# Transatlantic austerity 2010-…
# A comparative assessment

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## Abstract

Drawing on a large data collection, this paper offers a comprehensive assessment of fiscal austerity in twenty major countries in the Transatlantic area in the aftermath of the Great Recession of 2008-09. Countries include the twelve early Euro members, six other members of the European Union, and the two North-American countries. The paper is organized in two parts. First, an index of austerity is proposed based on the contraction of the public sector's net contribution to the economy. Then, there follows an assessment of austerity under the two dimensions of the improvement of public finances and interest rates, and of the collateral effects on economic activity and employment. The assessment is accompanied by reasoned discussion of the theoretical motivations and underpinnings of fiscal austerity and relevant criticisms. The main conclusion is that austerity in general has so far missed its promised goals, for 1) except budget deficits, public finances have further deteriorated, 2) countries under stronger austerity have achieved neither consolidation nor faster recovery but rather lower shock absorption, worse recovery performances, and higher unemployment. Claims that austerity failures are due to country-specific factors, such as mistakes in implementation and pre-crisis structural weaknesses, are not supported by robust evidence.

Keywords: Austerity, Transatlantic area, European Economic and Monetary Union.

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# 1. Introduction

'Austerity' was the 2010 word of the year according to the *Merriam-Webster Dictionary*, with more than 250,000 clicks on the online edition. This is today a notorious word that stands for what economists call "fiscal consolidation policies", recommended, and largely activated, all across the developed countries after the remarkable deployment of various fiscal supports to countervail the global financial and economic crisis exploded in 2008-09[1]. Austerity thus encompasses fiscal policies variably intended to keep the public budget in balance, or abstain from excess expenditure, or actively pursue budget restrictions, even though the economy may be suffering from low production and high unemployment. In this sense, austerity stands in opposition to the so-called "Keynesian fiscal policies" which recommend deficit spending as a means to overcome economic depressions. "The boom, not the slump, is the right time for austerity at the Treasury" Keynes said in 1937 in one of his famous radio broadcasts.

The motivations put forward for austerity vary according to the circumstances. For countries on the brink of a sovereign debt crisis, as it has been the case in the Euro Zone, austerity may appear to be an obvious necessity. However, since all countries activated fiscal stimuli in 2008-09 leading to substantial budget deficits, the overarching motivation for austerity has been fiscal consolidation, with variable force and urgency from country to country. If not dictated by immediate threats, austerity has also been prescribed as a requisite for reinstating sound growth conditions before prolonged fiscal stimuli to the economy become self-defeating as public debt grows too high

There should be little question that European economies share the need to reduce public deficits and debts from levels that, as confirmed by a growing strand of empirical literature [...] are likely to be harmful for growth in the medium term [...] (Buti and Pench, 2012, p.1)

In this perspective, the true issue at stake is whether austerity is a means to achieve fiscal consolidation with little or no output and employment losses, or as a means to restore growth, in the course of a recession.

Some argue that budget consolidation and fostering growth appear contradictory to one another [...] As consolidated public finances enhance the trust of financial markets in each respective country, budget discipline is a key prerequisite for

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[1] Indeed, austerity is a word with a long history which, to remain within contemporary history, may be traced back to the inter-war years of the Great Depression. See Blyth (2013) for a thorough historical reconstruction.

economic success and should not be perceived as a hurdle to growth (OECD, 2012, p.5)

In the face of the Euro-crisis persistence, the policy strategy has been rephrased as a matter of trading off some economic losses immediately with more austerity and economic losses in the future, while the policy assessment has progressively been shifted from short to longer time horizons, albeit undetermined.

It is undeniable that the front-loaded fiscal consolidation had a negative impact on Eurozone growth, and the factors that have aggravated the impact of consolidation on growth are well known […] The jury is still out on the relative merits of a more front loaded consolidation, allowing a smaller adjustment later on, and a delayed consolidation (US), requiring a more drastic effort when the recovery is still fragile (Buti and Padoan, 2013, p. 1)

As a matter of fact, today austerity not only is widely unpopular, but it is also highly controversial and increasingly criticized from various academic camps[2]. Inevitably, the debate has so far grown out of contingent events in a short-run perspective. Entering the sixth year after the crisis, and hence in a medium-run retrospective, this paper aims to offer a first systematic quantitative assessment of austerity from the outbreak of the crisis up to 2013.

The first goal is to set the stage for reasoned assessment of austerity by means of a wide data set covering the most relevant phenomena. To this end, as far as possible data have been collected from a single official source, Eurostat (online database AMECO[3]) unless otherwise stated. The second goal is to widen the view to a comparative spectrum of different countries across the Transatlantic area; indeed, austerity is not an exclusive policy of the countries in the Euro Zone. On the other hand, it is well known that policy design as well as policy results are also dependent on country-specific characteristics and institutions; as will be seen, austerity is no exception. The choice of countries has been made using Euro-membership as institutional criterion in the first place, and then along other dimensions. The Euro Zone is regarded as the epicentre of austerity mainly in force of the fiscal rules for members contained in the constitutive treaties and subsequent modifications of the Monetary Union. Accordingly, some scholars find that the "Euro dummy" may explain (adverse) phenomena

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[2] As examples in the flood of materials available, especially via internet, see the interventions collected by Corsetti (ed., 2012) representative of perplexities from more orthodox scholars, the papers in the special issue of the *Cambridge Journal of Economics* reviewed by King et al. (2012) for more radical Keynesian views, and Blyth (2013) for a discussion of the various positions pro and against austerity.

[3] http://ec.europa.eu/economy_finance/db_indicators/ameco/index_en.htm

that are peculiar to Euro-countries with respect to other similar "stand alone" countries (e.g. De Grauwe, 2011).[4] Therefore the twelve early members of the Euro Zone (EUR12)[5] have been selected first. The group has been restricted to the early members because the six late members[6] have too a short track of membership, and represent a thin fraction of the aggregate economy of the Union, to be comparable with the others. Second, in consideration of the features of the sovereign debt crisis of 2010-12, EUR12 has been disaggregated into two subgroups: EUR5, the group of the most fiscally distressed members (combining high public deficit, debt, and interest rate)[7], and the remaining EUR7. Third, eight of non-Euro countries (NoEUR) have been added, namely six other European countries (OE)[8] – comparable with the EUR12 in terms of development, average size, and other institutional features – and the two large North-American (NA) countries, Canada and United States, dimensionally comparable with EUR12 as a whole. In total, twenty countries highly representative of the Transatlantic area, which was also the epicentre of the global crisis.

The paper is organized in two parts. The first (section 2) introduces a measure of austerity. Various measures are available and used in the debate, depending on the specific aspect of interest. For reasons that will be seen, a suitable measure of austerity for our purposes is the year change in the public sector net contribution to income formation (i.e. the primary deficit) as a ratio to current GDP. Transatlantic austerity is then gauged under three dimensions that are regarded as relevant to achieve successful austerity – also known as "intelligent" or "smart" austerity: *timing and intensity* ("front-loaded"/large vs. "back-loaded"/progressive), and *composition* (cutting expenditure vs. raising taxes) (e.g. OECD, 2012; Buti

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[4] De Grauwe highlights that Euro-members have suffered higher risk premia than non-Euro countries with similar (deteriorating) public finance indicators. He argues that Euro-membership (lack of independent monetary policy) is an institutional variable that *per se* has been penalized by financial investors. More severe austerity can then be seen as the policy response emerged within the Euro Zone context.

[5] Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain.

[6] Slovenia (2007), Cyprus (2008), Malta (2008), Slovakia (2009), Estonia (2011), Latvia (2014),

[7] Greece, Ireland, Italy, Portugal and Spain. For statistical and econometric analyses identifying this cluster of countries as the eye of the debt storm see e.g. De Grauwe and Ji (), Favero and Missale ().

[8] Czech Republic, Denmark, Poland, Sweden, Switzerland, United Kingdom. Norway was another candidate, but it has been excluded because, as an oil producer, it would be an outlier in the sample, in fact presenting a large structural budget surplus.

and Padoan, 2012; Buti and Pench, 2012; EU Commission, 2013). The second part (section 3) is devoted to the assessment of the results of austerity. This is not an easy task with several areas of controversy because austerity is a multifaceted medium-run policy strategy, so that results may be better in some aspects and worse in others, and a sufficiently long gestation may be invoked. However, it seems fair to focus on two main areas, under the guidance of the austerity literature. One is obviously public finances, that is deficits, debts and interest rates, where results were expected to be tangible in the short run. The other is the real economy, namely economic activity, growth and employment, where the side effects of successful austerity ought to be transitory if negative, and conducive to faster recovery to growth in the medium run.

Given the objective intricacy of arguments and phenomena, and the relative scarcity of observations, it seems hard to provide a definite assessment of austerity in one single, integrated, all-encompassing empirical model. Rather, the paper will offer the reader a detailed analysis of country data and responses for each major issue of the multifaceted austerity experience of the last four years, mostly by means of partial correlation analysis. Since correlation is not causation, no strong causal inferences will be drawn, and yet a statistically qualified characterization will emerge of the role of austerity *vis-à-vis* the above mentioned set of variables across the Transatlantic area.

It will be seen that austerity in general has so far missed its promised goals, in particular in the Euro Zone, for 1) except budget deficits, public finances have further deteriorated, 2) countries under stronger austerity (e.g. EUR5) have achieved neither consolidation nor faster recovery; rather, they present lower shock absorption, worse recovery performance, and higher unemployment. Claims that austerity failures are due to country-specific factors, such as mistakes in implementation and pre-crisis structural weaknesses, are not supported by robust evidence. Summary of results and conclusions will follow in section 4.

## 2. Gauging austerity

A basic problem in the empirical analysis of austerity is its correct and appropriate measurement. Indeed, a number of different measures are possible and available in the literature depending on the purpose of analysis. To begin with, four different actors are involved with different viewpoints and stakes: the government, the recipients of fiscal decisions, the investors in public debt, and external agencies. Each actor may assess, or perceive, whether or not fiscal policy is austere in different ways, and it is

not difficult to imagine situations in which assessments are even of different sign. A simple example may clarify the issues involved and the rationale of the austerity indicator proposed here.

Suppose that the economy is in a downturn and the government cuts some current expenditure. This is intended to be an austerity policy "ex ante". But how this ex-ante austerity policy affects the economy depends on how the recipients of current expenditure are actually affected. Suppose that some automatic stabilizers are in place such that other components of current expenditure increase: overall, total expenditure indicates little or no change and, consequently, "ex-post" austerity results smaller than it is ex ante, probably with a negligible effect on the economy. At the same time, investors in public debt, possibly in line with external agencies like rating agencies, the IMF, or the EU Commission, are concerned with financial stability and focus on the evolution of indicators like the deficit/GDP ratio or the debt/GDP ratio. Since the economy is in a downturn, and the ex-ante austerity policy is ex-post-neutral on current public expenditure, the business cycle will probably follow its own course so that current GDP will be lower than the previous year, thus pulling tax revenues down: overall, the deficit/GDP ratio, and hence the debt/GDP ratio, will be worse than in the previous year, turning the ex-ante austere government into an ex-post profligate one. The "denominator bias" due to the use of GDP ratios is usually corrected by taking the primary budget net of interest and with "cyclical adjustment" (CA) techniques (for a recent assessment of this issue see EU Commission, 2013). Hence the CA primary budget can be regarded as a good approximation of the "true" ex-ante policy stance of the government. Yet, apart from various and unresolved technical problems, consider again the previous example. With a correct CA technique an observer might identify the ex-ante austerity policy of the government, but this fact is not particularly relevant to the economic impact of fiscal policy. What is relevant in this perspective is the actual evolution of fiscal balances for their terminals in the economy, which include the working of automatic stabilizers. Who is right, and what should the external observer look at?

## 2.1 An austerity indicator

The ideal indicator should be simple and transparent, and seek to comply with two criteria, at least for the purposes of the present study. 1) *Governments are responsible for what they can control directly*; hence the indicator should be "ex ante" as much as possible. 2) *The assessment of fiscal policy should necessarily go through its effects on the economy*, which largely depend on the actual evolution of relevant fiscal variables.

My proposed fiscal austerity indicator is the following. Let $F_t$ be the public sector net contribution to income formation in year $t$, given by public expenditure net of interest payments and total fiscal revenue (i.e. the primary deficit), and let $Y_t$ denote the nominal GDP. Then fiscal adjustment, as the change in the public sector net contribution in year $t$, is measured by $F_t - F_{t-1}$, and its impact on the economy by

(1) $\qquad FA_t \equiv (F_t - F_{t-1})/Y_t$

where $FA_t < 0$ indicates austerity.

Overall, this austerity indicator seems to strike a reasonable balance between the two criteria mentioned above, and to provide a comparable measure of the impact of actual changes in the public sector net contribution while avoiding the bias inherent in taking GDP ratios as primitives.[9]

Table 1 in Appendix provides the summary statistics of $FA$ indicators for all countries and over time. The time series for each country begins with the first year of recession, which is 2008 for France, Greece, Ireland, Italy, Denmark, Sweden, UK and US, 2009 for the others. Figure 1 provides a snapshot of the $FA$s since 2009 for main groups of countries. Following the literature on austerity, three dimensions stand out as critical: timing, intensity and composition.

Figure 1. *FA* indicators, groups of countries, 2009-13

## 2.2. Timing and intensity

The first key ingredient in the recipe for successful austerity is an "ambitious", front-loaded restoration of sustainable public finances that stops speculative attacks, regenerates investors' confidence, and regains access to the debt market at lower interest rates.[10] From this point of view, our data allow for the following considerations. As to timing, after the generalized anti-crisis fiscal stimuli of 2009, the majority of countries (13/20) moved into austerity in 2010, reaching a global average of almost −1% of national GDP. All countries, with no exceptions, were in the austerity regime by 2011, the peak austerity year with a global average of −1.5%. This fast fiscal adjustment was in part eased by the short-lived spring of the 2010 recovery, but it was not reversed in the subsequent years

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[9] Note that, generally, $(F_t - F_{t-1})/Y_t \neq F_t/Y_t - F_{t-1}/Y_{t-1}$ unless GDP is constant or $F_{t-1} = 0$. Otherwise, consider the case $F_{t-1} > 0$, $FA_t < 0$. If we use the GDP ratios instead, positive growth adds a negative bias (austerity is overvalued), whereas negative growth adds a positive bias (austerity is undervalued).

