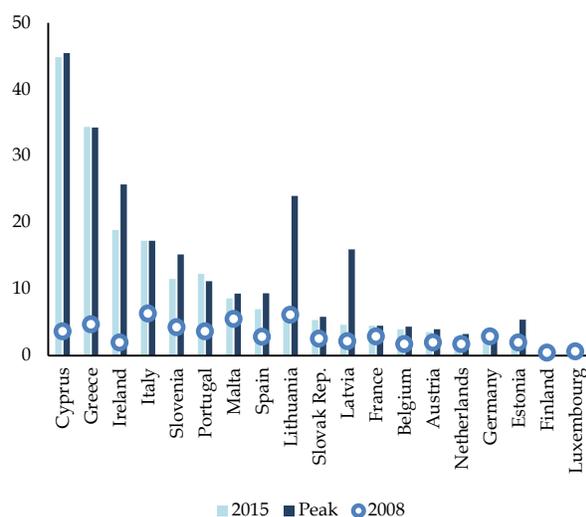
⁴⁷ IMF (2015f).

⁴⁸ The NPL data are reported on a consolidated basis for banking groups and include the value of collateral; the NPE data use locational data on impaired loan exposures and are weighted by total assets.

NPLs are higher than corporate ones.⁴⁹ Portugal (under 12% NPLs) and Spain (under 10%) have also seen very large increases since the crisis and are also above the median in terms of the NPL ratio.

FIGURE 14

Gross NPLs, 2008-2015
(% of total loans)



Notes: 2015 values are used for all countries, except for France (2013) and Finland (2012), Italy (2014), Germany (2014) and Luxembourg (2014).

Source: Aiyar et al, 2015.

TABLE 7

Gross Nonperforming Exposure (NPE)
(asset-weighted average; % of total assets, 2014)

	Total	Corporate	Retail	% of GDP
Ireland	32.2	50.2	21.7	40.9
Greece	25.3	23.2	26.9	25.4
Spain	12.2	18.8	6.8	9.1
Portugal	7.9	11.1	5.7	7.3
Belgium	3.4	5.1	2.4	2.3
France	3.2	2.9	3.4	2.7
Finland	1.7	1.8	1.6	0.9

Source: IMF, Global Financial Stability Report and Financial Soundness Indicators.

Despite the banking union, about 3,500 banks remain supervised by national authorities. A recent study (Mody and Wolff, 2015) found that small and medium sized banks holding about half of the euro area's assets could be a significant source of systemic instability in case of a negative shock in GDP. Bebchuk and Goldstein (2009) and Dagher et al. (2016) find that the level and distribution of capital across the whole banking sector has real effects on overall lending and the macro economy, particularly when there are externalities and informational asymmetries that prevent credit reallocation leading to self-fulfilling equilibria. Banks' lending practices are influenced by their expectations of overall banking behaviour. For example, if large banks expect overall lending to be lower because of deteriorating financial conditions in smaller banks, and estimate that this will affect overall economic conditions, they will also reduce lending, exacerbating the situation further (Acharya et al., 2012). Thus, smaller banks, left unresolved, can increase risk premia in financial markets and have real effects on the economy. Domestic credit to the private sector as a ratio of GDP fell in all countries during 2009-14 except in Greece where the decline in GDP was faster.⁵⁰ However, banking credit indicators do not tell the whole story.⁵¹ While net credit growth may be negative for large

⁴⁹ This is also true for some other EU countries, but the ratio in Greece is a multiple of these other countries' ratios.

⁵⁰ Typically credit growth is expected to lag the recovery in economic activity, even though narrower monetary aggregates may recover.

