



BANK FOR INTERNATIONAL SETTLEMENTS

BIS Working Papers

No 362

The "Austerity Myth": Gain Without Pain?

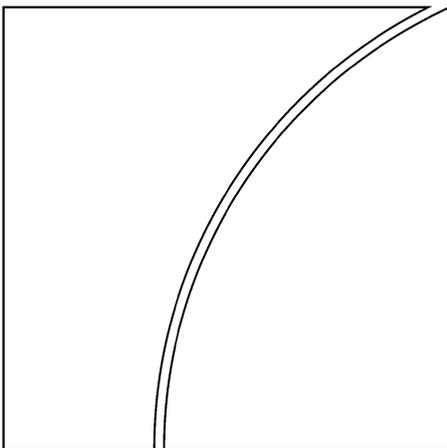
by Roberto Perotti, Discussion Comments by Carlo Cottarelli and Harald Uhlig

Monetary and Economic Department

November 2011

JEL classification: E62, E65, F32

Keywords: expansionary fiscal consolidations



BIS Working Papers are written by members of the Monetary and Economic Department of the Bank for International Settlements, and from time to time by other economists, and are published by the Bank. The papers are on subjects of topical interest and are technical in character. The views expressed in them are those of their authors and not necessarily the views of the BIS.

This publication is available on the BIS website (www.bis.org).

© *Bank for International Settlements 2011. All rights reserved. Brief excerpts may be reproduced or translated provided the source is stated.*

ISSN 1020-0959 (print)

ISBN 1682-7678 (online)

Foreword

On 23–24 June 2011, the BIS held its Tenth Annual Conference, on “Fiscal policy and its implications for monetary and financial stability” in Lucerne, Switzerland. The event brought together senior representatives of central banks and academic institutions who exchanged views on this topic. The papers presented at the conference and the discussants’ comments are released as BIS Working Papers 361 to 365. A forthcoming BIS Paper will contain the opening address of Stephen Cecchetti (Economic Adviser, BIS), a keynote address from Martin Feldstein, and the contributions of the policy panel on “Fiscal policy sustainability and implications for monetary and financial stability”. The participants in the policy panel discussion, chaired by Jaime Caruana (General Manager, BIS), were José De Gregorio (Bank of Chile), Peter Diamond (Massachusetts Institute of Technology) and Peter Praet (European Central Bank).

Table of contents

Foreword	iii
Conference programme	vii
The “Austerity Myth”: Gain Without Pain? (by Roberto Perotti)	1
Discussant comments by Carlo Cottarelli	58
Discussant comments by Harald Uhlig	60

Programme

Thursday 23 June 2011

- 12:15–13:30** Informal buffet luncheon
- 13:45–14:00** Opening remarks by Stephen Cecchetti (BIS)
- 14:00–15:30** **Session 1: The risks and challenges of long-term fiscal sustainability**
- Chair: Øystein Olsen (Central Bank of Norway)
- Author: Alan Auerbach (University of California, Berkeley)
“Long-term fiscal sustainability in major economies”
- Discussants: Pier Carlo Padoan (OECD)
Ray Barrell (NIESR)
- Coffee break (30 min)**
- 16:00–17:30** **Session 2: The effects of fiscal consolidation**
- Chair: Stefan Ingves (Sveriges Riksbank)
- Author: Roberto Perotti (Università Bocconi)
“The ‘austerity myth’: gain without pain?”
- Discussants: Carlo Cottarelli (IMF)
Harald Uhlig (University of Chicago)
- 19:00** **Dinner**
- Keynote lecture: Martin Feldstein (Harvard University/NBER)

Friday 24 June 2011

- 8:00–9:30** **Session 3: Fiscal policy and financial stability**
- Chair: Patrick Honohan (The Central Bank of Ireland)
- Author: Carmen Reinhart (Peterson Institute for International Economics)
“The liquidation of government debt”
- Discussants: Ignazio Visco (Bank of Italy)
Alan Taylor (University of California – Morgan Stanley)
- Coffee break (30 min)**
- 10:00–11:30** **Session 4: Fiscal policy and inflation**
- Chair: Prasarn Trairatvorakul (Bank of Thailand)
- Author: Eric Leeper (Indiana University)
“Perceptions and misperceptions of fiscal Inflation”
- Discussant: Christopher Sims (Princeton University)
Michael Bordo (Rutgers University)
- Coffee break (15 min)**

Friday 24 June 2011 (cont)

11:45–13:15

Session 5:

Fiscal policy challenges in EMEs

Chair:

Axel Weber (The University of Chicago Booth School of Business)

Author:

Andrés Velasco (Harvard Kennedy School)
“Was this time different ? Fiscal policy in commodity republics”

Discussants:

Choongsoo Kim (Bank of Korea)
Guillermo Calvo (Columbia University)

13:15

Lunch

15:00–16:30

Panel discussion

“Fiscal policy sustainability and implications for monetary and financial stability”

Chair:

Jaime Caruana (BIS)

Panellists:

José De Gregorio (Central Bank of Chile)
Peter Diamond (Massachusetts Institute of Technology)
Peter Praet (European Central Bank)

The “Austerity Myth”: Gain Without Pain?

Roberto Perotti*

Abstract

As governments around the world contemplate slashing budget deficits, the “expansionary fiscal consolidation hypothesis” is back in vogue. I argue that, as a statement about the short run, it should be taken with caution.

Alesina and Perotti (1995) and Alesina and Ardagna (2010) (AAP) have argued that fiscal consolidations may be expansionary if implemented mainly by cutting government spending. IMF (2010) criticizes the data and methodology used by AAP, and reach opposite conclusions. Some of the methodological critiques are correct. However, the implementation of the IMF methodology has several problems of its own. I then argue that because of the multi-year nature of the large fiscal consolidations, which are precisely the most informative ones, using yearly panels of fiscal policy is limiting. I present four detailed case studies, two – Denmark and Ireland – undertaken under fixed exchange rates (the most relevant case for many Eurozone countries today) and two – Finland and Sweden - after floating the currency.

All four fiscal episodes were associated with an expansion; but only in Denmark the driver of growth was internal demand. However, after three years a long slump set in as the economy lost competitiveness. In all the others for a long time the main driver of growth was exports. In Ireland this occurred because the sterling coincidentally appreciated. In Finland and Sweden the currency experienced an extremely large depreciation after floating.