[10] According to the evidence analysed by Buti and Pench (2012), gradual consolidations seem more likely to be successful, but gradualism may be harmful for countries starting with high debt levels and major financial distress.

in spite of a new generalized slowdown of economic activity. Cross-country heterogeneity is measured by the standard deviation of *FA*s, which, for the global area, may be seen as (unexpectedly) low in almost all years.

Looking at groups of countries (see Figure 1), it is worth noting that, indeed, the EUR12 group enacted much stronger austerity than the NoEUR group, and notably the US, except in 2013. There is some evidence that on average the Euro-countries followed the front-loading strategy prescribed by the austerity agencies (with the notable exception of Italy, which postponed major restrictions until the debt attack of the second half of 2011). It is also clear, however, that in the Euro Zone the austerity turn was largely driven by the EUR5 group of the most financially distressed countries (firstly Greece, Ireland, Spain) averaging around –3% of GDP in 2010 and –2.4% in 2011. The EUR7 countries remained almost neutral or slightly expansionary in 2010 (except Belgium, which was in fact a high debt country). Yet they were also driven into austerity in 2011 (–1.4% on average) led by Germany with a remarkable –3.4%. Among the NoEUR countries, there are, on average, no major differences between Europeans and North Americans, but UK and US stand out for the most aggressive 2009 fiscal stimulus, and for back-loading austerity, more in the UK than in the US. Heterogeneity has been fairly low within the EUR12 and its subgroups as well as within the NoEUR group.

From this initial overview, austerity appears as a medium-term policy. Hence, whether front- or back-loaded it is informative to have a measure of its overall intensity. To this end, Table 2 displays two additional indicators (see Figure 2 for the groups of countries) of the *cumulated fiscal adjustment* (*CFA*), that is the summation of *FA*s over time. One indicator measures the overall injection of austerity from 2010 to 2013. The other includes the fiscal stimulus from the first year of recession (2008 or 2009); hence it tells us whether austerity has more or less than reversed the initial fiscal stimulus. This adds important information with regard to the "shock absorption" and "income smoothing" functions of public finance. According to the income smoothing principle, this second indicator should point to zero as GDP returns to normality.

Figure 2. *CFA* indicators, groups of countries

Since the first year of generalized austerity (2010) the large majority of countries (with the exceptions of Luxembourg, Sweden and Switzerland) have cumulated sizeable restrictive *CFA*s, reaching a global average of –3.3% of GDP. This is equivalent to say that the representative Transatlantic country has cut the public sector net contribution to the economy at a year pace of about 0.8% of GDP for four years. Again,

heterogeneity has remained contained. However, the average austerity effort in the EUR12 group (–4.1%) has roughly doubled that of the OE and NA countries. Yet the back-loading strategy of UK and US has been particularly severe: the US has eventually reached almost the same *CFA* as EUR12 (–4.1%) and the UK a remarkable –6%. Evidently, while the timing of austerity doses has been different across the Channel and the Atlantic, with possibly different effects, the overall intensity of the therapy has not. However, the disaggregation of the EUR12 group is quite instructive. The austerity performance of the EUR7 group is not dissimilar (slightly less in fact) from the NoEUR group. By contrast, the EUR5 countries stand out as those with the largest cumulated austerity (–7.8% on average). The strongest dosage has been inflicted on Greece, Ireland and Portugal – i.e. the three countries under "Troika" treatment for access to rescue packages – with almost the same entity between 9% and 10%. The remaining countries range from 2% to 3%.

Table 2 also displays the *CFA*s from the first year of recession to 2013. In the majority of countries, and in the Transatlantic area as a whole, cumulated austerity has fallen short of the initial stimulus, leaving a net fiscal expansion. This is clearly the case of the EUR7 and NoEUR countries, with an average of 3.3% each. Above-average net expansions have occurred in small economies (Finland, Luxembourg, Netherlands, Denmark, Sweden) but also in the US (+5.4%). The "uniqueness" of the EUR5 group re-emerges more dramatically: in spite of Ireland's small positive residual, this has been the single group of countries where austerity has nullified, or reversed, the initial fiscal stimulus. As recalled above, a tendency to zero *CFA* is justified as GDP returns to normality, but as will be seen, these countries are far from catching up with their pre-crisis trend growth rate and even the pre-crisis *level* of GDP.

In light of this first overview of the data, we may draw two conclusions. First, austerity has not been an exclusive policy imposed onto Euro-countries; rather, it has been "freely" pursued across the whole Transatlantic area as the consensus mindset to manage the fiscal consequences of the financial crisis and the Great Recession. Second, austerity has however been implemented in different ways as to its timing and overall intensity. Under all dimensions, austerity has been most severely enacted in the five Euro-countries under worst public finance conditions. It is the joint presence of *two* features, Euro-membership *and* public finance distress, that makes the difference and identifies the real epicentre of austerity in the Transatlantic area. As argued by EU Commission officials, diversification and flexibility have in fact been actively pursued in application of the more recent modifications of the Euro Zone

fiscal rules (Buti and Carnot, 2013, p. 3). On the other hand, the dosage of austerity cumulated in the rest of the Euro-countries has been nontrivial, and it appears less justified on the grounds of public finance emergency. Thus, I would qualify the Euro Zone experience as one of "uncoordinated austerity", which may have created unfavourable conditions for the countries facing stronger pressure for fiscal consolidation.[11]

## 2.3. Composition

The most common austerity prescription is that expenditure cuts have less negative impact (or even a positive one) on the economy and more lasting effect on public finances (see Carnot, 2013, for an overview).[12] In this perspective, Table 1 and Table 2 provide the composition of the *FA*s and *CFA*s, respectively. Note that *CFA*s result from the difference between the cumulated (primary) expenditure adjustment (*CEA*) and the cumulated tax adjustment (*CTA*)[13]:

(2) $\qquad FA_t = (G_t - G_{t-1})/Y_t - (T_t - T_{t-1})/Y_t$

(3) $\qquad CFA = \Sigma_t \Delta G_t / Y_t - \Sigma_t \Delta T_t / Y_t = CEA - CTA$

Figure 3. Composition of *CFA* indicators 2010-13

Figure 3 shows the composition of *CFA*s for the groups of countries in the austerity period 2010-13. Positive histograms indicate increases. We can see that the recommended composition has not enjoyed large audience: the majority of countries, within and outside the Euro Zone have implemented cumulated austerity by *increasing taxation more than expenditure.* Some countries traditionally regarded as fiscally virtuous have let expenditure grow to a remarkable extent over the austerity period (Finland 8.4%, Netherlands 5.8%, Luxembourg 10.8%, Denmark 9.3%, Sweden 7.8%, Canada 6.8%). The UK has contained expenditure but has realized its cumulated restriction almost entirely on the taxation side. It may come as a surprise that the most aggressive restrictions on the expenditure side have been accomplished within the EMU5 group, with an average cut of 5.1%: in the case of Greece, Portugal and Ireland this may be the result of specific Troika interventions; yet Spain has managed a net cut by itself, while Italy has kept cumulated expenditure changes around zero.

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[11] On the problem of uncoordinated fiscal adjustment plans in the Euro Zone see Tamborini (2013), Berti et al. (2013), in't Veld (2013).

[12] It is sometimes added that the expenditure to be cut is the "unproductive" one. Yet this is a category difficult to identify, hence, in practice, expenditure at large is considered.

[13] Total revenue of the central government.

# 3. Assessing austerity

Assessing austerity is not an easy task. For two main reasons. The first is that austerity is a complex policy recipe with multidimensional implications; it may well happen that some results are negative while others are positive. The second reason relates more to the rhetoric of the economic discourse: pro-austerity arguments, even at the official levels, are remarkably devoid of any clear quantification of the expected results, including their time horizon, against which actual results can be assessed. Hence, we lack a clear and well identified framework for assessment in the first place.

## 3.1. An assessment framework

Strictly speaking, the purpose of austerity is to regain control over, and the sustainability of, public debt. As a matter of fact, however, implementation of orthodox sustainability analysis, based on fiscal fundamentals and the intertemporal budget constraint, encounters a number of non-trivial difficulties (e.g. the choice of the appropriate discount rate, time horizon, and budget items) paving the way to controversial if not inconclusive judgements (e.g. Bohn, 1995; Kanda, 2011; IMF, 2012). To circumvent these difficulties, less demanding, empirically based criteria have been put forward, particularly by Bohn (1995). The Bohn criterion is based on the fiscal reaction function that relates the primary balance, as the control variable, to outstanding debt in such a way that the latter is kept on a path converging to some finite level. In fact, a typical Fiscal-Compact-style plan can be viewed as a normative version of this principle which requires each government to plan its primary balance so as to achieve a debt target such that the excess of the debt/GDP ratio above 60% is reduced by 1/20th per year. However, sustainability assessments in this vein are no less fraught with difficult technical choices that may lead to controversial results (see e.g. Greiner et al., 2007, and Ghosh et al., 2013, for applications to Euro-countries).

Bearing this premise in mind, public finance assessment in the Maastricht rule framework is mostly driven by two simple indicators: the total deficit/GDP ratio and the gross debt/GDP ratio.[14] Therefore, let us think of austerity in the classical policy framework of *instruments*,

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[14] Note that, as a consequence, these indicators are also used by investors as conventional shortcuts in their own assessments, though they may bear a tenuous connection with fundamental sustainability analysis.

*intermediate targets*, and *final targets*. Let the debt/GDP ratio be the final target, whose quantification may vary from, say, stabilization to the reduction plans prescribed by the Fiscal Compact. Given this final target, the government has to choose an instrument. We have already examined this issue, opting for the *FA* indicator (of course, others may well be chosen). This instrument (and in general the instruments fully controllable by the government) have an indirect relationship with the final target. In this regard, we can rewrite the standard dynamic equation of public debt in terms of our *FA* indicator (see expression (1)), that is:

(4)      $D_t = D_{t-1} + I_t + F_{t-1} + FA_t Y_t + X_t$

where $D$ is the nominal value of debt, $I$ is interest payments, $F$ is the primary deficit and $X$ is other extraordinary operations and adjustments. Let $I_t = i_t D_{t-1}$ , where $i_t$ denotes the nominal interest rate on outstanding debt.  Taking ratios to current GDP $Y_t$, and denoting them with small-case letters we obtain

(5)      $\Delta d_t \equiv d_t - d_{t-1} \approx (i_t - n_t)d_{t-1} + f_{t-1} + FA_t + x_t$

where $n_t$ is the nominal growth rate of GDP, and the usual approximation $(1 + n_t) \approx 1$ is used.

This relationship provides a first benchmark for the *effectiveness* of austerity. If a government follows a consistent path of fiscal restrictions $FA_t < 0$, it may expect $d$ to remain on a non-increasing path $\Delta d_t \leq 0$. If this does not happen, the causes may be: 1) austerity is *insufficient*, given initial conditions and the paths of $i$ and $n$, 2) adverse evolutions of $i$ and $n$.

The most critical issue in austerity assessment, being a source of confusion and disagreement, is that the two sets of causes are in fact interconnected and cannot be easily disentangled. To put it in analytical terms, $i$ and $n$ are, in part at least, endogenous to *FA*. Moreover, these collateral effects of austerity are another area of large disagreement. In the pro-austerity view, its effectiveness hinges on driving $i$ down and being neutral or positive on $n$ (OECD, 2012; Buti and Padoan, 2012; Buti and Pench, 2012; EU Commission, 2013). The typical anti-austerity argument is that it can easily be *excessive*, driving $n$ downwards and $i$ upwards (e.g. De Grauwe and Ji, 2013a; Tamborini, 2013). If this happens, the pro-austerity counterargument is that the problem is not austerity in itself, but that it has probably been implemented in the wrong way (see above 2.2, 2.3). Another line of defence is that low growth and high unemployment in some countries are unrelated to austerity since they come from long-lasting structural weaknesses (e.g. Bini Smaghi, 2013; Manasse and Rota Baldini, 2013). Also, there has been a recent reformulation of austerity assessment according to which possible economic losses of immediate austerity should be assessed against possibly larger losses due to delayed austerity when

recovery comes (e.g. Buti and Padoan, 2013). On the other hand, this style of reasoning leaves the time dimension of assessment undetermined, and it seems to presume that there is no connection between the present course of policy and how much time the recovery takes to come.

First, public finances and interest rates will be examined. Second, the side effects on economic activity and employment.

## 3.2. Public finances

In section 2 we saw that between 2010 and 2013 almost all countries engaged in cumulated fiscal restrictions; those in the epicentre of the Euro-sovereign debt crisis by and large followed orthodox recommendations as to timing and composition. Did austerity deliver the promised results in terms of financial consolidation?

Let us first examine whether austerity has been effective on the basic indicators of "sound" public finances. Table 3 in Appendix provides the relevant data. As austerity has been a generalized policy, so all countries have progressively brought their deficit/GDP ratio under control. In the Euro Zone, the aggregate indicator has fallen from 6.4% in 2009 to 2.9% in 2013. In 2009 all countries (except Finland and Luxembourg) were above the 3% ceiling, in 2013 only six (Belgium, France, Greece, Ireland, Netherlands, Spain), some of which by virtue of special arrangements with the EU Commission and other official agencies. Interestingly, also countries with no formal deficit/GDP target have moved in tandem with the Euro Zone: the average NoEUR deficit has been cut from 5.4% in 2009 to 3.3% in 2013 (but note that UK and US still have deficits twice larger than the average).