⁵¹ In Spain, for example, overall credit was still declining (IMF, 2015c) in 2014, but the pace has slowed and new credit is being extended outside real estate and construction.

segments of the population, there is diversity among banks, firms and individuals (see below). Some firms borrow directly from international capital markets, though capital market financing, particularly debt financing is generally limited to a small subset of firms in each country.⁵² Distressed domestic markets have ended up constraining those firms that are less likely to get credit on international markets (EC, 2015).⁵³

Credit access, non-financial firm size and real effects. The decline of the banking sector and associated credit crunch tends to have a disproportionate effect on smaller and younger firms. In Germany and Ireland, they account for half of value-added and in Italy, Spain and Portugal, more than 65%. The ECB has found that short-term lending rates (spreads) for loans to SMEs⁵⁴ increased relative to other loans after the onset of crisis.⁵⁵ Younger and smaller firms in Portugal, which also tended to be the more entrepreneurial ones were unable to substitute credit and faced a credit constraint, unlike larger firms (Iyer et al., 2014). Balduzzi et al. (2013), in a study of the 2008-09 US-led financial crisis and the 2011 sovereign debt crises period, find that in Italy higher funding costs for banks meant that young and small client firms faced higher borrowing costs, borrowed and invested less, and hired fewer workers. At the aggregate level, they find that the 2008 crisis, and especially the 2011 crisis, led to sizable reductions in not just the level, but also the allocative efficiency of capital accumulation and employment growth (see also Riley et al., 2015 and Caballero et al., 2008, for the UK). Santos (2011) shows loan spreads increased more for borrowers that were bank-dependent, than for those that were not dependent on them. Moreover, loans made during the crisis period were to larger firms on average.

Delay in resolution has high costs, as high NPL ratios tend to constrain the monetary policy transmission mechanism, and credit supply conditions remain tight. A recent study of low productivity growth in the UK cites bank forbearance as a channel by which delayed financial sector restructuring may distort resource allocation between firms (see also Caballero et al, 2008) and dampen the productivity enhancing effects of job reallocation (Riley et al, 2015). Policy focus on resolution is needed. A new IMF report assessing the constraints to NPL resolution found that poor supervision, legal obstacles and distressed debt markets all contribute to slow resolution of problem loans (Aiyar et al, 2015).⁵⁶ The study found that NPL resolution could lead to a substantial increase in loanable funds. In fact, they estimate that loanable funds could have increased as much as 10% of GDP for Greece, and 9% for Ireland. The analysis assumed a 5% haircut due to factors such as the effectiveness of debt enforcement and the rate of return demanded by distressed debt investors, among other things. However, if these costs are very high, NPL resolution may not mean an increase in funds. Institutional reforms are critical to reduce the cost of NPL resolution.

⁵² Didier et al (2015), show that in the median country, only about 20 listed firms per year issue securities in either their domestic capital market or in an international financial center. Moreover, the median equity issuing firm is twice as large as the median non-equity issuing firm and the median bond issuing firm is more than 36 times as large as the median non issuing firm. Of the few debt and equity issuers, the top five firms receive 66% of the funds raised through bonds and over 77% of the funds raised through equity.

⁵³ For example, SMEs in Spain (for loans below € 1 million) since end 2013.

⁵⁴ They use the category of small loans (up to 1 million euros to approximate for loans to SMEs).

⁵⁵ They also find that as firms become larger, banks become less important.

⁵⁶ They find that in the EU, NPLs stood at over 9% of the region's GDP at end-2014, more than double the level of 2009.

TABLE 8

Debt of households as a percentage of net disposable income (%)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Greece	33	38	44	48	55	67	74	83	87	88	105	112	120	122	115	-
Ireland	-	111	126	147	170	201	226	236	232	241	237	236	229	225	207	-
Portugal	107	118	122	124	127	136	141	146	149	151	154	145	144	140	141	138
Spain	84	87	94	102	114	128	144	154	150	145	148	142	141	134	127	-

Notes: Includes non-profit institutions serving households.

Source: OECD, Financial Indicators, data as of May 17, 2016.