In all consolidations interest rate fell fast, and wage moderation played a key role in generating a gain competitiveness and a decline in interest rates. Wage moderation was facilitated by the direct intervention of the government in the wage negotiation process. In Finland and Sweden, the adoption of inflation targeting at the same time of the consolidation helped the decline in interest rates.

These results cast doubt on at least some versions of the “expansionary fiscal consolidations” hypothesis, and on its applicability to many countries in the present circumstances. A depreciation is not available to EMU members today (except vis à vis countries outside the Eurozone). A net export boom is not feasible for the world as a whole. A further decline in interest rates is unlikely in the current situation. And incomes policies are not popular nowadays; moreover, international experience, and the Danish case, suggest that they are ineffective after a few years.

* IGIER – Bocconi University, CEPR and NBER. Email: roberto.perotti@unibocconi.it.

I thank Alberto Alesina, John FitzGerald, Patrick Honohan, and Philip Lane for comments, and Marko Oja of the Finnish Ministry of Finance and Sylvie Toly of the OECD for help with the data. I also thank participants at the 10th BIS Annual Conference on Fiscal Policy and Its Implications for Monetary and Financial Stability, Lucern, June 23-24 2011, and my discussants, Carlo Cottarelli and Harald Uhlig. Elia Boè and Jacopo Perego provided outstanding research assistance. This paper was produced as part of the project Growth and Sustainability Policies for Europe (GRASP), a Collaborative Project funded by the European Commission's Seventh Research Framework Programme, contract number 244725. Financial support by the European Research Council (Grant No. 230088) is also gratefully acknowledged.

1. Introduction

Budget deficits have come back with a vengeance. In the last three years, they have risen in virtually all countries, due to the recession and, in some cases, to bank support measures. What to do next is a matter of bitter controversy. For some, governments should start reining in deficits now, even though most countries have not fully recovered yet; if done properly – namely, by reducing spending rather than by increasing taxes – budget consolidations are not harmful, and might indeed result in a boost to GDP. This is one interpretation of Alesina and Perotti (1995) and Alesina and Ardagna (2009) (AAP thereafter), who study all the episodes of large deficit reductions in OECD countries, defined as country – years where the cyclically adjusted deficit falls by more than, say, 1.5 percent of GDP. They compare the averages of macroeconomic variables before, during and after these episodes, and find that consolidations based mainly on spending cuts are typically associated with above average increases in output and private consumption, while consolidations based mainly on revenue increases are associated with recessions.

For others, this evidence on expansionary government spending cuts is flawed, and the aftermaths of a recession are the worst time to start a fiscal consolidation. This is the message of IMF (2010) (IMF thereafter). The heart of the matter is the methodology used to estimate a cyclically adjusted change in the deficit, i.e. that part of the change in the deficit that is due to the discretionary action of the policymaker, as opposed to the automatic effects of the cycle on government spending and revenues. IMF argues that the cyclical adjustment by AAP (in turn a variant of the methodology adopted by the OECD in the *Economic Outlook* and by the IMF in the *World Economic Outlook*) fails to remove important cyclical components, and that this failure can explain a spurious finding of expansionary budget consolidations. IMF instead estimates “action – based” or “narrative” measures of fiscal consolidations, in the spirit of Romer and Romer (2010), and uses them to estimate a Vector Autoregression and compute impulse responses of GDP and its components to a discretionary shock to the government surplus. They conclude that all fiscal consolidations are contractionary in the short run. Although not based on a formal statistical analysis, Krugman (2010) argues that many cases of “expansionary fiscal consolidation” were driven by a net export boom, hence the mechanism – whatever it is – is not replicable in the world as a whole.

In this paper, I argue that the IMF criticism of the AAP approach is correct in principle and represents an important potential advance; however, the implementation of the approach has problems of its own, both in the way it computes action – based measures of fiscal consolidations and in the way

it estimates impulse responses to fiscal consolidations. On the other hand, large consolidations are typically multi-year affairs, and the means-comparison methodology of AAP is ill suited to deal with these cases. Both approaches are also subject to the reverse causality problems that are almost inevitable with yearly data, and both lump together countries and episodes with possibly very different characteristics.¹

For all these reasons, I argue that one can learn much from detailed case studies. I present four, covering the largest, multi-year fiscal consolidations that are commonly regarded as spending based (I plan to add more in future versions of this paper). Two of these episodes - Denmark 1982-86 and Ireland 1987-90 - were exchange rate based consolidations, while the other two – Finland 1992-98 and Sweden 1993-98 - were undertaken in the opposite circumstances, after abandoning a peg. For each episode, I do two things. First, I compute action-based measures of budget consolidations, often using the original documents, and taking into consideration also fiscal action outside the official budgets, that was often overlooked by IMF. As I will show, this typically results in smaller discretionary consolidations than estimated by the IMF or the OECD, and in a much smaller share of spending cuts. The reason is that often governments used supplementary budgets during the year to undo some of the spending cuts of the January budgets, and also because the IMF often only considers spending cuts or tax increases.

Second, I study in detail the timeline of budget consolidations, the behavior of interest rates, wages and the exchange rate, and of GDP and its components, in order to try and learn something about the possible channels at work. I use contemporary sources, like the OECD yearly *Economic Surveys* (“ES” from now on) of each country, and country specific studies.

In doing this, I focus on two very specific and narrow questions. First, is there evidence that large budget consolidations, particularly those that are based mainly on spending cuts, have expansionary effects **in the short run**? I will have nothing to say regarding the medium- to long-run effects of fiscal consolidations. As a consequence, I will have nothing to say about their social desirability: it might well be that reducing government spending is socially desirable even if it has contractionary effects in the short run.

Second, if the answer to the first question is in the affirmative, **how useful is the experience of the past as a guide to the present**? For instance, if fiscal consolidations were expansionary in the past because they caused a steep decline in interest rates or inflation, it is unlikely that the same mechanism can be relied on in the present circumstances, with low inflation and interest rates close to zero. Or, if

¹ Favero and Giavazzi (2011) study various dimensions of country heterogeneity and how this affects the IMF estimates of the effects of consolidations.

consolidations were expansionary mainly because they were associated with large increases in net exports, this mechanism is obviously not available to a large group of countries highly integrated between them.