As regards public debt, the outcome of austerity has been much poorer. In Figure 4 (a), the time profile of the debt/GDP ratio from 2008 to 2013 has been quite similar across countries. The first spike occurred in 2009 as a consequence of the post-shock fiscal stimuli; thereafter, however, the ratio went on rising. Faster debt accumulators reside in the EUR5 group (35.2 point on average), but also France (13.3), Netherlands (12.2), Czech Republic (14.5), UK (25) and US (21.4) have reached a two-digit increase in their debt/GDP ratio. All countries (except Sweden and Switzerland) ended 2013 with a ratio greater than in 2009, and now the Transatlantic area is split *across* the ideal border of the Euro Zone between a higher debt group above 90% of GDP[15] (Belgium, France, Greece, Ireland, Italy, Portugal, UK, Canada and US) and a lower debt group.

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[15] This is the well-known dangerous threshold popularized by Reinhart and Rogoff ().

Figure 4.
(a) Debt/GDP ratios from 2008 to 2013
(b) Increase in debt/GDP ratio 2009-13 and *CFA* 2010-13

These data indicate that cumulated fiscal restrictions subsequent to the 2009 debt creation have failed to curb the growth of debt relative to GDP. As a matter of fact, if a relationship exists between *CFA*s and debt/GDP ratios, this has been perverse, as shown by Figure 4 (b). The statistical occurrence of high debt/GDP growth and high *CFA* is quite tight. The interpolation line indicates that, on average, 1 point of negative *CFA* has been associated with 4.1 points of debt/GDP growth. Paradoxically, the EUR5 countries, which underwent the most severe austerity motivated by their debt emergency, are also the countries with the worst debt/GDP performance. Yet they share the company with the UK, which embraced Euro-style austerity voluntarily. It is also interesting to note that the differences in *CFA*s explain 87% of differences in debt/GDP growth, which indicates that other country-specific factors (e.g. the initial debt level) have played a minor role.[16]

Apparently, austerity policies have by and large failed to curb debt growth relative to GDP, even more so in the countries under most severe treatment. Austerity defenders may argue that this is evidence that austerity has been *insufficient*, and that without austerity debt growth would have been much worse. Yet this argument is not so obvious as it appears. As is well known, the debt to GDP dynamics depends not only on the control of the primary budget but also on the gap between the interest rate paid on debt and on the growth rate of GDP. Equation (5) provides guidance in decomposing the drivers of the debt/GDP ratio. Apart from extraordinary operations and adjustments $x_t$, and given the government's fiscal impulse $FA_t$, three other factors can be identified: "fiscal inertia", given by the previous year's primary deficit/GDP ratio $f_{t-1}$, "growth effect" $-n_t d_{t-1}$, and "snowball effect" given by the evolution of interest payments $i_t d_{t-1}$. Table 4 presents these calculations for all countries in the austerity period. To capture the medium-term evolution of debt, $t-1$ is 2009, and $t$ is the "average year" 2010-13.[17] "Total", if positive, measures the impulse to debt/GDP growth net of $x_t$. Differences, and hints about whence the ineffectiveness of austerity derives, appear quite clearly. Figure 5 presents the decomposition of the growth of debt/GDP ratios for the groups of

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[16] The statistical correlation between high initial debt in 2009 and high debt growth is much looser, with $R^2 = 0.1$. Indeed, four of the largest debt accumulators (UK, Ireland, Spain, Portugal) started from a debt well below 90% of GDP.

[17] Since "the" interest rate actually paid on the outstanding debt is in fact a complex composition of different rates and maturities, for these empirical calculations $i_t$ has obtained as the ratio of actual interest payments on debt.

countries (figures above the histograms indicate the total impulse to debt/GDP growth).

Figure 5. Decomposition of the growth of the debt/GDP ratio 2010-13, groups of countries

Let us compare the average EUR7 country with the average EUR5 country. The initial impulse in 2009 ("inertia") is quite similar, while the subsequent fiscal adjustment ("average *FA*") is consistently larger for EUR5. Why does the latter end up with such a stronger impulse to debt/GDP growth? Clearly for two factors: the snowball effect, that is higher unit cost of debt, and the growth effect, such that *negative* growth pushes the debt/GDP ratio up for EUR5 whereas *positive* growth pushes it down for EUR7. Indeed, EUR5 is the single group where high interest rates and low growth jointly plaid the most perverse effect on the debt/GDP ratio. As said, the critics of austerity point out that it may in itself be partly responsible for worsening debt/GDP ratios by depressing growth, and possibly increasing risk premia. But of course, it should be proved that austerity is responsible for both perverse effects. Hence, let us now turn to the evolution of interest rates.

### 3.3. Interest rates

It is well known that interest rates on Euro-sovereign bonds, and notably spreads over German *Bunds*, have shown large downward comovements after the inception of the single currency followed by dramatic upward comovements since the beginning of 2010, that is, the outbreak of the Greek crisis. This tendency is even more evident in the EUR5 group of countries under sovereign debt attack. It is worth tracking the experience of these countries in some detail.

The comovement of the spreads in Figure 6 is quite clear. They began to soar for all countries in early 2010. They all peaked towards the end of 2011. In the same period all countries activated substantial austerity programmes. They have differed in timing and intensity, but overall from 2010 to 2013 the EUR5 countries have accomplished large cumulated restrictions.

Figure 6. Average monthly spreads of long-term interest rates over German bonds: EUR5, 2009-13

Source: ECB, Statistical Warehouse, Interest rates statistics.

The relationship between this sustained fiscal effort over time and the evolution of spreads is thus best captured by plotting the latter *vis-à-vis* the year *CFA*s (Figure 7).[18] The plot in Figure 7 highlights a strong *positive* (convex) correlation between the data.

Figure 7.  Year average of monthly spreads of long-term interest rates over German bonds and year *CFA*, EUR5, 2010-13

Empirical research on risk premia in the Euro-sovereign crisis is burgeoning[19]. Challenging technical problems aside, some convergence in conclusions can be detected. Overall, the Euro-sovereign turmoil has shaken the reliance on financial market efficiency as providing the right stick-and-carrot mix that should drive fiscal consolidation. However, the same studies widely agree that, among the fundamentals, the evolution of debt/GDP ratios maintains a significant influence on spreads. Hence, having seen austerity's scant success in harnessing debt/GDP growth, it is not so surprising that spreads have failed to fall as well.

Figure 7 can be interpreted as evidence that, in financially distressed countries, spreads have been strong drivers of austerity, as they should be, to the point that governments have been chasing their spreads with repeated doses of austerity. However, reverse causality is also possible. Reverse causality, or the "positive feedback" mechanism going from austerity to higher spreads to more austerity and so on, is embedded in the growing literature on "self-fulfilling expectations" of sovereign-debt crises, which challenges both the efficient market hypothesis and the austerity doctrine (e.g. Corsetti and Dedola, 2011; De Grauwe, 2011; Gros, 2012; Cooper, 2012; Tamborini, 2012; Ghosh et al., 2013). In this literature, the dimension and timing of consolidation plans is a double-edged blade: if small and progressive, the plan may strain *credibility*, if large and immediate it may be judged *unsustainable*. As stressed in particular by Gros (2012) and Tamborini (2012), an essential factor from the investors' viewpoint is the difficulty of assessing unsustainability due to the large and blurred set of factors, many of which extra-economic, that may impinge on the government's decision. This adds a source of peculiar uncertainty not amenable to "objective" analysis of the so-called "fundamentals". Unsustainability of consolidation plans is thus embodied in sovereign risk premia. Contrary to the credibility approach, sustainability indeed predicts

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[18] The year $CFA_t$ is the sum of previous *FA*s up to $t$.

[19] To mention only a few recent comprehensive contributions: Attinasi et al. (2009), Caceres et al. (2010), Favero and Missale (2011), De Grauwe and Ji (2012)

that governments engaged in larger and larger fiscal adjustments will pay a *higher* interest rate. This happens because, as the fiscal adjustment increases, the probability attributed to the government's option for default increases, and so does the risk premium.

Causality is an issue that can hardly be settled once and for all by pure statistics, especially in a context of limited availability of data and in times of exceptional events. De Grauwe and Ji (2013b) provide an econometric test that supports the reverse causality hypothesis. At any rate, what seems indisputable in the data is that, over time, austerity has failed to deliver lower spreads. At the beginning of 2012 the spreads of all EUR5 countries were still high or rising. The true turning point occurred in the second half of 2012, and to many observers it was only due to the credible launch of the ECB Outright Monetary Transactions programme (the safety net for sovereign debt prices and spreads) and to President Draghi's celebrated commitment that "the ECB will do whatever it takes" (for pleas to adopt this new approach, and predictions of its outcome, see e.g. De Grauwe, 2010; Wyplosz, 2011). Thereafter, spreads fell though debt/GDP ratios went on rising as seen above. It may be argued that austerity paved the way, both financially and politically, to the ECB intervention (Buti and Carnot, 2013). However, the ECB intervention mechanism is heterodox, not complementary, with respect to the austerity doctrine, and it was in fact fiercely opposed by integral supporters of the doctrine. So in the end the question remains: Why was austerity by itself ineffective on spreads? Was austerity too little, or too much?

### 3.4. Output and growth: Where do we stand, and why?

The impact of austerity on economic activity is ostensibly the most controversial issue. It revolves around the time-honoured issue of "crowding out" and "crowding in": that is, the relationship between changes in fiscal variables and in private expenditures (e.g. Bernheim, 1989). The counterparty, at the aggregate level, is the never settled issue of the extent of "fiscal multipliers", that is, the relationship between a unit change in a fiscal variable and the change in GDP. Net of differences in the specific treatments, the essential pro-austerity argument remains that, if not immediately, in the medium term the "crowding out" effect of fiscal expansions and the "crowding in" effect of fiscal restrictions are both large and symmetric (or fiscal multipliers are small). Which means that fiscal restrictions may be neutral (as in the Barro-Ricardo framework; Barro, 1974, 1989), negative in the short run but positive in the long run (which is more typical of New Keynesian models; e.g. Woodford, 2011; Corsetti et al., 2010, 2012; Roger and in't Veld, 2013) or altogether positive according to the

so-called "non-Keynesian effects of fiscal policy" or "expansionary fiscal restrictions" (popularized by Giavazzi and Pagano, 1996; Alesina and Perotti, 1997; Alesina and Ardagna, 2010) for which the right timing and composition are critical (see above, 2.2, 2.3).

In the course of the crisis, a marked shift of consensus has occurred from small, non-Keynesian, back to large, Keynesian, fiscal multipliers. These now seem prevalent, though their magnitude varies considerably, according to systematic studies especially at the IMF (e.g. Coenen et al., 2010). Particularly remarkable has sounded the *mea culpa* of IMF chief economists Blanchard and Leigh (2013) with regard to underestimation of the recessionary effects of austerity. Perotti (2011) has revised critically the evidence supporting the chances of "expansionary fiscal restrictions". Here I will not enter into this controversy in detail. In light of the previous data about fiscal consolidation, I will examine the evolution of  output, growth and unemployment in the four years of austerity.

To begin with output and growth, Table 5 in Appendix displays the relevant data for all countries. Looking at post-shock data, the first patent fact is their high correlation. Evidence collected prior to the crisis showed increasing synchronization of business cycles in the Euro Zone –an expected result of integration (e.g. De Haan, 2008). As already observed, all countries fell into recession in the same year, 2009. Over the whole  period under consideration, the correlation coefficient of each Euro-country's GDP with that of the Euro Zone as a whole exceeds 0.9, with three interesting exception: Ireland (0.73), Portugal (0.69) and Greece (–0.47), the only country with a full sequence of negative growth rates. This statistical evidence should call into question the entrenched belief that low cyclical correlation is one of the reasons for the Euro Zone not being an optimal currency area, and that asymmetric shocks should be the overarching concern. Not only.  Post-shock GDP correlation is also above 0.9 across EUR12, OE and NA. Therefore, if anything the Great Recession has been a *macro symmetric shock*, with GDP fluctuations being largely driven by common factors across the whole Transatlantic area.

This of course does not mean that the *magnitude* of fluctuations has been the same in all countries (see Figure 8 (a)). Indeed, the EUR5 group stands out for being unable to recover positive growth (mainly owing to Greece and Portugal, but also to anaemic and intermittent growth in the other three). Note, also, that after the short-lived 2010 recovery, the rest of the European area (EUR7 and OE) too has lost contact with the NA area, with the EUR7 falling back into negative territory in 2013.

Figure 8.
(a) GDP growth rate 2008-13, groups of countries

(b) Compound growth rate, 2008(09)-13, all countries

Regaining the pre-crisis growth rate would be important, but the *level* of GDP is equally so. Hence a better gauge of the overall post-recession performance is the compound growth rate (*CGR*) reported in Table 5 (and Figure 8 (b)) from the first year of recession to 2013: if negative, it indicates a net output loss, if positive a net output gain, with respect to 2007.[20] The Transatlantic area is almost split into two halves: 11 countries are still suffering a net output loss. They are all European: 9 in the Euro Zone, of which all the EUR5 with the dramatic –22.9% of Greece, plus UK and Czech Republic. The remaining 9 countries have gained a net output growth, which is however of relatively modest entity (except Poland) if distributed over five-six years. Looking at our groups, we can clearly see a cleavage between Euro and Non-Euro countries. Both EUR5 and EUR7 countries have on average failed to catch up with their pre-crisis GDP levels making of the Euro Zone as a whole the income-loss area of the Western world. Declaration of the end of the Recession War seems premature.

These figures vividly depict the unprecedented width and depth of the crisis, as well as the slow and scant recovery of most countries. Indeed, this gloomy picture is in line with recent research on the abnormal effects of "financial cycles" with respect to more "usual" business cycles, which focuses on the peculiar role of the financial sector in modern economies (Borio, 2012; Hall, 2010). How do fiscal policies, and their differences, relate to these facts? And, does the "Euro dummy" matter?