The demand for credit: private sector debt; firm and household perspectives. High debt and high NPL ratios have also adversely affected the demand for credit. Over-indebted firms' and households' portfolios worsened as GDP and prices fell in the wake of the financial and sovereign crises. In the pre-crisis period, all countries had large increases in private debt/GDP ratios as credit growth boomed faster than GDP growth. Household net debt to disposable income ratios were very high (Table 8), peaking at 241% in Ireland and 154% in Spain in 2009. In Greece, this ratio increased three-fold by 2010 and is now around 4 times its level in 2000. The condition of household balance sheets affected the intensity and duration of the macroeconomic impact of the crisis. For all countries except Ireland, the increase in household credit was larger than the increase in credit to nonfinancial corporations. In the case of Greece, the difference is striking, as credit to households grew twice as fast as credit to corporations⁵⁷ and Greece was the country with the fastest increase in construction. In 2007, Greece and Portugal had around 45% of the stock of total credit with households, with Ireland and Spain close behind.

Lesson 9 - The relationship between finance, innovation and productivity is complex. Also, who borrows, and how much, matter for growth composition and stability.

A complex relationship between finance, productivity growth and innovation. New research is reassessing the impact of financial sector growth on productivity and GDP growth. One main theme is that financial system growth contributes to growth, but up to a point and/ or under certain conditions. Easterly et al. (2000), and Islam (2016) among others show that large financial systems may increase growth volatility. Arcand et al. (2012) find a nonlinear impact of banking depth on growth, as banking depth increases to very high levels, the additional impact on growth becomes weaker. Other research has found that when private credit outstanding exceeds 110 percent of GDP, the marginal effect of additional financial sector deepening on economic activity becomes negative, both at the economy and industry level. Cecchetti and Kharroubi (2012) show that when private credit grows to the point where it exceeds GDP growth, it becomes a drag on productivity growth. They also show that where the financial sector represents more than 3.5% of total employment, further increases in financial sector size tend to be detrimental to growth. In their empirical work on advanced countries covering the past three decades, they find that compared with a situation where the financial sector's share in employment is stable, financial booms (employment growth of 1.6% per year) reduce growth in aggregate GDP per worker by roughly one half of 1 pp. The authors claim that during 1995-99, for example, the Irish financial sector's share in total employment (3.84%) was near the maximizing value, but rose to more than 5% in the next five years. They estimate that Irish

⁵⁷ In Portugal the number was 16 pp higher and in Spain, 10 pp higher.

trend GDP per worker growth could have been as much as 0.4pp higher over the past decade, if employment growth had been slower in finance. They also estimate that had financial sector employment been constant in Ireland and Spain, during the five years, beginning in 2005, the decline in Ireland's GDP would have been 1.4pp lower and in Spain, 0.6pp lower during the crisis.

The reasons that researchers have given for the negative correlation between too fast financial sector growth and productivity growth are instructive. Cecchetti and Kharroubi (2015) examine two reasons: the disproportionate benefit given to low productivity/high collateral sectors by banks and the possible misallocation of resources such as skilled labor. They contend that high productivity sectors tend to be more innovative (and more risky sectors); thus, projects in these sectors tend to have higher collateral risk. When funding costs are low, entrepreneurs have an incentive to invest in projects with higher pledgeability but lower productivity because expected net returns can be maintained at lower interest rates by taking on lower return but lower risk projects, reducing their demand for skilled labor. Entrepreneurs that hire skilled labor tend to invest more in low pledgeability and high return projects (often with more R&D). Recent research by Benigno et al. (2015) finds that the shares of employment in both investment and manufacturing drop during periods of large capital inflows and credit growth. The reallocation of labor occurs especially swiftly during episodes that begin when international liquidity, proxied by low US interest rates, is high. Spain is cited as a typical economy that demonstrates this phenomenon.