That private consumption should boom when government spending falls would come as no surprise to believers in a standard neoclassical model with forward looking agents. Although in that model alternative time paths of government spending and distortionary taxation can create virtually any response of private consumption, from negative to positive, the basic idea is straightforward; lower government spending means lower taxes and higher households' wealth, hence higher consumption. This is sometimes dubbed the "confidence channel" of fiscal consolidations.² Lower taxes also mean less distortions, hence they *can* lead to higher output and investment. More generally, a large fiscal consolidation may signal a change in regime in a country that is in the midst of a recession, and may boost investment through this channel.

In open economies alternative effects may be at play. A fiscal consolidation might reinforce and make credible a process of wage moderation, either implicitly or by trading explicitly less labor taxes for wage moderation; this in turn feeds into a real effective depreciation and boosts exports. Or, it might reinforce the decline in interest rates, by reducing the risk premium or by making a peg more credible. These alternative channels were highlighted for instance in Alesina and Perotti (1995) and (1997) and Alesina and Ardagna (1998).

The main conclusions of the case studies I present here are:

(i) Discretionary fiscal consolidations are often smaller than estimated in the past, and spending cuts are less important than is commonly believed. Only in Ireland were revenue increases larger than spending cuts; in Finland, spending cuts were a negligible component of the consolidation.

(ii) All stabilizations were associated with expansions in GDP. Except in Denmark (one of the two exchange rate based stabilizations), the expansion of GDP was initially driven by exports. Private consumption typically increased 6 to 8 quarters after the start of the consolidation. And as national source data (as opposed to OECD data that turned out to be incorrect) show, the expansion in what was probably the most famous consolidations of all - Ireland – turned out to be much less remarkable than previously thought.

(iii) In Denmark the stabilization relied most closely on the exchange rate as a nominal anchor, and as such is of particular interest for small EMU members today. Denmark relied on an internal devaluation via wage restraint and incomes policies as a substitute for a devaluation. It exhibited all the

² Or "confidence fairy", in the less charitable interpretation of Krugman (2011).

typical features of an exchange rate based stabilization: inflation and interest rates fell fast, domestic demand initially boomed; but as competitiveness slowly worsened, the current account started worsening, and eventually growth ground to a halt and consumption declined for three years. The slump lasted for several years.

(iv) In the second exchange rate based stabilization, Ireland, the government depreciated the currency before starting the consolidation and fixing the exchange rate within the European Exchange Rate Mechanism (ERM). Again wage restraint and incomes policies played a major role, but a key feature was the concomitant depreciation of the sterling and the expansion in the UK, that boosted Irish exports and contributed to reducing the nominal interest rate.

(v) The two countries that instead floated the exchange rate while consolidating, Finland and Sweden, experienced large real depreciations and an export boom. Also, in both countries inflation targeting was adopted at the same time as the consolidations were started.

(vi) The budget consolidations were accompanied by large decline in nominal interest rates, from very high levels.

(vii) Wage moderation was essential to maintain the benefits of the depreciations and to make possible the decline of the long nominal rates. In turn, wage moderation probably had a powerful effect as a signal of regime change.

(viii) Incomes policies were in turn instrumental in achieving wage moderation, and in signaling a regime shift from the past. Often these policies took the form of an explicit exchange between lower taxes on labor and lower contractual wage inflation. However, the international experience suggests that incomes policies are effective for a few years at best. The experience of Denmark in this study is consistent with this.

These results are useful to understand what are the typical mechanisms and initial conditions that are associated with expansionary fiscal consolidations. Some of the conditions that made these consolidations expansionary (a decline in interest rates from very high levels, wage moderation relative to other countries, perhaps supported by incomes policies) seem not to be applicable in the present circumstances of low interest rates and low wage inflation. The experience of the exchange rate based stabilizations, Ireland and Denmark, is particularly interesting, as it is conceivably more relevant for the Eurozone countries that are experiencing budget problems. Both countries managed to depreciate the exchange rate prior to pegging and to the consolidation, an option that is not available to members of the EMU except vis à vis the non-Euro countries as a whole. Ireland also benefitted from the

appreciation of the currency of its main trading partner, the UK. In contrast, the Danish expansion was short lived, as it quickly ran into a loss of competitiveness that hampered growth for several years.

The timing and role of exports growth also casts doubt on the “confidence explanation” of expansionary fiscal consolidations; an expansion that is based on a real depreciation and a net export boom is also obviously not available to the world as a whole.

However, even in the short run budget consolidations were probably a necessary condition for output expansion for at least three reasons: first, they were instrumental in reducing the nominal interest rate; second, they made wage moderation possible by signaling a regime change that reduced inflation expectations; third, for the same reason they were instrumental in preserving the benefits of nominal depreciation and thus in generating an export boom.

In my analysis, I do not use formal tools; I do not estimate consumption or investment functions, to test for instance whether there are positive residuals during fiscal consolidations. Many consumption and investment functions have been estimated for these countries before with a specific focus on these consolidation episodes,³ and I do not have anything to add to the existing estimates.

I do not consider political factors, such as whether fiscal consolidations are more frequently observed under majority or minority governments, or under coalition or single party governments. Similarly, I do not address the role of budget institutions, such as whether some institutions or processes are more conducive to effective consolidations, or the role of expenditure ceilings. These are all important issues, that have been dealt with elsewhere (see e.g. Alesina, Perotti and Tavares 1998 and Lessen 2000 on the former issue, and Guichard et al. 2007, Hauptmeier, Heipertz and Schuknecht 2007, Ljungman 2008, Hardy, Kamener and Karotie 2011, and Borg 2010 on the latter).

I will also have little to say about the composition of spending cuts and revenue increases; again, this is an extremely important question, and the original focus of Alesina and Perotti (1995), but one that is difficult to address in the context of the narrative approach that I use here.

This paper has obviously numerous antecedents. The closest antecedent is Alesina and Ardagna (1998), who also look at case studies and emphasize the role of wage dynamics and incomes policies. I defer a discussion of this and other papers to section 5.