These questions can be approached from two sides. The first is the cyclical timing of austerity. The second is the effect of austerity on the economy's performance over the whole period under consideration

The cyclical position of the economy can be measured in different ways none of which is free from drawbacks. For our purposes, it is convenient to accept one of the measures elaborated by official agencies, namely the *output gap*, that is the percent difference between actual and potential output at constant prices[21]: see Table 6. A negative output gap indicates a cyclical downturn and, concomitantly, a lack of aggregate demand driving actual output below potential aggregate supply. According to the New Keynesian brand of orthodoxy, output gaps also indicate the room for demand stimulus, once account is taken for the concomitant inflation trend.

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[20] A more severe, and perhaps correct, measure of output loss would take into account that, in the absence of the crisis, GDP would have probably grown. Here the problem is the choice of the trend growth rate, which is obviously arbitrary.

[21] The source is Eurostat for all countries except Switzerland, Canada and United States for which the source is OECD.

Figure 9. Output gap and *FA* 2010-13, all countries

There is clear evidence that the 2009 recession was associated with a large output gap of almost the same magnitude in all countries. The subsequent evolution has been diversified, with EUR5 countries lagging behind in closing their output gaps, but it is striking how large and persistent output gaps have remained all across the Transatlantic area, while prices have nowhere shown upward tensions, if not signs of deflation.

I now simply wish to give a quantitative representation of the cyclical timing of austerity. To this end, Figure 9 plots all the 80 joint observations of output gaps and *FA*s for the 20 countries from 2010 to 2013. Countercyclical austerity falls into the first (north-west) quadrant; procyclical austerity falls into the fourth quadrant. It can be seen that 5% of austerity episodes have been anticyclical whereas 73.6% have been procyclical, with a tendency for large *FA*s to be associated with large output gaps. These data indicate that austerity has been activated procyclically in the large majority of cases and countries beyond those under worst public finance conditions.

Considering now the relationship between austerity and GDP, in order to avoid short-run noise factors, reverse causality effects, etc., it seems sensible to maintain a medium-term perspective whereby *CGR*s are better compared against *CFA*s. It is interesting to distinguish two dimensions of the role of fiscal policy. One is the so-called "shock absorption" role, that is how fiscal policy reacts to the macroeconomic shock and the extent to which the latter is smoothed over time. To this end, *CGR*s should be computed against *CFA*s from the first year of recession: see Figure 10 (a). Afterwards, shock absorption eventually depends on the extent of fiscal adjustment, that is on the "austerity effect" over the years 2010-13, which is highlighted in Figure 10 (b).

Figure 10. Compound growth rate and *CFA,* all countries
(a) "Shock absorption", 2008(09)-13
(b) "Austerity effect", 2010-13

With regard to shock absorption, an interesting nonlinear interpolation arises according to which the former is decreasing in austerity with increasing marginal intensity. The correlation is particularly evident for the EUR5 group, all income recovery laggards (*CGR* < 0), though situations are rather diversified within the group (actually, only Italy, Greece and Portugal have a negative *CFA*). Globally, differences in *CFA*s amount to about 33% of differences in *CGR*s, which means a non-trivial contribution

beside other country-specific factors. Net of these factors, shock absorption has been zero (i.e. net output losses have occurred) for *CFA*s smaller than 2% (or fiscal stimuli less than 0.4% of GDP per year). On the other hand, positive *CFA*s have not been equally effective in all countries. On the far right of the plot, we can see a small cluster of countries "below the curve", that is with large positive *CFA* and still negative *CGR*. It may come as a surprise that these are three Nordic countries (Finland, Netherlands and Denmark) usually regarded as fiscally virtuous and efficient. Though less markedly, the same holds for the UK, Ireland and the EUR7 group as a whole.

As shown by panel (b), the austerity effect, that is the occurrence of weaker growth with stronger austerity after the recession, is even tighter, with differences in *CFA*s explaining 43% of differences in *CGR*s. A widespread interpretation of shock absorption and/or post-recession resilience downplays the role of austerity with respect to country-specific structural factors. Yet, the overall growth performance of these countries seems significantly conditioned by their austerity intensity in the fiscal consolidation period.

As said in 2.3, in the pro-austerity literature "composition matters". Accordingly, the recessionary effects of austerity are attributed to a composition unbalanced towards higher taxation instead of lower expenditure. Correlation analysis of *CGR*s and composition of *CFA*s in the austerity period does not lend support to this view. Table 2 reported the decomposition of *CFA*s between tax and expenditure adjustment. We saw that most countries engineered negative *CFA*s by raising taxes more than expenditure. Figure 11 shows the correlation between the tax component of negative *CFA*s[22] and *CGR*s (an absolute value of the tax component smaller than 1 indicates a mixed adjustment with less taxes and less expenditure; an absolute value larger than 1 indicates higher taxation in excess of higher expenditure)

Figure 11. Compound growth rate and tax incidence on *CFA* 2010-13, all countries

Correlation is poor, and if any, it is with inverted sign, that is countries with better *CGR* have also higher tax incidence. As already stressed, the most aggressive austerity on the expenditure side (low tax incidence) has been realized in the EUR5 group, which has however suffered the largest output losses, such as Greece. By contrast, EUR7, OE, and NA countries display a similar higher tax incidence, such that 1 euro of cumulated fiscal

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[22] Tax incidence is $CTA/|CFA|$ from equation (3).

restriction has been the result of 5 euros of more taxes and 4 euros of more expenditure.

## 3.5. Unemployment

Since 2007 unemployment has soared significantly in all countries apart from Germany and few others. Table 7 and Figure 12 highlight that the crisis has created a clear break in the previous trends, which were either stable at relatively low levels or gradually decreasing.

Figure 12. Unemployment rate 2000-13, groups of countries

However there are significant differences across groups. At first sight the Euro Zone as a whole has done worse than the NoEUR countries, with unemployment increasing 5.6 points *vis-à-vis* 2. Yet this is the result of two sharply different groups. The most dramatic unemployment peaks have occurred in the EUR5 group, where average unemployment in 2013 reached 12.4 points higher than in 2007 (mostly concentrated in Greece and Spain). By contrast the EUR7 group has obtained the least increase (less than 1%, and 1.5% net of the unique German performance). Hence the "Euro dummy" does not seem critical in this case.

What does seem critical is medium-term growth. Figure 13 (a) presents changes in unemployment against *CGR*s. A (nonlinear) correlation between high unemployment increases and low *CGR*s appears fairly tight. Differences in *CGR*s account for 65% of differences in unemployment performance. The curvature of the best fitting function suggests that the growth component of unemployment displays an increasing marginal impact. Since we found above a non-trivial statistical correlation between *CGR*s and *CFA*s, it is not surprising that differences in *CFA*s, too, have some bearing upon unemployment performances. Overall, poor shock absorption is a good candidate to be a component of bad unemployment performances (Figure 13 b).

Figure 13. Changes in unemployment 2007-13 and
(a) compound growth rate 2008(09)-13, all countries
(b) *CFA* 2008(09)-13, all countries

The effects of austerity on the labour market are a contentious and intricate issue that cannot be fully developed here. It is well-known that orthodox macroeconomic schools share the view that large cyclical effects of GDP on unemployment should be traced back to labour-market rigidities, whether "nominal" or "real". Parallely, one standard ingredient in the recipe for growth-friendly austerity is that there should be concomitant

"structural" − i.e. labour market − reforms injecting more flexibility into wage changes as well as job relocations. This conveys the idea that austerity may have undesirable effects on unemployment owing to labour market rigidity, and also the idea that if large losses of employment are observed, these are more the result of rigidities than of austerity *per se*. These propositions, which are very popular in the pro-austerity narratives, are hard to test because they usually come with no indication about what the ideal response of unemployment should be for the given rate of austerity (perhaps zero, or less than zero?).

Inspection of standard labour market statistics does not lend much support to these narratives in two respects. The first is that there is not much evidence that labour markets have remained rigid in the face of falling output and rising unemployment. The second is that differences in rigidity across countries amount to a thin explanation of differences in unemployment performances.

Rigidity is a difficult concept to render operational. It combines institutional factors with other factors that condition the functioning of the labour market in specific economic circumstances. From the former point of view, the OECD offers a well-known set of indicators, the Employment Protection Indicators (EPI)[23], which are widely used by labour researchers for comparative analyses. A high value of the indicator provides a measure of rigidity in terms of legislations and regulations that may hamper wage changes and/or workers mobility across jobs and sectors.

To gauge how this dimension of labour market rigidity may relate to differences in unemployment performance across countries during the crisis, I have elaborated a synthetic index for each country based on two EPI: "Strictness of employment protection; Individual and collective dismissal (regular contracts)" (version 3), and "Temporary employment" (version 3).[24] My index is the average of the average value of the two EPI from 2008 to 2013 (actually, EPI have remained constant or have changed very little in this period of time). The relationship between this rigidity index and the change of unemployment is shown in Figure 14.

Figure 14. Labour market rigidity index and change in unemployment 2007-13

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[23]
http://www.oecd.org/employment/emp/oecdindicatorsofemploymentprotection.htm

[24] Considering both segments of the labour market is important since temporary jobs are becoming increasingly common and typically less regulated than open-ended contracts. Both versions 3 encompass a larger number of indicators, and are available from 2008 to 2013.

If *some* countries with higher index display a greater increase in unemployment than do *some* countries with lower index, this pattern is far from providing an exhaustive explanation of the differences in unemployment performance. True, the more flexible NA economies have suffered relatively smaller increases in unemployment, but the majority of the European economies, with much higher indices, have done no worse, or even better. Germany's celebrated Hartz reforms have changed little its mid-EPI ranking, and yet its employment resilience has been extraordinary. The much worse unemployment performance of the EUR5 countries seems unrelated to significant differences in rigidity with respect to the other Euro partners.

EPI provide a "static snapshot" of the institutional arrangements governing labour relations. However, the actual response of labour markets to economy-wide shocks may be more or less rigid also depending on specific circumstances that cannot be accounted for *ex ante*. It is therefore useful to extend our analysis to some economic indicators. I propose here in Figure 15 the most classic labour market indicator, the Phillips Curve, or better the "real" Phillips curve, that is the relationship between the changes in unemployment and in the real compensation per employee. As recalled above, one traditional explanation of unemployment is that nominal wage deflation, if any, may be insufficient relative to prices, so that real wages actually rise, triggering layoffs – the so-called "real rigidity" problem.

Figure 15. The real Phillips Curve 2007-13, all countries

Overall, a Transatlantic Phillips Curve emerges which is downward sloping as it should be. Almost half of the countries (9/20) have cut real wages, the more so the larger the increase in unemployment, with an average responsiveness of −0.7 points of real wage for each 1% of greater unemployment. In conclusion, labour market flexibility may be a precondition for achieving "smart" austerity, but there is little evidence that the "nasty" austerity now being experienced in some Euro-countries can be entirely traced back to labour market institutions.


## 4. Conclusions

Assessment of austerity is matter of lively and unresolved dispute. As stressed in the paper, an additional difficulty is that the advocates of austerity usually fail to clearly specify the criteria against which this policy should be assessed. This enhances, rather than dispelling, the suspicion

that austerity is a *must* without alternatives also for extra-economic reasons.

In this paper I have sought to present the reader with a wide set of data and "stylized facts", in order to assess and characterize the last four years of austerity on both sides of the Atlantic. The first fact to be stressed is that austerity has not been confined within the Euro Zone; rather, it appears a generalized "consensus policy" throughout the Transatlantic area to manage the fiscal consequences of the global crisis. Also, the epicentre of austerity has not been the Euro Zone in its entirety, but the EUR5 group of countries under worst public finance conditions and sovereign debt attack. On the other hand, the entity of austerity in the rest of the Euro Zone has been nontrivial and, in most cases, procyclical, though less justified on the grounds of fiscal emergency. Hence, a picture of "uncoordinated austerity" emerges, which may have impinged upon the chances of success of the countries under necessity of stronger fiscal adjustment.

Data analysis has been organized around two assessment criteria: the primary goal of improving public finances and lowering interest rates, and the collateral effects on economic activity and unemployment. The results provide a first comprehensive view of the role of austerity *vis-à-vis* the criteria of interest, and pave the way for further and deeper statistical analyses.

According, for instance, to Buti and Carnot (2013), austerity has been on the main target, since "on average the euro area structural balance has been cut from 4.5% to 1.25% between 2009-13 (…) There has also been visible progress in improving external and relative competitiveness positions" (p. 2). These are indeed two facts that we have found in the data. However, that strong fiscal adjustments coupled with domestic deflation can eventually produce such results is not surprising. The key test of the ex-ante austerity prescriptions and narratives is that *such results should come at low or negligible real and welfare costs followed by fast recovery*, since front-loaded fiscal consolidation produces an immediate fall in interest rates and a rise in confidence that foster long-term private expenditure. The main accusation brought against austerity is that this prediction, or promise, has not materialized, particularly in the EUR5 group of countries under the most severe austerity therapy. Debts have increased further, spreads have remained high until the ECB has stepped in, recessionary effects have been much longer and deeper than expected, and the political and social costs have been impressive.

While respecting the principle that correlation is not causation, partial correlation analyses presented in this paper indicate that, on average, each additional point of cumulated austerity 2010-13 has been associated with 4

additional points of debt/GDP growth, and differences in cumulated austerity explain 87% of differences in debt/GDP growth across countries. As to the excess austerity hypothesis (austerity is itself responsible for higher debt/GDP ratios by depressing the denominator), we saw that cumulated austerity is positively correlated with worse post-shock compound growth rates, and that it explains 43% of differences in the latter. Since the rise of unemployment across countries results highly correlated with compound growth rates, and the latter have a larger explanatory power (63%) than other labour market rigidity variables, the excess austerity hypothesis may also be extended to the labour market.