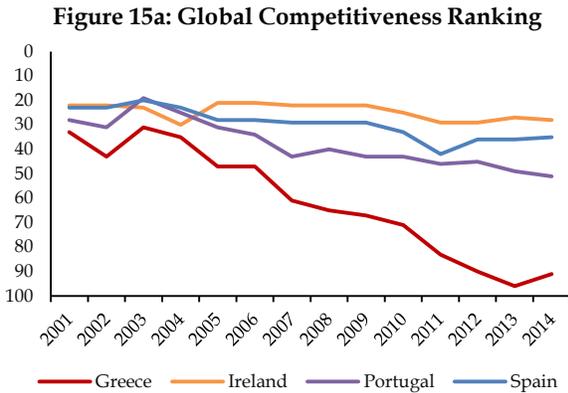
It may also matter who borrows at the country level. Another branch of research (Angeles, 2015) finds that credit expansion to households is not associated with growth. Fast credit growth to the household sector is more likely to beget financial crises. Credit expansion to households tends to encourage consumption or investment in real estate; at the same time, savings may decline as liquidity constraints fall. Islam (2017) finds that manufacturing sector growth is adversely affected by increases in the relative importance of household credit. Household credit ratios are positively associated with trade deficits and lower export shares to GDP. IMF (2006) also warns against the current account impacts of household credit expansion and the risks associated with household debt during downturns. IMF (2011) establishes links between asset market booms and busts and household mortgage credit growth with the two reinforcing each other.

Lesson 10 - Countries with better structural indicators and more flexible economies recover faster from recession because resources reallocate faster and creditor perceptions are more favorable. Structural reforms to make markets more flexible during or in the immediate aftermath of a downturn can have unexpected effects. Falling real wages, rising unemployment, and household deleveraging during fiscal consolidation aggravate declines in domestic demand and worsen the downturn.

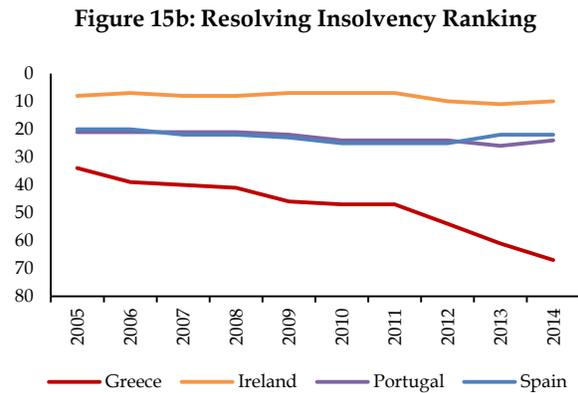
Business climate and governance: when policy, institutions and perceptions follow each other. Ireland has always had the best business climate and governance performance, and Greece the worst. Portugal and Spain fall in between and their performances mirror each other's. Figures 15a-d show GIPS's most recent global competitiveness ranking (GCR) and other related measures. The evolution of these indicators provides insight on outcomes. Greece's performance is 3 times worse in the GCR in 2012-2014 than it was at the beginning of the decade (Figure 15a). On almost all measures of institutional quality (Figures 15b- d), such as government effectiveness, rule of law, regulatory quality, the strength of auditing and accounting, resolving insolvency

and, in particular, corruption, Greece shows a widening difference with the other countries and a much worse deterioration. Table 9 below shows how GIPS compare with other countries at similar or lower GDP per capita. Portugal outperforms Greece, despite being poorer.

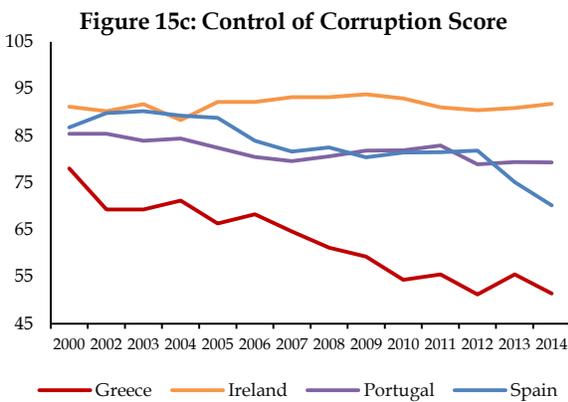
FIGURE 15



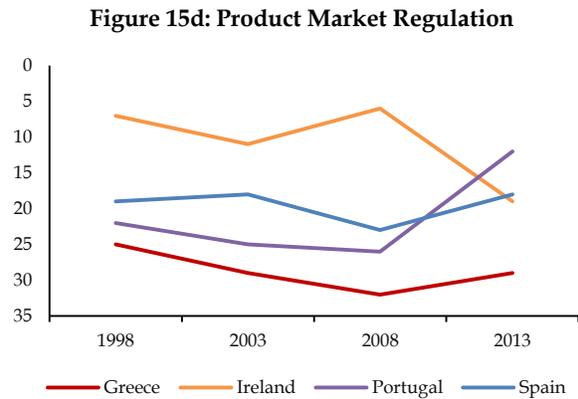
Source: World Economic Forum, Global Competitiveness Reports.