The outline of the paper is as follows. Section 2 presents a simple statistical model that allows a unified treatment of the methodologies of the IMF and of AAP, and discusses the biases associated with

³ See e.g. Giavazzi and Pagano (1990) for Ireland and Denmark, Giavazzi and Pagano (1996) for Sweden, Bradley and Whelan (1997) for Ireland, Honkapohja and Koskela (1999) for Finland, Bergman and Hutchison (2010) for Denmark.

each. Section 3 focuses on the IMF approach, and section 4 on the AAP approach. Section 5 discusses the relation with the literature. Section 6 presents the case studies. Section 7 concludes.

2. A simple static model

The intuition for the AAP approach and for the IMF criticism of that approach can be gathered from a simple static model. The equation for the budget surplus is

$$\Delta s = \alpha_y \Delta y + \alpha_p \Delta p + \beta_y \Delta y + \varepsilon_s \quad \alpha_y > 0; \quad \alpha_p > 0; \quad \beta_y > 0 \quad (1)$$

where s is the budget surplus as a share of GDP, y is the log of real GDP, and p is the log of asset prices. Due to the operation of automatic stabilizers, the surplus increases automatically (i.e. for given policy parameters like tax rates and eligibility rules for unemployment benefits) when GDP increases ($\alpha_y > 0$). The surplus also increases automatically when asset prices increase, because of their effects on tax revenues ($\alpha_p > 0$).⁴ In addition, when GDP increases policymaker might implement systematic, countercyclical changes to policy parameters (e. g., increase tax rates) to cool down the economy, and vice versa in recessions: this is captured by $\beta_y > 0$. Finally, the random component ε_s captures discretionary actions by the policymaker, which are not motivated by the response to cyclical developments: for instance, actions motivated by ideology or long run growth considerations.

I allow GDP to depend on the pure discretionary component ε_s but also on the systematic discretionary component $\beta_y \Delta y$, possibly with different coefficients:

$$\Delta y = \gamma_1 \varepsilon_s + \gamma_2 \beta_y \Delta y + \varepsilon_y \quad (2)$$

In a keynesian world presumably $\gamma_1 < 0$ and $\gamma_2 < 0$.⁵

Finally, I assume that Δp is white noise: $\Delta p = \varepsilon_p$, and it is positively correlated with Δy : $\text{cov}(\Delta y, \varepsilon_p) > 0$. ε_s instead is a pure policy shock, uncorrelated with ε_p or ε_y .

⁴ See e.g. Morris and Schuknecht (2007) and Benetrix and Lane (2011)

⁵ I am simplifying considerably here. While a textbook keynesian model like the IS-LM model usually does imply $\gamma_1 < 0$, virtually any contemporaneous or dynamic relation between the surplus and GDP can occur in a neoclassical model, with or without price rigidity. Only for simplicity I will sometimes refer to the case of $\gamma_1 > 0$ as “neoclassical effects” of fiscal policy, or “expansionary effects of fiscal consolidations”.

The issue of estimating the fiscal policy multiplier can be interpreted as finding a consistent estimate of γ_1 in equation (2) (of course in general this will be done in a dynamic context, such a Vector Autoregression, but this simple static model is enough for the key intuition). The econometrician, however, in general does not observe ε_s , but only Δs . There are basically two ways to proceed next, which correspond to the two approaches by AAP and IMF.

AAP apply a standard cyclical adjustment method, such as that by the OECD (see e.g. Fedalino, Ivanova, and Horton 2009): they use existing estimates of the automatic output elasticity α_y to subtract $\alpha_y \Delta y$ from the observed change in the surplus.⁶ Hence one ends up with the AAP measure of the cyclically adjusted surplus:

$$\Delta s^{AAP} = \beta_y \Delta y + \alpha_p \varepsilon_p + \varepsilon_s \quad (3)$$

There are clearly two potential problems with using this measure of the surplus, as emphasized by IMF. The first arises because Δs^{AAP} includes a countercyclical response by policymakers to output shocks, $\beta_y \Delta y$, which is positively correlated with output changes since $\beta_y > 0$. I call this the **“countercyclical response”** problem.⁷ The second problem arises because Δs^{AAP} contains a component, $\alpha_p \varepsilon_p$, that is positively correlated with output since standard cyclical adjustments do not correct for asset price changes and $\alpha_p > 0$. I call this the **“imperfect cyclical adjustment”** problem.⁸

⁶ The OECD constructs the cyclically adjusted change in the surplus using external estimates of the elasticity to output of each type of tax revenues. The actual implementation of this approach by AAP is different: they first regress budget variables on the unemployment rate, and then take the residuals of these regressions.

⁷ [The cyclical adjustment method] “omits years during which actions aimed at fiscal consolidation were followed by an adverse shock and an offsetting discretionary stimulus. For example, imagine that two countries adopt identical consolidation policies, but then one is hit by an adverse shock and so adopts discretionary stimulus, while the other is hit with a favorable shock. [...] The standard approach would therefore tend to miss cases of consolidation followed by adverse shocks, because there may be little or no rise in the [cyclically adjusted primary balance] despite the consolidation measures.” (IMF, p. 4).

⁸ “The first problem is that cyclical adjustment methods suffer from measurement errors that are likely to be correlated with economic developments. For example, standard cyclical-adjustment methods fail to remove swings in government tax revenue associated with asset price or commodity price movements from the fiscal data, resulting in changes in the [cyclically adjusted primary balance] that are not necessarily linked to actual policy changes. Thus, including episodes associated with asset price booms—which tend to coincide with economic expansions—and excluding episodes associated with asset price busts from the sample introduces an expansionary bias.” (IMF, p. 4)

The action-based, or narrative measure of fiscal policy stance constructed by IMF is an attempt to solve both problems by constructing a series for ε_s directly, using the original official estimates of the effects on spending and revenues of each specific measure in a budget or in a spending or tax bill. Hence

$$\Delta S^{\text{IMF}} = \varepsilon_s \quad (4)$$

Now consider using these two measures of the discretionary fiscal stance to estimate γ_1 . The reduced form for output is

$$\Delta y = k\gamma_1\varepsilon_s + k\varepsilon_y; \quad k = 1/(1 - \gamma_2\beta_y) \quad (5)$$