Against these "collateral damages", the usual line of defence consists of a number of side-arguments that methodologists call the "protective belt". Arguments of this sort usually exploit the fact that articulated theories, or policy prescriptions in our case, do depend on a number of side-conditions. Hence, if some facts do not fit the theory, the core is preserved, while the problem is shifted onto the side conditions. Here we have examined those which are more frequently invoked: too little, too late, too much taxes, too much labour rigidity. Again, assessment is questionable as long as we are not given a benchmark. At any rate, the data lend little support to the argument that austerity failures are essentially due to these concomitant factors. Quite the contrary: the countries which have benefited the least and suffered the most from austerity – in particular Greece, Ireland, Spain and Portugal – are also those where the right precepts have been followed, or imposed, more faithfully.

Elusive deadlines for policy assessment are another typical protective strategy. As the Euro-crisis progressed, delivery of promised austerity rewards has been shifted into a farther future. This style of argumentation is purely rhetorical since there is no clear ex-ante commitment stating 1) *how much* recession is compatible with the given policy, 2) *how long* the long run is.

In the long run we are all dead. Economists set themselves too easy, too useless a task if in a tempestuous season they can only tell us that when the storm is long past the ocean is flat again (Keynes, 1923).

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Figure 1. *FA* indicators, groups of countries, 2009-13
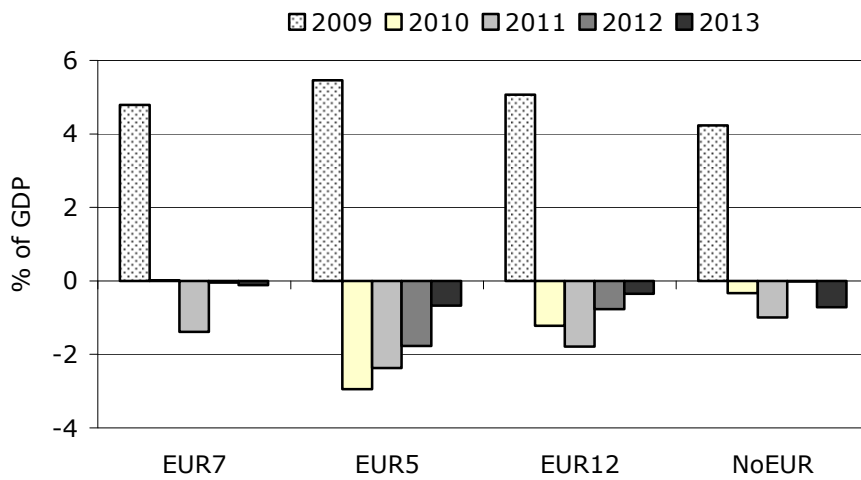


Figure 2. *CFA* indicators, groups of countries
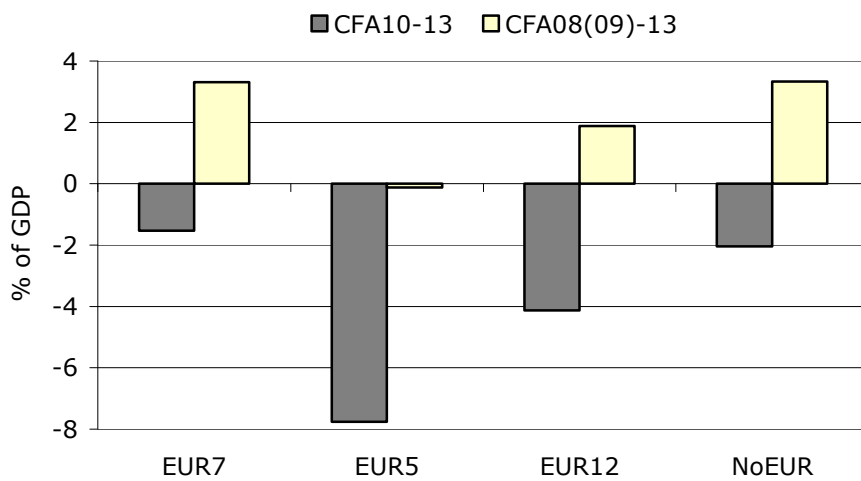


Figure 3. Composition of *CFA* indicators 2010-13
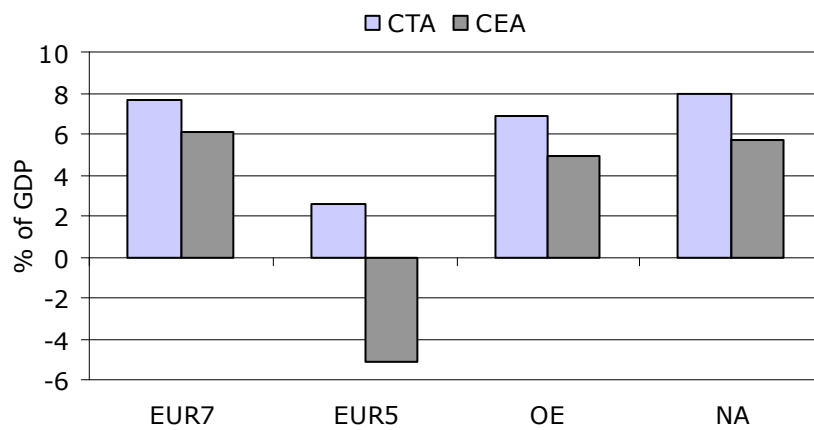
Figure 4.

(a) Debt/GDP ratios from 2008 to 2013
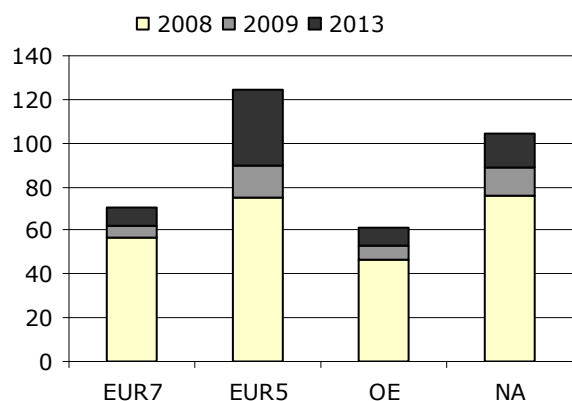
(b) Increase in debt/GDP ratio 2009-13 and *CFA* 2010-13



$y = -4.09x + 2.09$
$R^2 = 0.868$
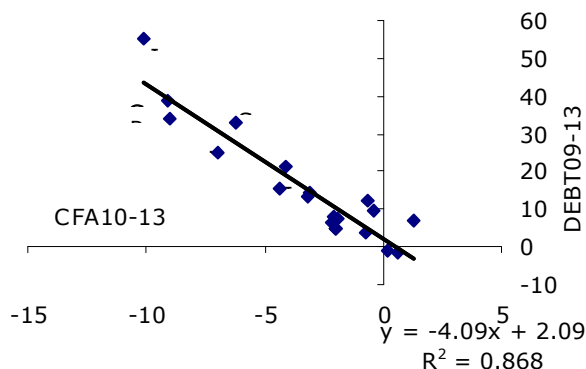
Figure 5. Decomposition of the growth of the debt/GDP ratio 2010-13, groups of countries
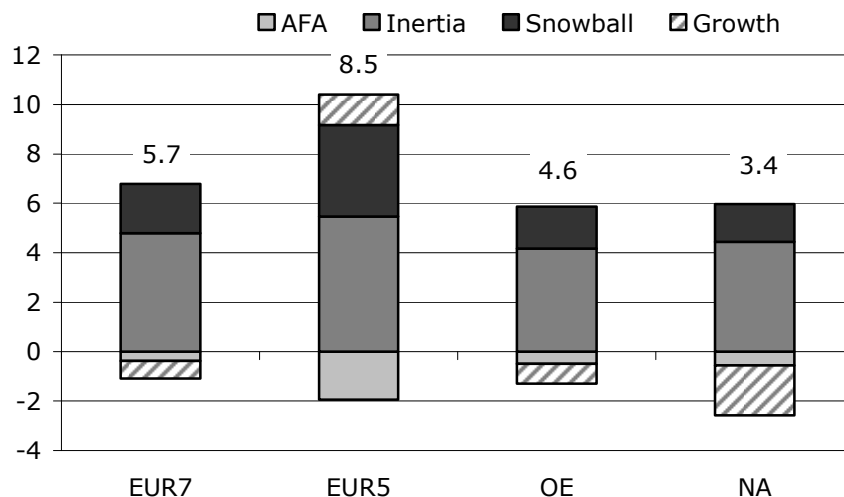


Figure 6. Average monthly spreads of long-term interest rates over German bonds: EUR5, 2009-13
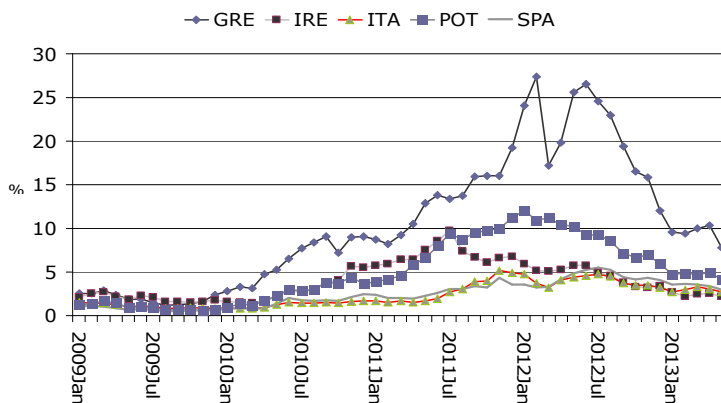


Source: ECB, Statistical Warehouse, Interest rates statistics.

Figure 7. Year average of monthly spreads of long-term interest rates over German bonds and year CFA, EUR5, 2010-13



$y = 0.12x2 + 0.23x + 2.68$
$R^2 = 0.47$

S

Year CFA
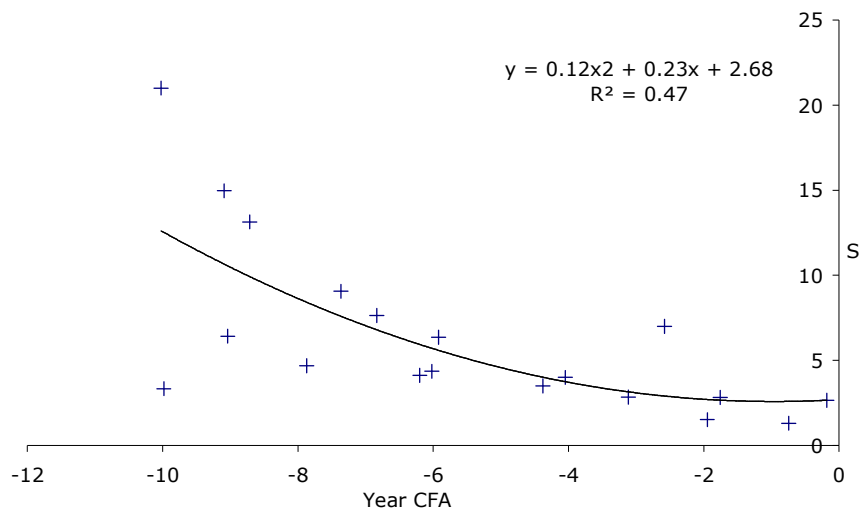
Figure 8.

(a) GDP growth rate 2009-13, groups of countries
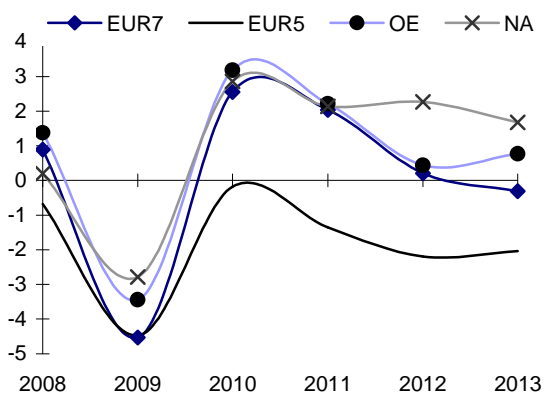
(b) Compound growth rate, 2008(09)-13, all countries
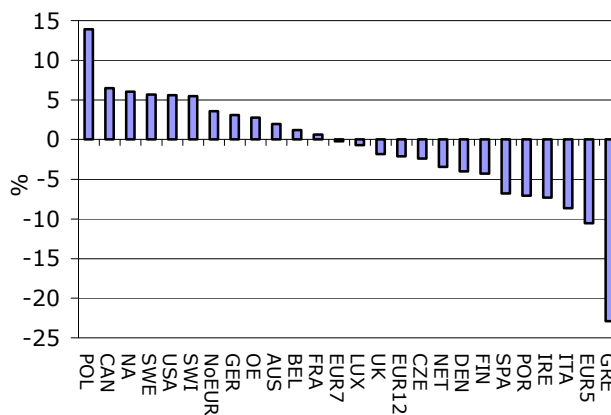