Note: Higher rank means less cumbersome regulation.
Source: The World Bank, Ease of Doing Business Database.



Note: Percentile rankings (0 lowest rank, 100 best performance)
Source: The World Bank, Worldwide Governance Indicators.



Note: Among 34 OECD members, higher rank (lower number) means less regulation.
Source: OECD

TABLE 9
GDP per capita and governance

	GDP per capita (constant 2010 US\$)		Control of corruption*		Global competitiveness rank		Doing business rank	
	2007	2014	2007	2014	2007	2014	2007	2014
Ireland	53,975	52,257	93	92	22	25	10	15
Austria	47,243	47,645	96	90	18	21	30	30
France	41,699	41,050	92	88	15	23	35	38
Spain	32,462	29,595	82	70	29	35	39	52
Greece	30,057	22,558	65	51	61	91	109	72
Israel	29,634	32,673	76	76	14	27	26	35
Slovenia	24,675	23,247	81	75	40	62	61	33
Portugal	22,819	21,537	80	79	43	51	40	31
Korea, Rep.	20,421	24,479	73	70	23	25	23	7
Estonia	17,595	14,540	79	88	26	32	17	22
Slovak Rep.	15,827	17,883	67	60	36	78	36	49
Croatia	14,480	13,539	59	62	56	75	124	89
Hungary	13,629	13,933	73	61	38	63	66	54

Notes : *Percentile Rank (0 lowest rank, 100 highest rank).

Source: The World Bank; World Development Indicators, Worldwide Governance Indicators, Global Competitiveness Dataset, Doing Business Reports.

Changing labor market regulation. Overall labor market regulation ranking, which had deteriorated for GPS, showed improvements in Portugal and Spain. Ireland started off with better rankings and recovered the fastest. Notably, Ireland and Greece, very different on many regulatory and institutional counts, were both above (Greece diverged from Portugal and Spain in 2009) the other two in terms of the ease of hiring and firing workers. Surprisingly, even before the 2008 crisis, Greece and Ireland cut their severance pay requirements dramatically – it was not until 2012 that Portugal and Spain reduced theirs (Portugal’s very high severance pay may explain the poor performance of employment even before the crisis). On all other rankings, Greece had the lowest rank among the four. The period 2012-2014 shows continuing adjustment. All four countries made labor market adjustment easier by allowing firms to fire workers at low cost. Combined with large declines in wages in Greece, these changes, unsurprisingly, had long-lived effects on the economy. Employment losses have been large.

Lower real wages. In terms of wages, Greece stands out in relation to the others, having a 21% decline in the minimum wage (Table 10a) and a 20% decline in the average wage during 2009-2014. Greece’s real wage levels are now at their 2000 levels. Portugal and Spain increased protection for the lower income earners and had increases in their minimum wages (while the average real wage fell around 7%). Ireland was different in that both were relatively stable (the real wage declined only 1.5%). Lower labour costs were not reflected in higher employment, but rather in compressed consumption, particularly as households deleveraged. The consumption dampening effect of internal devaluation was underestimated. Barkbu et al. (2012) note that internal devaluations usually end up in drawn out recessions.

TABLE 10a

Monthly minimum wages, euro

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Greece	540	552	582	607	631	668	710	768	794	863	863	877	684	684	684	684
Ireland	945	1009	1009	1073	1183	1293	1293	1462	1462	1462	1462	1462	1462	1462	1462	1462
Portugal	371	390	406	416	426	437	450	470	497	525	554	566	566	566	566	589
Spain	496	506	516	526	573	599	631	666	700	728	739	748	748	753	753	757
EU-28*	476	511	526	541	569	593	611	655	667	681	698	709	719	733	751	807

Notes:* Simple averages of EU member states excluding Austria, Cyprus, Finland, Denmark, Italy, and Sweden.