An OLS regression of Δy on ΔS^{IMF} therefore gives:

$$\gamma^{\text{IMF}} = k\gamma_1 = \gamma_1/(1 - \gamma_2\beta_y) \quad (6)$$

Hence, if the world is Keynesian ($\gamma_1 < 0$) the IMF estimate of γ_1 is biased towards 0 because of the countercyclical response problem. Following a unitary realization of ε_s , GDP falls by γ_1 ; then the policymaker reacts, on average, by increasing the surplus by β_y , which leads to a decline in output by $|\gamma_2\beta_y|$, and so on. If one is interested in studying how much GDP reacts to a unit exogenous change in the surplus, and not in these indirect effects via the policymaker response, the estimated coefficient from the IMF approach is biased towards 0: one estimates a less powerful Keynesian effect of fiscal policy than in the true model. However, it is likely that this particular bias of the IMF approach is relatively small.

Note that the problem stems from the use of annual data. With quarterly data, it would be plausible to assume $\beta_y = 0$, since the policymaker would not be able to learn about an output shock and react to it within three months. This was indeed the key identifying assumption in Blanchard and Perotti (2002). Note the parallel with changes in the Federal Fund rate target. Virtually all policy changes to the FFR are driven by countercyclical considerations. But, by assuming that changes in the FFR did not affect GDP within a month, with monthly data one can identify the component of the FFR forecast error that is orthogonal to GDP forecast errors.

Now consider the AAP approach. The estimated OLS effect of a regression of Δy on ΔS^{AAP} is

$$\gamma^{AAP} = \text{cov}(\Delta s^{AAP}, \Delta y) / \text{var}(\Delta s^{AAP}) > \gamma_1 \quad (7)$$

It is easy to show that the bias generated by the AAP approach is bigger than the IMF bias, essentially because the AAP approach is affected both by the imperfect adjustment problem and by the countercyclical response problem.⁹ An incomplete cyclical adjustment biases the coefficient towards zero because it generates a positive correlation between the change in the AAP surplus and the error term in the estimated GDP equation; hence, it biases the results again towards a less powerful keynesian effect of fiscal policy.

Thus, methodologically the IMF approach is potentially an important step forward. However, contrary to what it is claimed, it does not explain the key finding of AAP, namely the expansionary effects of spending based consolidations. In addition, its implementation suffers from other problems of its own that complicate its interpretation. I now turn to these issues.

3. The IMF approach

In the simplest version of the IMF approach, one computes impulse responses from single equations regressions like

$$\Delta y_t = \rho_1 \Delta y_{t-1} + \dots + \rho_k \Delta y_{t-k} + \lambda_0 \varepsilon_{s,t} + \lambda_1 \varepsilon_{s,t-1} + \dots + \lambda_h \varepsilon_{s,t-h} + \eta_t \quad (8)$$

In the more general case, one computes a VAR, in which lags 0 to h of $\varepsilon_{s,t}$ appear as exogenous variables in each equation.

Panel data VARs are always dangerous objects: they impose the same dynamics on potentially very different groups of countries (see Favero and Giavazzi 2011 on this), and they introduce a bias from the presence of lagged endogenous variables. Besides these well known problems, I will focus here on three others that are more specific to the particular application.

⁹Note in particular that the IMF approach is unbiased if $\beta_y = 0$, while the AAP approach continues to be biased.

A. Why the IMF approach does not explain the expansionary fiscal stabilization results

The key methodological point of IMF is that the bias generated by the imperfect cyclical adjustment problem and by the countercyclical response problem can explain the expansionary fiscal consolidation results of AAP. This is incorrect.

To understand why, note that IMF and AAP agree that, on average, fiscal consolidations are associated with a recession in the short run. Where they differ is in the effects of spending based consolidations: still contractionary according to IMF, expansionary according to AAP.

However, contrary to the claim by IMF, the **imperfect cyclical adjustment bias** cannot explain this difference - in fact, it goes in the opposite direction: in other words, removing this bias would *reinforce* the main finding of AAP, i.e. that revenue based consolidations are contractionary while spending based ones are expansionary. In fact, if the IMF is correct, in periods of high growth, cyclically adjusted revenues are overestimated, hence the AAP approach imparts a spurious *positive* bias to the correlation between increases in the surplus that are due to increases in revenues and GDP growth; but the AAP method finds a *negative* correlation.

The **countercyclical response bias** also is unlikely to explain the expansionary consolidations result. For discretionary fiscal policy to react to GDP developments within the current fiscal year, discretionary fiscal action has to be quick. Changing taxes is typically easier, and works faster, than changing spending; thus, as a first response policymakers will usually cut taxes in response to negative shocks, and will increase taxes in response to positive shocks. Again, this would impart a *positive* bias to the correlation between revenue based increases in the surplus and GDP growth, while the AAP method finds a *negative* correlation.

B. The censoring bias of the IMF approach

IMF records only positive values of ϵ_s , and sets all negative values to 0. It is easy to show that censoring of the independent variable generates a bias away from 0 of the coefficient of interest: Figure 1, adapted from Rigobon and Stoker (2005), provides the intuition. Rigobon and Stoker also show that the bias can be substantial if a large share of the observations are censored; in the IMF study, these are about 60 percent of the whole sample. Hence, if fiscal policy has Keynesian effects, censoring of the independent variable will show even stronger Keynesian effects; symmetrically, if fiscal policy has neoclassical effects, censoring will show even stronger neoclassical effects.

C. The standard error of the impulse responses

IMF reports impulse responses with one standard error bands. While this is somewhat typical of the fiscal policy literature, I now agree with Ramey (2011) that there is no reason why only this particular literature should deviate from the norm in macroeconomics.¹⁰ The problem is almost certainly more serious in a panel VAR, because of the correlation of errors across countries, which is bound to be an issue in this context; in the micro literature, this correlation has been shown to lead to a downward bias in the estimated standard errors by a factor that can easily reach 10 or more (see e.g. Angrist and Pischke (2008) or Bertrand, Duflo and Mullainathan (2004)). Failure to correct for this can therefore lead to a vast underestimation of the uncertainty surrounding the estimated impulse response. If one considers that the reported impulse responses would already not be significant if two standard error bands were used, it is doubtful how much confidence we should put in these estimates – a point to which I will return below.