Figure 9. Output gap and *FA* 2010-13, all countries
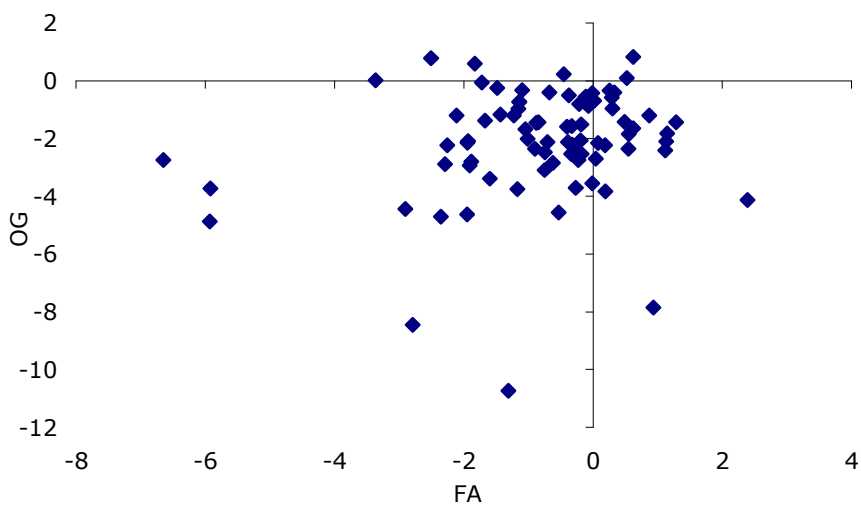
Figure 10. Compound growth rate and *CFA,* all countries
(a) "Shock absorption", 2008(09)-13
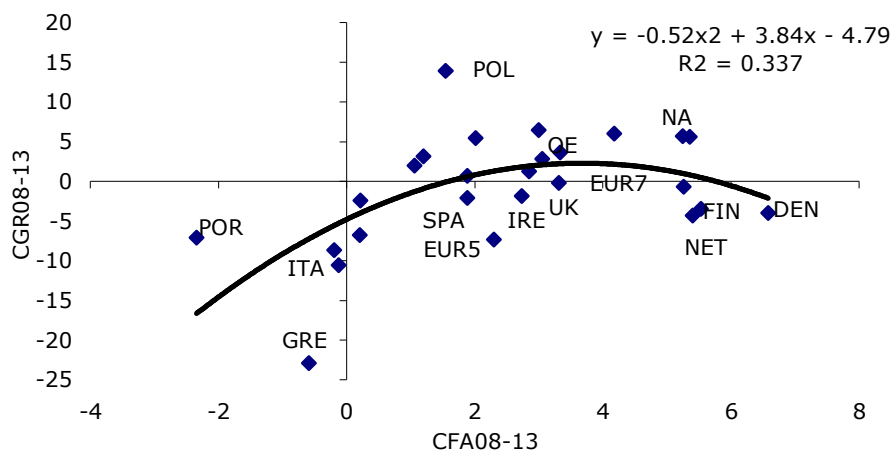


$y = -0.52x^2 + 3.84x - 4.79$
$R^2 = 0.337$

(b) "Austerity effect", 2010-13



$y = -0.08x^2 + 0.77x + 9.22$
$R^2 = 0.424$

Figure 11. Compound growth rate and tax incidence on *CFA* 2010-13, all countries



$y = -0.57x + 2.13$
$R^2 = 0.121$
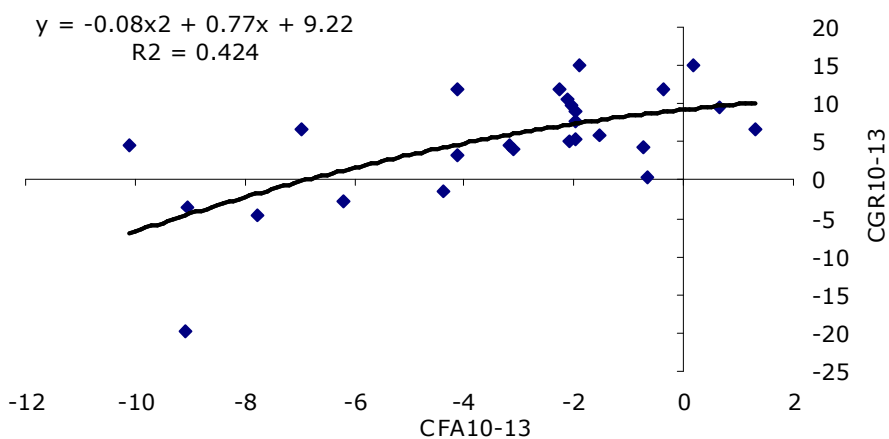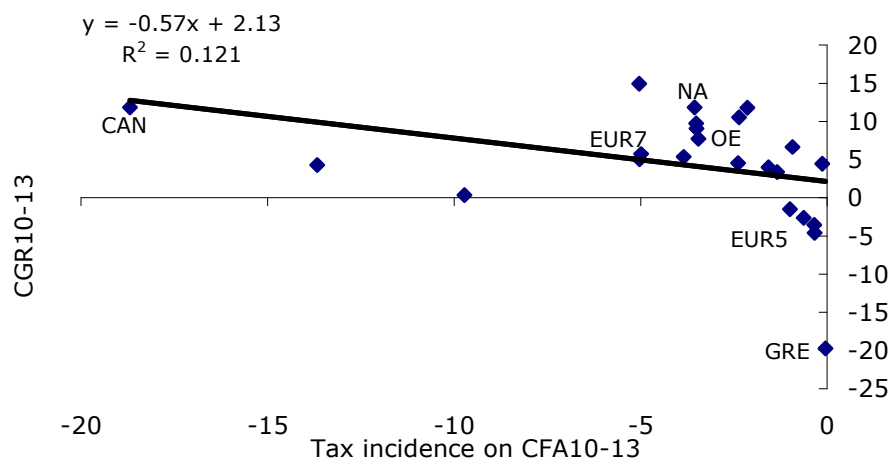
Figure 12. Unemployment rate 2000-13, groups of countries



Figure 13. Changes in unemployment 2007-13 and

(a) compound growth rate 2008(09)-13, all countries

(b) *CFA* 2008(09)-13, all countries



$y = 0.014x^2 - 0.46x + 2.97$
$R^2 = 0.645$

$y = 0.30x^2 - 2.61x + 7.40$
$R^2 = 0.3376$
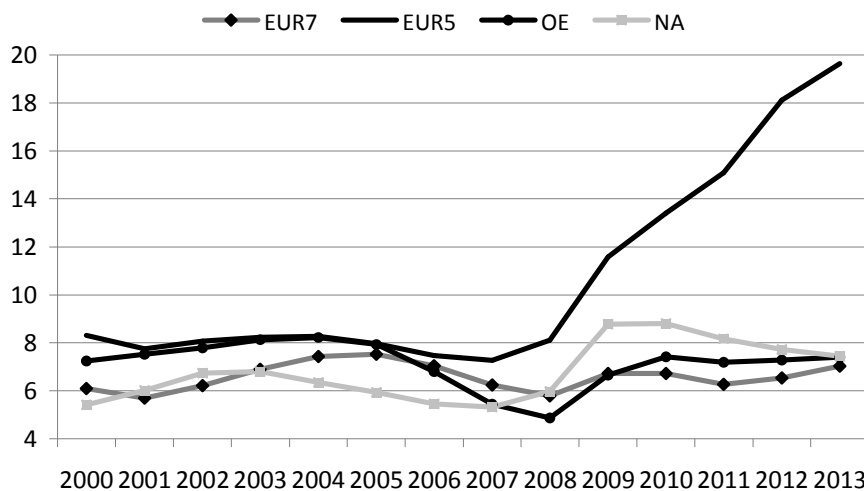
Figure 14. Labour market rigidity index and change in unemployment 2007-13
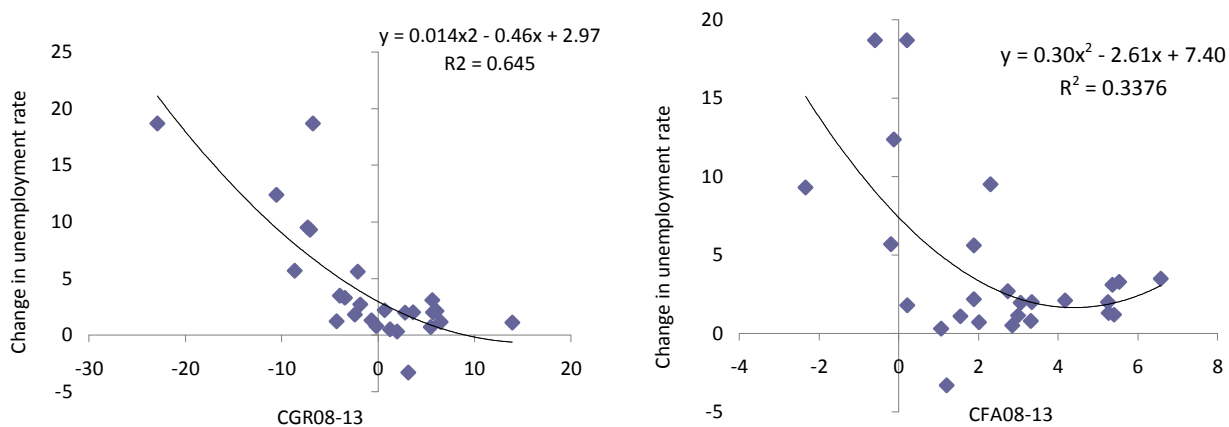


$y = 1.08x^2 - 2.0x + 2.99$
$R^2 = 0.113$
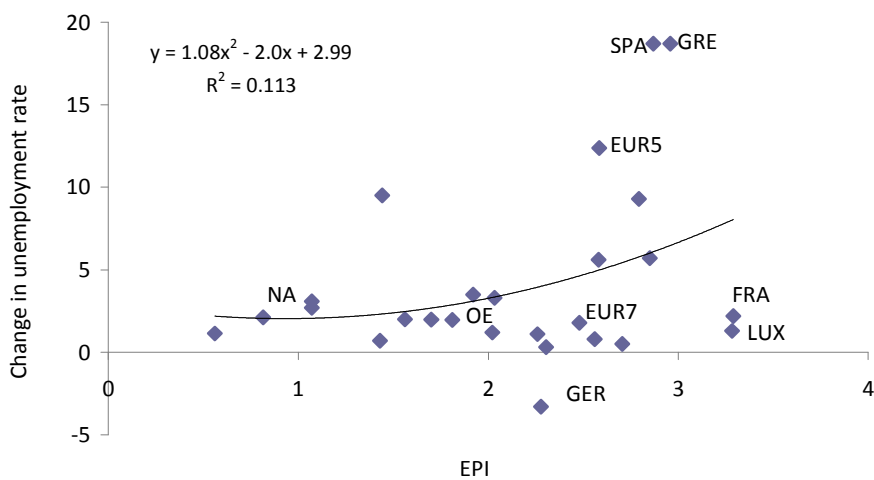
Source: elaborations on OECD Employment Protection Indicators

Figure 15. The real Phillips Curve 2007-13, all countries
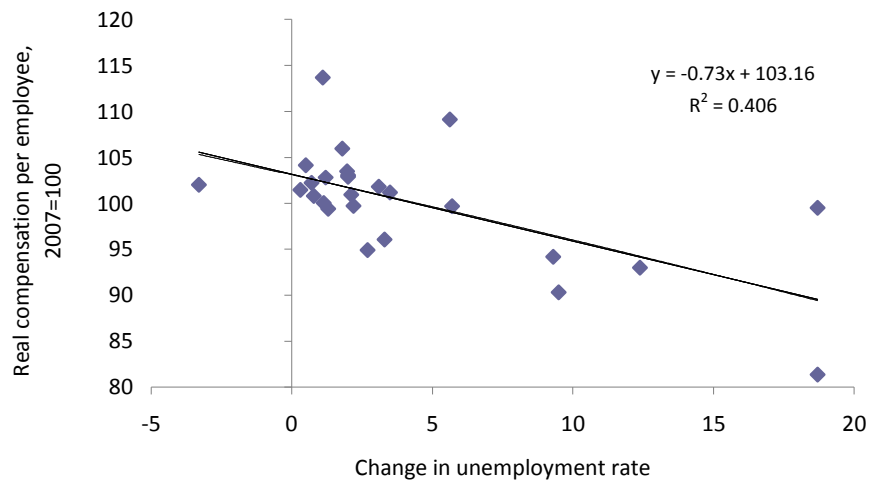
# Appendix

Table 1. Summary statistics of *FA* indicators and their components, 2008-13
(% of GDP)