Source: Eurostat, data as of Oct. 9, 2015.

TABLE 10b

Non-wage labor cost as a share of total labor cost (%)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Greece	38.2	39.3	39.9	41.4	41.2	42.3	42.1	41.5	41.3	40.1	43.2	42.9	41.6	40.4
Ireland	25.9	24.4	24.4	24.1	23.5	23.0	22.2	22.3	24.7	25.8	25.8	25.9	27.1	28.2
Portugal	36.4	37.6	37.4	37.4	36.8	37.5	37.3	36.9	36.5	37.1	38.0	37.6	41.4	41.2
Spain	38.9	39.1	38.6	38.8	39.0	39.1	39.0	38.0	38.3	39.7	40.0	40.6	40.7	40.7
EU-28*	42.9	42.7	42.7	42.8	40.7	40.6	40.4	40.9	40.5	40.4	40.9	41.1	41.0	41.0

Notes:* Simple average.

Source: Joint European Commission-OECD project, Tax & benefits indicators database.

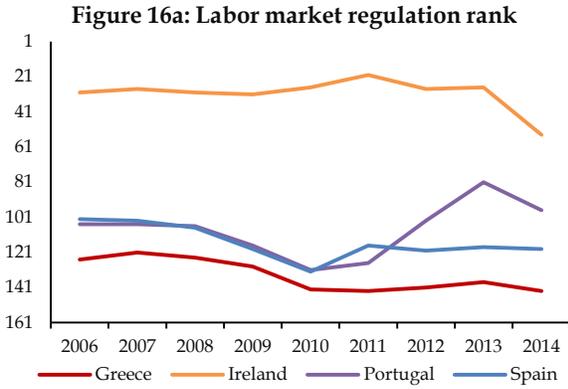
Lesson 11 - The short term affects the long term. Labor and product market reforms are effective when they reduce the length of time that resources remain unemployed or underused.

Large losses in employment, lower labour intensity of GDP. Employment between 2008-2014 has fallen 18% for Greece, followed closely by Spain at 16%. Portugal and Ireland have had 11 and 9 percent declines in these six years. As Table 4 Shows the relationship between growth and employment seems to have changed in at least three of the countries. It is significantly weaker in Ireland, where growth has been the strongest and significantly stronger in Portugal, where recession has been mirrored in much larger employment losses than might have been expected given the growth-employment relationship of the pre-crisis years. The lower demand for labor has been the result of a slow growth recovery, and expectations of more of the same.

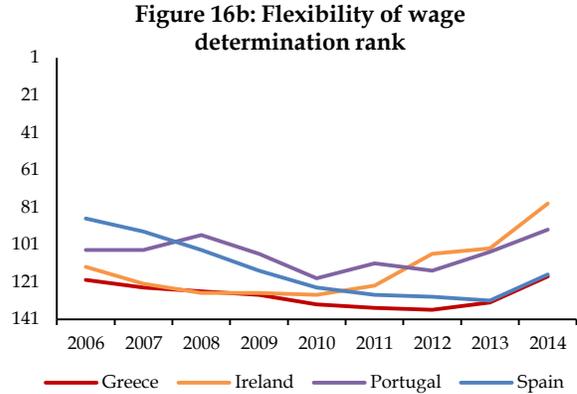
Recent research by the IMF addresses the impact of structural reforms in different economic contexts (IMF, 2016a). They contend that the degree of slack in the economy should influence the choice of policy; job protection reforms (making it easier to sack people) can promote employment and output in good times, but further unemployment and output loss in bad times. In addition, together with wage declines, such reforms during fiscal contractions can be self-defeating by depressing demand and output (and raising debt ratios). Recent research also concludes (IMF, 2016b) that the larger a country's output gap, the more policy should prioritize growth in the short and long runs. While the IMF focusses on infrastructure investment and product market deregulation, this recipe holds for monetary and other structural policies/regulations. Poor performance on business climate/institutional indicators is likely to