D. Omitting the countercyclical response in the IMF approach

In computing its action – based measure of consolidations, IMF includes only those actions that can be ascribed to the goal of enhancing long run growth or reducing the deficit, thus excluding actions undertaken with the goal of stabilizing short run fluctuations. While omitting the countercyclical response of fiscal policy has an obvious motivation for the purposes of estimating the multiplier of fiscal policy actions (as in Romer and Romer 2010), it can provide the wrong picture of the actual fiscal policy stance when trying to gather the size of a fiscal consolidation. It is also not easy to implement on a large set of countries, often without the help of primary sources like the original budget documents.

Perhaps most importantly, it is very difficult to identify motives behind a certain policy action, and it must have been even more difficult to contemporaries. It is conceivable that most policy actions are justified at some point by the desire to achieve such worthy goals as “growth” or “fiscal discipline”; finding the “true” motivation is likely to be nearly impossible. It is unlikely, however, that the public at the time would weigh differently the different measures, depending on their alleged motivation.

For all these reasons, omitting these actions gives a distorted picture of the fiscal stance: for instance, as I show later, IMF concludes that there was a large budget consolidation in Finland between 1992 and 1995; but in fact there was hardly any, because spending cuts in the main budgets were often interspersed with spending increases in supplementary budgets that are largely ignored by IMF. Some of

¹⁰ With apologies, having used one standard error bands in my own work.

these supplementary measures might have had a countercyclical motivation (if so, it was rarely stated explicitly); more likely, these measures were taken in response to a political opposition to the earlier budget cuts - perhaps within the government itself.

In other cases, the difference in motivations was extremely – perhaps too – subtle even with hindsight. For instance, in September 1982 the new Danish government introduced a package of budget austerity in order to curb the current account deficit. In 1986 it increased taxes to achieve the same goal. True, the former occurred in a context of a much larger budget deficit, but the main motivation appears to have been the same. IMF counts the former, but not the latter.

4. Comparing averages in the AAP approach

The AAP approach consists of comparing average values of several macro variables before, during and after large fiscal consolidations. First, AAP define a country-year as a fiscal consolidation if in that year the cyclically adjusted primary balance improves by, say, at least 1.5 per cent of GDP. Then they compute average values across episodes of the change in the primary surplus, of GDP, of consumption growth, and a number of other variables., “during” the year of the consolidation and in the two years “before” and “after” the consolidation. They repeat the exercise separately for “expansionary” consolidations (those that were accompanied by an increase in growth) and for “contractionary” ones.

Finding the effects of fiscal consolidations is not different from estimating (possibly nonlinear) fiscal policy multipliers, an issue that has been the object of a heated methodological debate recently. What is the justification then for comparing averages of large consolidations? Three possible reasons come to mind: (i) there are large measurement errors, which are minimized by focusing on large consolidations; (ii) the effects of fiscal policy can be nonlinear, so that it makes sense to isolate large consolidations; (iii) consolidations are random events, that are independent of initial conditions and other variables.

However, even if assumptions (i) to (iii) above are correct, it is not clear what are the advantages of comparing means relative to running a VAR (the method adopted by the IMF, although subject to the censoring bias illustrated above). But there are two more potential problems with the implementation of the mean – comparison method. Both have to do with the fact that large consolidations are seldom

one-year events. I illustrate them using the most recent incarnation of the AAP approach, Alesina and Ardagna (2010).

A. Identifying multi-year fiscal consolidations

If, say, year t and $t+2$ are both consolidations years according to the definition above, year $t+2$ appears both in the “after” average of the year t consolidation and in the “during” average of the year $t+2$ consolidation. The issue becomes trickier because, if there are three consecutive years of consolidation, t , $t+1$ and $t+2$, Alesina and Ardagna (2010) consider only year t as “during” and years $t+1$ and $t+2$ as “after”; in other words, now year $t+2$ is no longer considered the “during” year of a different consolidation.

B. Comparing averages in multi-year fiscal consolidations

For all these reasons, it is difficult to interpret a comparison of these averages. An example of the possible complications that may arise is in Table 1.¹¹ The table displays a comparison of the rate of growth of business investment “during” (year t) relative to “before” (years $t-1$ and $t-2$) the consolidation, and “after” (years $t+1$ and $t+2$) relative to “during”, with the standard errors of these differences.¹² Clearly, business investment booms “during” the expansionary consolidations, while it does not budge during the contractionary ones. But then “after” the expansionary consolidations business investment declines for two years at almost the same yearly rate at which it increased “during” the consolidation, so that by year $t+2$ it is below the level of year t , the consolidation year. In contrast, after the contractionary consolidations business investment increases for two years, and at the end of year $t+2$ it is well above its level in year t .

The case of business investment is extreme, as the other macro variables do not exhibit this pattern; also, business investment does not exhibit this pattern in Alesina and Perotti (1995) or Alesina and Ardagna (1998). But it is still useful in order to illustrate the issue. Exactly because fiscal consolidations are typically not one-year events, it is difficult to imagine that their effects manifest

¹¹ The table does not exactly replicate the results of Alesina and Ardagna (2010) because I have kept only those episodes for which there are complete data for the “after” period. In Alesina and Ardagna (2010), some episodes do not have an “after” average, hence the samples of “during” and “after” do not have the same size. To compute the standard error of the difference between the two samples, for each episode at time t I take the average of the years $t+1$ and $t+2$, I subtract the value at t , and I compute the average and standard error of all 20 episodes thus constructed.

¹² The standard error of the differences was not calculated in Alesina and Perotti (1995) or Alesina and Ardagna (2010).

themselves fully in the year of the consolidation itself. Hence, it is important to understand what happens also after the consolidation, but then the potential confusion between “after” and “during” becomes relevant.

C. Endogeneity and pre-existing trends

Conceptually, the means- comparison method is not different from a difference – in – difference estimator, in which one compares, say, the difference in the rates of growth of GDP after and before an expansionary consolidation with the same difference in contractionary consolidations. In DD estimation, a key problem is that of pre-existing trends: perhaps the finding that the rate of growth increases more in expansionary consolidations is just a result of a pre-existing stronger trend in the countries that we then assign to the “expansionary” group.