| | 2008 | | | 2009 | | | 2010 | | | 2011 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | FA | Tax | Exp | FA | Tax | Exp | FA | Tax | Exp | FA | Tax | Exp |
| Austria | | | | 3.04 | -1.00 | 2.04 | 0.55 | 1.40 | 1.95 | -1.72 | 2.28 | 0.56 |
| Belgium | | | | 4.84 | -1.41 | 3.43 | -1.43 | 2.60 | 1.17 | -0.02 | 1.92 | 1.90 |
| Finland | | | | 7.48 | -4.39 | 3.09 | 0.19 | 1.73 | 1.92 | -1.94 | 4.26 | 2.32 |
| France | 0.37 | -0.10 | 0.27 | 4.70 | -1.93 | 2.77 | -0.34 | 1.46 | 1.13 | -1.94 | 2.76 | 0.82 |
| Germany | | | | 3.34 | -0.91 | 2.43 | 1.29 | 0.55 | 1.84 | -3.36 | 2.36 | -1.00 |
| Luxemb. | | | | 3.94 | -0.16 | 3.78 | 0.04 | 2.30 | 2.34 | -0.32 | 3.70 | 3.38 |
| Netherl. | | | | 6.20 | -2.62 | 3.58 | -0.19 | 1.54 | 1.35 | -0.39 | 0.84 | 0.45 |
| **EUR7** | | | | **4.79** | **-1.77** | **3.02** | **0.01** | **1.66** | **1.67** | **-1.38** | **2.59** | **1.20** |
| st.dev. | | | | 1.47 | | | 0.77 | | | 1.11 | | |
| Greece | 2.91 | -0.41 | 2.51 | 5.58 | -2.03 | 3.56 | -5.92 | 0.14 | -5.78 | -2.79 | -0.39 | -3.18 |
| Ireland | 7.11 | -2.11 | 5.0 | 5.29 | -4.94 | 0.36 | 15.70 | -0.43 | 15.26 | -18.3 | 0.49 | -17.8 |
| Italy | 0.86 | -0.20 | 0.66 | 3.32 | -2.11 | 1.21 | -0.74 | 1.04 | 0.30 | -1.01 | 0.84 | -0.17 |
| Portugal | | | | 6.69 | -2.43 | 4.27 | -0.18 | 1.02 | 0.84 | -6.65 | 0.99 | -5.66 |
| Spain | | | | 6.40 | -3.01 | 3.40 | -1.95 | 1.31 | -0.64 | -1.17 | 0.83 | -0.34 |
| **EUR5** | | | | **5.46** | **-2.90** | **2.56** | **-2.94** | **0.62** | **-2.33** | **-2.37** | **0.55** | **-1.82** |
| st.dev. | | | | 1.19 | | | 2.50 | | | 2.30 | | |
| **EUR12** | | | | **5.07** | **-2.24** | **2.83** | **-1.22** | **1.22** | **0.00** | **-1.80** | **1.74** | **-0.05** |
| st. dev. | | | | 1.40 | | | 4.88 | | | 4.83 | | |
| Czech Re. | | | | 3.31 | -4.99 | -1.68 | -1.16 | 2.58 | 1.42 | -1.48 | 3.00 | 1.51 |
| Denmark | 1.49 | -0.40 | 1.09 | 5.83 | -12.1 | -6.25 | -0.02 | 6.84 | 6.82 | -0.75 | 3.78 | 3.03 |
| Poland | | | | 3.44 | -9.58 | -6.14 | 0.62 | 6.36 | 6.98 | -2.51 | 2.95 | 0.44 |
| Sweden | 1.39 | -0.21 | 1.18 | 3.69 | -7.05 | -3.36 | -0.88 | 5.24 | 4.36 | -0.12 | 1.86 | 1.75 |
| Switzer. | | | | 1.37 | 0.03 | 1.40 | 0.52 | 0.34 | 0.86 | -0.45 | 0.99 | 0.53 |
| UK | 2.20 | -1.5 | 0.72 | 6.73 | -2.51 | 4.22 | -1.69 | 2.28 | 0.59 | -0.78 | 1.46 | 0.67 |
| **OE** | | | | **4.16** | **-6.03** | **-1.97** | **-0.47** | **3.94** | **3.50** | **-1.01** | **2.34** | **1.32** |
| st.dev. | | | | 1.92 | | | 0.92 | | | 0.78 | | |
| Canada | | | | 3.40 | -1.70 | 1.68 | 0.90 | 1.50 | 2.40 | -0.70 | 2.70 | 2.00 |
| US | 3.81 | -2.3 | 1.51 | 5.26 | -2.47 | 2.80 | -0.66 | 1.82 | 1.16 | -0.96 | 2.39 | 1.43 |
| **NA** | | | | **4.44** | **-2.08** | **2.24** | **0.08** | **1.66** | **1.78** | **-0.83** | **2.55** | **1.71** |
| st. dev. | | | | 1.06 | | | 0.79 | | | 0.19 | | |
| **NoEur** | | | | **4.23** | **-5.04** | **-0.92** | **-0.33** | **3.37** | **3.07** | **-0.97** | **2.39** | **1.42** |
| st.dev. | | | | 1.75 | | | 0.92 | | | 0.69 | | |
| **Global** | | | | **4.74** | **-3.36** | **1.33** | **-0.86** | **2.08** | **1.23** | **-1.46** | **2.00** | **0.54** |
| st.dev. | | | | 0.34 | | | 2.19 | | | 1.01 | | |

Tax: Total fiscal revenue
Exp: Primary expenditure
Groups of countries are unweighted averages

Table 1. ctd.

| | 2012 | | | 2013 | | |
| --- | --- | --- | --- | --- | --- | --- |
| | FA | Tax | Exp | FA | Tax | Exp |
| AUS | 0.29 | 1.47 | 1.76 | -1.10 | 1.69 | 0.60 |
| BEL | -0.84 | 0.78 | -0.07 | 0.30 | 2.36 | 2.66 |
| FIN | 0.08 | 2.07 | 2.15 | -0.40 | 2.39 | 1.99 |
| FRA | -0.62 | 1.90 | 1.27 | -0.29 | 1.48 | 1.19 |
| GER | -0.07 | 1.12 | 1.04 | 0.02 | 0.99 | 1.00 |
| LUX | 1.12 | 1.93 | 3.05 | 0.49 | 1.52 | 2.00 |
| NET | -0.27 | 1.12 | 0.85 | 0.19 | 2.97 | 3.16 |
| **EUR7** | **-0.05** | **1.48** | **1.44** | **-0.11** | **1.91** | **1.80** |
| st.dev. | 0.60 | | | 0.50 | | |
| GRE | -1.31 | -1.75 | -3.06 | 0.93 | 2.40 | 3.33 |
| IRE | -1.83 | 0.42 | -1.41 | -2.11 | 0.85 | -1.26 |
| ITA | -2.29 | 1.49 | -0.80 | -0.33 | 0.99 | 0.66 |
| POR | -0.53 | 0.05 | -0.48 | -1.67 | 1.04 | -0.63 |
| SPA | -2.90 | -0.35 | -3.25 | -0.18 | 2.10 | 1.92 |
| **EUR5** | **-1.77** | **-0.03** | **-1.80** | **-0.67** | **1.48** | **0.80** |
| st.dev. | 0.81 | | | 1.10 | | |
| **EUR12** | **-0.77** | **0.85** | **0.09** | **-0.35** | **1.73** | **1.38** |
| st. dev. | 1.10 | | | 0.85 | | |
| CZE | 1.14 | -1.76 | -0.61 | -1.60 | 1.05 | -0.55 |
| DEN | 2.39 | -8.81 | -6.42 | -2.36 | 8.27 | 5.91 |
| POL | -1.14 | -2.86 | -4.01 | 1.13 | 3.12 | 4.25 |
| SWE | 0.62 | -4.65 | -4.03 | 0.54 | 5.22 | 5.76 |
| SWI | 0.33 | 0.73 | 1.06 | 0.25 | 0.78 | 1.03 |
| UK | -1.59 | 1.63 | 0.03 | -1.91 | 1.12 | -0.79 |
| **OE** | **0.29** | **-2.62** | **-2.33** | **-0.66** | **3.26** | **2.60** |
| st.dev. | 1.42 | | | 1.40 | | |
| CAN | -0.40 | 1.30 | 0.90 | -0.20 | 1.70 | 1.50 |
| US | -1.04 | 1.79 | 0.75 | -1.10 | 2.76 | 1.66 |
| **NA** | **-0.72** | **1.55** | **0.83** | **-0.65** | **2.23** | **1.58** |
| st. dev. | 0.38 | | | 0.51 | | |
| **NoEur** | **0.04** | **-1.58** | **-1.54** | **-0.66** | **3.00** | **2.35** |
| st.dev. | 1.31 | | | 1.24 | | |
| **Global** | **-0.44** | **-0.12** | **-0.56** | **-0.47** | **2.24** | **1.77** |
| st.dev. | 1.25 | | | 1.04 | | |

Tax: Total fiscal revenue

Exp: Primary expenditure

Groups of countries are unweighted averages

Table 2. *CFA* indicators and their composition

| | 2008(09)-13 | | | 2010-13 | | |
|---|---|---|---|---|---|---|
| | CFA | CTA | CEA | CFA | CTA | CEA |
| AUS | 1.06 | 5.85 | 6.91 | -1.98 | 6.85 | 4.86 |
| BEL | 2.85 | 6.24 | 9.09 | -1.99 | 7.65 | 5.66 |
| FIN | 5.40 | 6.07 | 11.47 | -2.08 | 10.45 | 8.38 |
| FRA | 1.88 | 5.56 | 7.45 | -3.19 | 7.59 | 4.40 |
| GER | 1.20 | 4.12 | 5.32 | -2.13 | 5.02 | 2.89 |
| LUX | 5.26 | 9.28 | 14.54 | 1.32 | 9.44 | 10.76 |
| NET | 5.53 | 3.85 | 9.38 | -0.66 | 6.47 | 5.80 |
| **EUR7** | 3.31 | 5.87 | 9.18 | -1.53 | 7.64 | 6.11 |
| GRE | 0.57 | -2.04 | -2.63 | -9.09 | 0.40 | -8.69 |
| IRE | -0.59 | -5.71 | -3.41 | -10.10 | 1.33 | -8.77 |
| ITA | 2.30 | 2.06 | 1.86 | -4.38 | 4.37 | -0.01 |
| POR | -0.19 | 0.68 | -1.67 | -9.04 | 3.10 | -5.94 |
| SPA | -2.34 | 0.88 | 1.09 | -6.20 | 3.89 | -2.31 |
| **EUR5** | 0.21 | -0.28 | -0.41 | -7.76 | 2.62 | -5.14 |
| **EUR12** | -0.12 | 3.30 | 5.18 | -4.13 | 5.55 | 1.42 |
| CZE | 1.49 | -0.12 | 0.09 | -3.10 | 4.87 | 1.77 |
| DEN | 1.88 | -2.40 | 4.18 | -0.74 | 10.08 | 9.34 |
| POL | 2.42 | -0.02 | 1.53 | -1.90 | 9.57 | 7.67 |
| SWE | 0.22 | 0.41 | 5.66 | 0.17 | 7.67 | 7.84 |
| SWI | 6.58 | 2.87 | 4.89 | 0.65 | 2.84 | 3.49 |
| UK | 1.55 | 2.48 | 5.21 | -6.95 | 6.49 | -0.47 |
| **OE** | 5.25 | 0.89 | 3.94 | -1.98 | 6.92 | 4.94 |
| CAN | 2.01 | 5.50 | 8.50 | -0.39 | 7.20 | 6.81 |
| US | 2.73 | 4.00 | 9.35 | -4.12 | 8.76 | 4.65 |
| **NA** | 3.06 | 5.90 | 10.08 | -2.25 | 7.98 | 5.73 |
| **NoEur** | 2.19 | 2.14 | 5.48 | -2.05 | 7.18 | 5.14 |
| **Global** | 3.0 | 2.84 | 5.30 | -3.29 | 6.20 | 2.91 |

CTA = cumulated tax adjustment
CEA = cumulated expenditure adjustment

Table 3. Central government's total deficit and gross debt as % of GDP, 2009-13

| | 2009 | | 2010 | | 2011 | | 2012 | | 2013 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Def/ GDP | Debt/ GDP | Def/ GDP | Debt/ GDP | Def/ GDP | Debt/ GDP | Def/ GDP | Debt/ GDP | Def/ GDP | Debt/ GDP |
| AUS | 4.1 | 69.5 | 4.5 | 71.9 | 2.6 | 72.2 | 3.0 | 74.2 | 2.1 | 74.3 |
| BEL | 5.7 | 95.8 | 3.9 | 96.0 | 3.9 | 98.0 | 3.1 | 100.5 | 3.4 | 100.8 |
| FIN | 2.7 | 43.5 | 2.8 | 48.4 | 0.9 | 48.6 | 1.0 | 50.5 | 0.7 | 51.7 |
| FRA | 7.6 | 79.2 | 7.1 | 82.3 | 5.2 | 85.8 | 4.5 | 90.5 | 4.5 | 92.5 |
| GER | 3.2 | 74.4 | 4.3 | 83.0 | 1.0 | 81.2 | 0.9 | 82.2 | 0.6 | 80.7 |
| LUX | 0.8 | 14.8 | 0.9 | 19.1 | 0.6 | 18.2 | 1.8 | 20.3 | 2.2 | 21.6 |
| NET | 5.6 | 60.8 | 5.0 | 62.9 | 4.6 | 65.2 | 4.4 | 70.1 | 4.5 | 73.0 |
| **EUR7** | **4.2** | **62.6** | **4.1** | **66.2** | **2.7** | **67.0** | **2.6** | **69.7** | **2.6** | **70.6** |
| GRE | 15.6 | 129.4 | 10.5 | 145.0 | 9.2 | 165.3 | 7.3 | 160.6 | 9.6 | 168.0 |
| IRE | 14.0 | 65.1 | 9.5 | 92.5 | 9.7 | 108.2 | 8.3 | 116.1 | 7.9 | 120.2 |
| ITA | 5.4 | 116.0 | 4.5 | 119.3 | 3.8 | 120.8 | 3.0 | 127.0 | 2.9 | 131.4 |
| POR | 5.6 | 83.1 | 9.8 | 93.3 | 4.2 | 107.8 | 4.7 | 113.9 | 3.7 | 117.1 |
| SPA | 10.2 | 53.9 | 9.3 | 61.2 | 8.5 | 68.5 | 6.4 | 80.9 | 5.5 | 87.0 |
| **EUR5** | **10.1** | **89.5** | **8.7** | **102.2** | **7.1** | **114.1** | **5.9** | **119.7** | **5.9** | **124.7** |
| **EUR12** | **6.4** | **80.6** | **6.2** | **86.2** | **4.1** | **88.6** | **3.2** | **92.4** | **2.9** | **93.3** |
| CZE | 5.8 | 34.6 | 4.7 | 38.4 | 3.2 | 41.4 | 4.4 | 46.2 | 2.9 | 49.0 |
| DEN | 2.7 | 40.7 | 2.5 | 42.7 | 1.8 | 46.4 | 4.1 | 45.4 | 1.7 | 44.3 |
| POL | 7.5 | 50.9 | 7.9 | 54.9 | 5.0 | 56.2 | 3.9 | 55.6 | 4.8 | 58.2 |
| SWE | 0.7 | 42.6 | -0.3 | 39.4 | -0.2 | 38.6 | 0.2 | 38.2 | 0.9 | 41.3 |
| SWI | -0.8 | 49.8 | -0.3 | 48.9 | -0.7 | 49.1 | -0.4 | 49.2 | -0.1 | 48.2 |
| UK | 11.4 | 69.6 | 10.1 | 79.6 | 7.7 | 85.7 | 6.1 | 91.2 | 6.4 | 94.6 |
| **OE** | **4.5** | **52.7** | **4.1** | **55.7** | **2.8** | **58.0** | **3.1** | **59.7** | **2.8** | **61.3** |
| CAN | 4.5 | 87.4 | 4.9 | 89.5 | 3.7 | 93.6 | 3.4 | 96.1 | 3.0 | 97.0 |
| US | 11.4 | 90.4 | 10.9 | 99.1 | 9.8 | 103.5 | 9.1 | 108.9 | 6.4 | 111.8 |
| **NA** | **8.0** | **88.9** | **7.9** | **94.3** | **6.7** | **98.6** | **6.2** | **102.5** | **4.7** | **104.4** |
| **NoEur** | **5.4** | **58.2** | **5.0** | **61.6** | **3.8** | **64.3** | **3.9** | **66.3** | **3.3** | **68.0** |
| **Global** | **6.2** | **66.9** | **5.6** | **72.5** | **4.2** | **76.8** | **3.9** | **79.9** | **3.7** | **82.1** |