have a negative impact on growth (Olson et al, 2000).⁵⁸

FIGURE 16



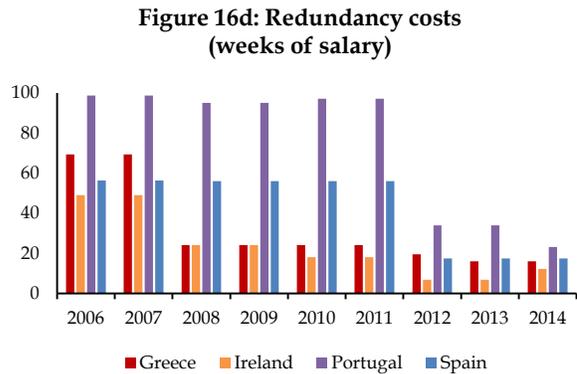
Notes: Higher rank means less regulation. 1= most flexible.
Source: Fraser Institute, Economic Freedom of the World Database.



Source: World Economic Forum, Global Competitiveness Index.



Source: World Economic Forum, Global Competitiveness Index.



Notes: Redundancy costs measure the costs of advance notice requirements, severance payments and penalties due when terminating a redundant worker, expressed in weeks of salary.
Source: World Economic Forum, Global Competitiveness Index.

⁵⁸ Note that some of these indicators being “subjective” partly reflects worsening of perceptions than worsening on the ground.

The long term cost of unemployment. Blanchard et al (2015) looking at 122 recessions over the past 50 years in 23 countries find that, for two-thirds of the cases, recessions have been followed by lower output relative to trend and even lower growth in many cases. They contend that the probability of hysteresis argues for more aggressively expansionary monetary and fiscal policies during downturns. They also find that the elasticity of inflation with respect to the unemployment rate has increased over time, in the aftermath of crises. The implication of this change would be that monetary policy should put more emphasis on the unemployment gap rather than on inflation as the focus on inflation becomes more costly in terms of foregone output. Benigno and Fornaro (2015) show that innovation falls during recessions.

Other studies suggest that financial crises can permanently reduce potential output by 1.5-4%, though per capita growth can eventually return to the pre-crisis rate (e.g. Furceri and Mourougane, 2009). However, the time it takes to return to the previous path is uncertain and empirical studies find that capital and employment suffer enduring losses relative to trend. For example, in the countries they analyze, EC (2009) find that employment does not recover even after 10 years. Policy matters in this regard. Fatas and Summers (2016) find that the global financial crisis has permanently lowered the path of GDP in all advanced countries.

Further, the policy responses were not appropriate in that strong hysteresis effects of fiscal consolidation have likely led to a long-term negative effect on output, particularly for Euro area countries. For their group of advanced economies, they contend that every 1% fiscal policy induced decline in GDP during 2010-2011 has meant a 1% decline in potential output by 2015 and even more by 2021. Long recessions and slow recoveries lead to persistent short run dynamics that leave large effects on permanent output- in the aftermath of these recessions, these affects are seen both because of sustained unemployment of labor but also because of sustained drops in investment.

In conclusion, policies to stabilise economies can have implications for longer-term growth and even potential output. Undertaking active restructuring during stabilization will limit the time that resources remain idle. The financial conditions of banks, households and corporations- even be they small in size- have real effects on current and future output because of the direct impact on consumption, investment (innovation and capital accumulation) and the labor market. A long period of depressed demand and output can raise long-term unemployment rates while also

lowering the labor force participation rate as workers become discouraged. Reforms facilitating redundancy may be anti-productive in low growth contexts with fiscal consolidation.

Lesson 12 - Consider the windfall in revenues temporary in the presence of asset market booms. Unless potential output and structural fiscal balances are corrected for asset price booms, policy mistakes will be greater. Fast and sustained increases in real government expenditures (and government size) are cause for concern; extra revenues during asset market booms should be saved.