This problem is related to that of endogeneity of fiscal policy. We have seen that the imperfections in the cyclical adjustment of revenues, of the type emphasized by IMF, cannot explain the expansionary fiscal adjustment result of AAP. But there are other possible problems with the cyclical adjustment that may pollute the interpretation of the evidence. There is anecdotal evidence that the cyclical adjustment may be particularly problematic in large recessions or expansions. For instance, during the recessions of the late eighties and early nineties, Finland and Sweden experienced dramatic automatic increases in welfare related spending, of several percentage points of GDP in just one year. If this is true, there is an alternative reading of the means - comparison evidence on expansionary adjustments. Suppose there is an exogenous, persistent positive shock to growth: government spending as a share of GDP will fall GDP growth accelerates, giving the impression of an expansionary, spending based consolidation while in reality fiscal policy was completely passive. This frequently heard criticism of the expansionary fiscal consolidation view is difficult to address, but at a minimum it seems to require a more satisfactory treatment of the dynamics of consolidations than just looking at the one year of the consolidation.

5. Relation with the literature

The literature on fiscal consolidations is large, and it has been surveyed in part in Alesina and Ardagna (2010). Here, I will focus specifically on recent work that is more closely related to the present paper.

The closest antecedents of this paper are Alesina and Ardagna (1998) and Broadbent and Daly (2010). Alesina and Ardagna (1998) apply the means-comparison method, followed by ten case studies. Most of the cases are one- or two-year episodes; only Ireland and Denmark last three years. The treatment of each case is necessarily more concise than in the present paper. Like this paper, they emphasize the role of wage developments, although they do not study in detail the evolution of wage negotiations and the relation with GDP and its components. Also, their conclusions are sometimes difficult to reconcile with the evidence they present: as Jordi Galí points out in his discussion, relative unit labor costs actually *increase* immediately after the start of the expansionary consolidations, while the trade balance *improves* significantly during the recessionary consolidations. There is also no discussion of the role of interest rates, that play instead a critical role in my analysis.

Broadbent and Daly (2010) also apply the means-comparison method and present three short case studies, which display the salient features of each episode. The basic message is similar to Alesina and Ardagna (1998), with an additional emphasis on the role of the fall in interest rates. They point out correctly that interest rates declined in revenue based consolidations as well.

Baker (2010) and Jajadev and Konczal (2010) study the samples of fiscal consolidations of Alesina and Ardagna (2010) and Broadbent and Daly (2010) with a view to their applicability to current circumstances. They both point out that a key feature of the consolidations of the past is the scope for reducing interest rates, which is not available now. Jajadev and Konczal (2010) also argue that growth in the year preceding the adjustment was already strong on average in the sample of Alesina and Ardagna (2010)'s expansionary consolidations.

Lilico, Holmes and Sameen (2009) also present six case studies, although they focus more on the budget and political processes of the consolidations.

6. Case studies

I now present four cases studies. All four cover small, open European countries. The first two, Denmark 1983-86 and Ireland 1987-89, are typically regarded as the classical examples of “expansionary fiscal consolidations”. They are also examples of exchange rate based stabilizations, in which a country pegs the exchange rate to obtain a rapid decline in inflation (although, as we will see, things are not so clear-cut in the case of Ireland). The next two cases are Finland 1992-98 and Sweden 1993-98. These were also associated with an economic expansion, but undertaken under opposite circumstances in one important respect, i.e. after abandoning a peg and letting the currency float.

For each country, I display four tables, displaying my reconstruction of a narrative measure of yearly discretionary changes in spending and revenues, various types of interest rates and spreads, various measures of exchange rates, unit labor costs, and inflation, and GDP and its components.

DENMARK

In 1980 and 1981 Denmark entered a recession. The deficit worsened quickly, from 1.5 percent of GDP in 1979 to 11 percent in 1982; interest payments rose, but the government also increased spending under pressure from rising unemployment; as a consequence, the primary deficit increased by 7.5 percent of GDP. The recession was relatively mild, in part because the government devalued or realigned the Krone several times during 1979-82.¹³ In fact, in those three years the nominal effective exchange rate depreciated by about 15 percent and exports increased by about 25 percent cumulatively.

In 1982 GDP expanded strongly, at 4 percent, spurred mostly by investment: private consumption was subdued, and so were exports. Wage dynamics accelerated, the current account deficit rose to 4 percent of GDP, and the Krone came under strong pressure; to pre-empt a further

¹³ The Krone was devalued unilaterally in November 1979, adjusted downward on the occasion of general ERM realignments in September 1979 and February 1982, while it stood firm when other currencies realigned in October 1981 and June 1982.

worsening of the macroeconomic picture, the new government that took office in September 1982 embarked in a medium run stabilization program.

The program adopted a two-pronged approach to achieve its goals of enhancing competitiveness and reducing the budget deficit: it explicitly ruled out devaluations, relying instead on the exchange rate as a nominal anchor; and emphasized incomes policies to achieve wage restraint. As we will see, the Danish episode exhibits all the hallmarks of a typical exchange rate based stabilization (see e.g. Ades, Kiguel and Liviatan 1993 and Detragiache and Hamann 1999): an initial rapid decline in inflation and nominal interest rates, a boom in domestic demand led by private consumption (especially durables) and, to a lesser extent, by private investment; a gradual appreciation of the real exchange and a deterioration of the current account, which eventually led to the undoing of the programme.

Budget timetable. Overall, I calculate that between 1983 and 1987 discretionary measures improved the primary balance by 8.9 percent of GDP, 55 percent of which tax increases (see Table 2). IMF estimates instead a smaller consolidation, 6.7 percent of GDP, 35 percent of which tax increases.¹⁴ IMF and I agree almost exactly on the size and timing of spending cuts; but IMF records much smaller tax increases because it omits the austerity measures of December 1985 and March 1986 (see below), totaling about 2 percent of GDP, on the ground that they were undertaken for countercyclical reasons. However, this underscores the difficulties of attributing a sharp motive to fiscal policy actions: officially, these measures were undertaken for the same reasons as the initial 1982 consolidation, namely to tackle the current account deficit.