Table 4. Decomposition of the growth of debt/GDP ratios in the austerity period, average percent values 2010-13

|  | Ave. FA | Inertia | Snowball | Growth | Total |
|---|---|---|---|---|---|
| AUS | -0.50 | 3.04 | 2.6 | -1.0 | 4.1 |
| BEL | -0.50 | 4.84 | 3.4 | -1.0 | 6.7 |
| FIN | -0.52 | 7.48 | 1.2 | -0.4 | 7.7 |
| FRA | -0.80 | 4.70 | 2.4 | -0.7 | 5.6 |
| GER | -0.53 | 3.34 | 2.2 | -1.5 | 3.4 |
| LUX | 0.33 | 3.94 | 0.4 | -0.2 | 4.5 |
| NET | -0.17 | 6.20 | 1.8 | 0.0 | 7.8 |
| **EUR7** | **-0.38** | **4.79** | **2.0** | **-0.7** | **5.7** |
| GRE | -2.27 | 5.58 | 5.7 | 5.5 | 14.5 |
| IRE | -2.53 | 5.29 | 2.5 | -0.6 | 4.7 |
| ITA | -1.09 | 3.32 | 5.2 | 0.3 | 7.8 |
| POR | -2.26 | 6.69 | 3.5 | 0.6 | 8.5 |
| SPA | -1.55 | 6.40 | 1.7 | 0.3 | 6.8 |
| **EUR5** | **-1.94** | **5.46** | **3.7** | **1.2** | **8.5** |
| **EUR12** | **-1.03** | **5.07** | **2.7** | **-0.5** | **6.2** |
| CZE | -0.77 | 3.31 | 1.4 | -0.3 | 3.7 |
| DEN | -0.18 | 5.83 | 0.7 | -0.3 | 6.0 |
| POL | -0.47 | 3.44 | 2.5 | -1.4 | 4.0 |
| SWE | 0.04 | 3.69 | 1.2 | -1.2 | 3.7 |
| SWI | 0.16 | 1.37 | 0.9 | -0.9 | 1.5 |
| UK | -1.74 | 7.34 | 2.5 | -0.9 | 7.2 |
| **OE** | **-0.49** | **4.16** | **1.7** | **-0.8** | **4.6** |
| CAN | -0.10 | 3.38 | 0.5 | -2.0 | 1.8 |
| USA | -1.03 | 5.50 | 2.5 | -2.0 | 5.0 |
| **NA** | **-0.56** | **4.44** | **1.5** | **-2.0** | **3.4** |
| **NoEUR** | **-0.51** | **4.23** | **1.5** | **-1.1** | **4.1** |

Table 5. GDP growth rates at constant 2005 prices (percent values)

| | Ave. 2000-07(08) | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | CGR 08(09)-13 | CGR 10-13 |
|---|---|---|---|---|---|---|---|---|---|
| AUS | 2.1 | 1.4 | -3.8 | 2.3 | 3.1 | 0.2 | 0.3 | 2.0 | 7.7 |
| BEL | 1.8 | 1.0 | -2.8 | 2.3 | 1.9 | -0.1 | 0.1 | 1.2 | 5.4 |
| FIN | 2.9 | 0.3 | -8.4 | 3.7 | 2.9 | -0.6 | -1.5 | -4.3 | 5.0 |
| FRA | 1.6 | -0.1 | -2.7 | 1.5 | 1.7 | 0.0 | 0.4 | 0.7 | 4.5 |
| GER | 1.4 | 1.1 | -5.1 | 3.7 | 3.0 | 1.3 | 0.5 | 3.1 | 10.6 |
| LUX | 3.8 | 0.8 | -5.3 | 2.7 | 0.6 | 1.3 | 0.2 | -0.7 | 6.7 |
| NET | 2.0 | 1.8 | -3.5 | 1.7 | 1.2 | -0.7 | -2.1 | -3.5 | 0.3 |
| **EUR7** | **2.2** | **0.9** | **-4.5** | **2.5** | **2.0** | **0.2** | **-0.3** | **-0.2** | **5.8** |
| GRE | 3.6 | -0.2 | -3.3 | -3.5 | -6.9 | -7.1 | -4.3 | -22.9 | -19.7 |
| IRE | 4.0 | -3.0 | -7.0 | -0.4 | 0.7 | 3.5 | -1.0 | -7.3 | 4.4 |
| ITA | 1.0 | -1.2 | -5.5 | 1.7 | 0.3 | -2.3 | -1.9 | -8.6 | -1.5 |
| POR | 1.0 | 0.0 | -2.9 | 1.4 | -1.6 | -3.0 | -1.1 | -7.1 | -3.6 |
| SPA | 3.1 | 0.9 | -3.7 | -0.1 | 0.7 | -2.0 | -1.8 | -6.8 | -2.6 |
| **EUR5** | **2.5** | **-0.7** | **-4.5** | **-0.2** | **-1.4** | **-2.2** | **-2.0** | **-10.6** | **-4.6** |
| **EUR12** | **1.7** | **0.3** | **-4.3** | **1.9** | **1.5** | **-0.5** | **-0.6** | **-2.1** | **3.4** |
| CZE | 4.5 | 3.1 | -4.5 | 2.5 | 1.8 | -1.0 | -1.0 | -2.4 | 4.0 |
| DEN | 1.6 | -0.8 | -5.7 | 1.6 | 1.1 | -0.4 | 0.3 | -4.0 | 4.3 |
| POL | 4.2 | 5.1 | 1.6 | 3.9 | 4.5 | 1.9 | 1.3 | 13.9 | 14.9 |
| SWE | 2.8 | -0.6 | -5.0 | 6.6 | 2.9 | 1.0 | 1.1 | 5.7 | 15.1 |
| SWI | 2.2 | 2.2 | -1.9 | 3.0 | 1.8 | 1.0 | 1.7 | 5.5 | 9.5 |
| UK | 2.7 | -0.8 | -5.2 | 1.7 | 1.1 | 0.1 | 1.3 | -1.8 | 6.7 |
| **OE** | **3.0** | **1.4** | **-3.4** | **3.2** | **2.2** | **0.4** | **0.8** | **2.8** | **9.1** |
| CAN | 2.6 | 0.7 | -2.8 | 3.2 | 2.4 | 1.8 | 1.8 | 6.5 | 11.8 |
| USA | 2.3 | -0.3 | -2.8 | 2.5 | 1.8 | 2.8 | 1.6 | 5.6 | 11.8 |
| **NA** | 2.5 | 0.2 | -2.8 | 2.9 | 2.1 | 2.3 | 1.7 | 6.0 | 11.8 |
| **NoEUR** | 2.6 | 1.1 | -3.3 | 3.1 | 2.2 | 0.9 | 1.0 | 3.6 | 9.8 |
| **Global** | 2.6 | 0.6 | -4.0 | 2.1 | 1.3 | -0.1 | -0.2 | -1.3 | 4.8 |

Ave. 2000-07(08): average growth rate from 2000 to the last year of positive growth

CGR 08(09)-13: compound growth rate from the first year of recession to 2013

Table 6. Output gap between actual GDP and potential GDP at constant 2005 prices, 2008-13
(percent values)

|  | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|
| AUS | 1.9 | -2.9 | -1.8 | -0.1 | -0.6 | -0.3 |
| BEL | 1.7 | -2.3 | -1.2 | -0.4 | -1.4 | -1.0 |
| FIN | 3.2 | -6.3 | -3.8 | -2.1 | -2.1 | -1.6 |
| FRA | 1.1 | -2.8 | -2.5 | -2.1 | -2.8 | -2.4 |
| GER | 2.1 | -3.8 | -1.4 | 0.0 | -0.9 | -0.7 |
| LUX | 2.6 | -4.2 | -2.7 | -2.2 | -2.4 | -1.4 |
| NET | 2.2 | -2.7 | -2.1 | -2.1 | -3.7 | -2.2 |
| **EUR7** | **2.1** | **-3.6** | **-2.2** | **-1.3** | **-2.0** | **-1.4** |
| GRE | 2.0 | -1.4 | -3.7 | -8.4 | -10.7 | -7.9 |
| IRE | -0.1 | -5.9 | -4.9 | -2.7 | 0.6 | -1.2 |
| ITA | 1.1 | -4.3 | -2.5 | -2.0 | -2.9 | -1.6 |
| POR | 0.0 | -2.8 | -1.5 | -2.7 | -4.6 | -1.4 |
| SPA | 0.2 | -4.4 | -4.6 | -3.8 | -4.4 | -2.5 |
| **EUR5** | **0.6** | **-3.8** | **-3.4** | **-3.9** | **-4.4** | **-2.9** |
| **EUR12** | **1.4** | **-3.6** | **-2.4** | **-1.7** | **-2.6** | **-2.2** |
| CZE | 5.3 | -1.8 | -1.0 | -0.2 | -1.8 | -3.4 |
| DEN | 2.2 | -4.4 | -3.6 | -3.1 | -4.1 | -4.7 |
| POL | 3.2 | 1.0 | 0.8 | 0.8 | -0.7 | -2.1 |
| SWE | 0.6 | -5.7 | -1.4 | -0.5 | -1.6 | -2.3 |
| SWI | 2.6 | -1.1 | 0.1 | 0.2 | -0.4 | -0.3 |
| UK | 1.5 | -4.1 | -2.9 | -2.4 | -2.8 | -2.2 |
| **OE** | **2.6** | **-2.7** | **-1.3** | **-0.9** | **-1.9** | **-2.5** |
| CAN | 1.3 | -2.9 | -1.2 | -0.4 | -0.5 | -0.8 |
| USA | 0.4 | -3.4 | -2.1 | -1.7 | -0.7 | -1.2 |
| **NA** | **0.8** | **-3.2** | **-1.7** | **-1.0** | **-0.6** | **-1.0** |
| **NoEUR** | **2.1** | **-2.8** | **-1.4** | **-0.9** | **-1.6** | **-2.1** |

Table 7. Unemployment rate 2000-13, all countries

|  | Ave. 2000-07 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| AUS | 4.4 | 3.8 | 4.8 | 4.4 | 4.2 | 4.3 | 4.7 |
| BEL | 7.7 | 7.0 | 7.9 | 8.3 | 7.2 | 7.6 | 8.0 |
| FIN | 8.6 | 6.4 | 8.2 | 8.4 | 7.8 | 7.7 | 8.1 |
| FRA | 8.8 | 7.8 | 9.5 | 9.7 | 9.6 | 10.2 | 10.6 |
| GER | 9.4 | 7.5 | 7.8 | 7.1 | 5.9 | 5.5 | 5.4 |
| LUX | 3.6 | 4.9 | 5.1 | 4.6 | 4.8 | 5.1 | 5.5 |
| NET | 3.9 | 3.1 | 3.7 | 4.5 | 4.4 | 5.3 | 6.9 |
| **EUR7** | **6.6** | **5.8** | **6.7** | **6.7** | **6.3** | **6.5** | **7.0** |
| GRE | 9.9 | 7.7 | 9.5 | 12.6 | 17.7 | 24.3 | 27.0 |
| IRE | 4.4 | 6.4 | 12 | 13.9 | 14.7 | 14.7 | 14.2 |
| ITA | 8.1 | 6.7 | 7.8 | 8.4 | 8.4 | 10.7 | 11.8 |
| POR | 6.9 | 8.5 | 10.6 | 12 | 12.9 | 15.9 | 18.2 |
| SPA | 10.2 | 11.3 | 18 | 20.1 | 21.7 | 25 | 27.0 |
| **EUR5** | **7.9** | **8.1** | **11.6** | **13.4** | **15.1** | **18.1** | **19.6** |
| **EUR12** | **7.2** | **6.8** | **8.7** | **9.5** | **9.9** | **11.4** | **12.3** |
| CZE | 7.6 | 4.4 | 6.7 | 7.3 | 6.7 | 7.0 | 7.1 |
| DEN | 4.6 | 3.4 | 6.0 | 7.5 | 7.6 | 7.5 | 7.3 |
| POL | 16.8 | 7.1 | 8.1 | 9.7 | 9.7 | 10.1 | 10.7 |
| SWE | 6.5 | 6.2 | 8.3 | 8.6 | 7.8 | 8.0 | 8.1 |
| SWI | 3.7 | 2.5 | 3.2 | 3.6 | 3.3 | 3.2 | 3.2 |
| UK | 5.1 | 5.6 | 7.6 | 7.8 | 8 | 7.9 | 8.0 |
| **OE** | **7.4** | **4.9** | **6.7** | **7.4** | **7.2** | **7.3** | **7.4** |
| CAN | 7.0 | 6.1 | 8.3 | 8.0 | 7.4 | 7.3 | 7.2 |
| USA | 5.1 | 5.8 | 9.3 | 9.6 | 8.9 | 8.1 | 7.7 |
| **NA** | **6.0** | **6.0** | **8.8** | **8.8** | **8.2** | **7.7** | **7.4** |
| **NoEUR** | **7.0** | **5.1** | **7.2** | **7.8** | **7.4** | **7.4** | **7.4** |
| **Global** | **7.1** | **6.1** | **8.1** | **8.8** | **8.9** | **9.8** | **10.3** |