Potential output, structural fiscal balances and the design of policy. The estimation of potential output, never an easy task, differs substantially across studies (and policy making units). However, in pre-crisis years, potential output estimates did not include an adjustment for the impact of (temporary) asset market led booms on current output. Kanda (2010), Athanasopoulou (2009), and Borio et al. (2016) show how, after correcting for the impact of the financial cycle, the output gap preceding the financial crisis is much larger than without the correction. At the same time, structural fiscal balances were not really “structural” in the sense that revenue streams were not corrected either for the impact of asset market booms.⁵⁶ Borio (2010) estimates that in 2007, when the headline fiscal deficit was in slight surplus for Ireland, the properly adjusted structural balance was -7 % of potential GDP (and -13% in 2008). In 2007, the EC measured the output gap in Spain to be 2% of potential output. Borio et al. (2013) estimate a “finance-neutral” measure of potential output and find the positive output gap for Spain to have been 4-5% of potential GDP in 2007. Using alternative methodology, but including financial factors, Alberola et al (2013) find the output gap to have been 6%. Conversely, after the crisis, the output gap was overestimated after the 2009 meltdown: the EC estimate of the output gap was -4% in 2011, Borio et al have an estimate of -2% and the OECD -3%. Just as potential output tended to be overestimated before the crisis, it ran the risk of being overestimated afterwards.

Had potential GDP and structural fiscal balances been more accurately measured, policy makers may have looked at economic developments differently. For example, while Kanda (2010) estimates a deterioration of 3.8 pp in structural revenues to GDP during 2006-08. For Ireland, he finds an 8 pps increase in structural expenditures to GDP in the same period.

⁵⁴IMF (Selected Issues, July 2014, CR 14/193); Kanda (2010).

Had the numbers been presented as such, different choices would have been made. Another paper (Liu et al, 2015), studying OECD countries, finds the average fiscal impact of housing and equity prices before the crisis to have been around 2.25% of GDP. For Ireland, the housing effect was 3% of GDP and in Spain the equity market effect was 4% of GDP. Perhaps additional revenues during asset price induced booms should be thought of in the same way as are revenues from commodity price booms - and saved.

Fiscal revenues can be notoriously volatile rising faster than GDP growth in good times and falling faster in bad times. Sometimes they take a long time to recover while expenditures tend to be much more “sticky”. Thus, despite efforts at fiscal consolidation since 2010, years of increasing fiscal expenditures before, during and just after the financial crisis when tax revenues and output fell have played havoc with the debt ratios of GIPS. Ireland’s real expenditures grew 60% in the 7 years leading up to 2008 (in contrast, they only fell 7% in the 7 years during 2008-2014), Spain’s grew 35%, Greece’s 38% and only 11% in Portugal (Spain’s and Greece’s fell 7% and 32% respectively and Portugal’s grew 3% during 2008-2014). In relation to GDP, Ireland’s government grew an amazing 11 pp during 2000-2008.⁵⁷ The second largest increase was Greece at 4.4 pps. In the adjustment period since 2009, what is striking is that Greece has had a commensurately large expenditure decline (34%) even as tax revenues fell the most. Portugal has had no decline in real terms.³ With growth being slow to recover, every country’s debt ratio is now around 100 or above, but the *increases* in the debt ratios in seven years (2007-2014) are particularly striking, being 76, 84, 62 and 64 pp, respectively. The increases are spectacular in view of the dynamics of the preceding years when, even with high growth boosting tax revenues (in Greece and Ireland) and low interest rates, debt ratios fell a small amount (only Spain had a 23 pp decline during 2000-2007); Portugal had an increase of 18 pp.

4. Conclusions

Almost a decade after the global financial crisis, adjustments in fiscal, monetary, structural and financial sector policies continue to be needed. This paper, reaching into new research and studies, has highlighted some

⁵⁵At the same time, the number of public servants increased 35%, and wages rose 60% during 2000-08.

⁵⁶Ireland and Spain had 11 and 14 % declines.

“lessons” in economic policy making that should shed some light on policy choices and their impact on growth and employment.

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