The fiscal consolidation itself was in two parts. The package introduced in September 1982 abolished the automatic indexation of tax schedules, froze unemployment benefits, imposed a tax on pension schemes (to be replaced from 1984 by a tax on their interests and dividends earnings), and increased employers' social security contributions. The result was almost 2 percent of GDP in spending cuts and 1 percent of GDP in revenue increases in 1983.¹⁵

After the draft 1984 Budget was rejected in December 1983, elections were held and the government was confirmed in office. The April 1984 budget and various measures taken during the year cut spending by 1.2 percent of GDP and increased taxes by 1.5 percent of GDP.

¹⁴ These numbers and the IMF numbers that follow are based on Devries et al. (2011).

¹⁵ Local taxes also increased markedly (see 1982/83 ES, p. 26). 1983/84 ES, p. 9 also reports considerable reductions in local governments' public investment (recall that "ES" stands for "OECD Economic Survey"). These effects have not been quantified.

In December of 1985, following continuing worsening of the trade balance in the second half of the year, the government decided on a new austerity package, which was followed by two more in March and October 1986. All three relied mostly on tax increases. The third one in particular (the "potato diet") was worth 1.5 percent of GDP and introduced a 20 percent tax on interests (exceptions included mortgages, loans to business and to students) and further restrictions on consumer credit.

Inflation, wage dynamics, competitiveness, and interest rates. Between 1980 and 1982 relative unit labor costs in manufacturing fell by more than 15 percent, thanks to the depreciation of the Krone and a good productivity performance. Thus, Denmark entered the consolidation phase after accumulating a large depreciation. However, the price of this policy of devaluations and realignments was high interest rates and a large differential vis à vis Germany: in September 1982, long-term interest rates reached a peak of 23 percent.

As we have seen, an important component of the September 1982 stabilization package was the use of the exchange rate as a nominal anchor. This policy gained credibility in March 1983 when the Krone followed the DM in appreciating in an ERM realignment; the interest differential with Germany came down quickly. A second precondition for the credibility of the policy was wage restraint. This the government planned to achieve through active intervention in the wage negotiation process.

The incomes policies adopted were in several steps. As part of the comprehensive package of September 1982, the new government suspended all indexation of wages, salaries and transfer incomes until 1985; it limited the increases in public sector wages to 4 percent, with the explicit intent of making this a guideline for the wage negotiation between the trade unions and the employers' organization, coming up in March 1983.¹⁶ The subsequent wage agreement indeed followed closely these guidelines, implying a strong deceleration of the wage dynamics. The package also froze the maximum amount of unemployment and sickness benefits until April 1986. After the election of spring 1984, the government approved new incomes policy measures, mainly an extension of the suspension of wage and transfer indexation until March 1987.

By April 1983 long term interest rates were down to 14 percent. Contemporary sources¹⁷ attributed the decline to the strict budget policies, to the increased credibility of the hard currency policy when the Krone followed the DM in the revaluation of March 1983, and to the moderate wage

¹⁶ The government announced a tax cut of Krone 2.5bn (about .5 percent of GDP) to support wage and salary freeze, but the tax cut was later rejected by Parliament.

¹⁷ See e.g. 1982/83 ES p. 35, 1983/84 ES p. 12 and 1985/86 ES p. 17.

settlements. The large capital outflows of late 1982 also turned into inflows. Interest rates kept falling following the April 1984 budget which included further incomes policy measures (1983/84 ES p. 14). The liberalization of capital movements also contributed to reducing interest rates.

After the failure of decentralized wage negotiations in early 1985, and a pessimistic Public Finance Report, in March 1985 the government tried to have tripartite negotiations but was not successful. However, it decided further incomes policy measures, including a ceiling on public and private sector salary increases at 2 percent in 1986/86 and 1.5 percent in 1986/87. It supported this proposal by a cut in employers' social security contributions, financed by higher taxes on profits.¹⁸ By the beginning of 1986 long interest rates were down to 10 percent, and the differential with Germany to 3 percentage points.

Thus, the years 1983-1985 were years of wage moderation, helped by government intervention. 1986 displayed the first signs of wage pressure. The government was no longer willing to provide wage targets for the 1987 wage negotiations; these resulted in wage growth of 9 and 7 percent in 1987 and 1988. Two explanations have been offered (see Andersen and Risager 1990 p. 173): first, public sector workers discontent; second, the upcoming 1987 elections. Also, in 1986 the nominal effective exchange rate started appreciating; as a result of these developments, relative unit labor costs increased, by about 10 percent in 1986 and 1987.

Thus, the benefits of incomes policies, to the extent that they were behind the wage restraint of 1983-85, were short-lived: wage negotiations in 1987-89 largely undid the benefits of the earlier wage restraint.¹⁹ As I show below, growth halted from 1987 to 1989, and thereafter remained slow until 1994.

GDP and its components. Contrary to the case of the other countries that we will study, growth was already high, at 4 percent, when the September 1982 package started the consolidation, and it stayed there until 1986. The recovery was broadly based. Investment was the most dynamic component, increasing at more than 10 percent per annum from 1982 to 1986, after falling by almost 30 percent in 1980 and 1981. Consumption grew roughly at the same rate as GDP until 1985, and then at a remarkable 7.5 percent in 1986. During this period average export growth was less than 4 percent, far below that of the other countries of this study.

¹⁸ In 1985 a radical reform of the budget process also took place.

¹⁹ As argued by Andersen and Risager 1990 p. 171, this is a common pattern with incomes policies.

The increase in consumption in 1983 came as a surprise to contemporaries, against the expectations that the March wage agreement would produce a decline in consumption; but because inflation also declined fast, real salaries remained constant. Initially the consumption acceleration was due largely to durables: car registration increased by 36 percent; this contributed to about half of the increase in private consumption (see 1983/84 ES p. 20).

Obviously also the decline in nominal interest rates generated a wealth effect that stimulated consumption. House prices increased by 60 percent in nominal terms (35 percent in real terms) between 1982 and 1986. 1986/87 ES p. 32 calculates that this implied an increase by Kr. 200bn at current prices, or Kr. 100bn at 1982 prices, or about half of total private consumption in 1982. Before the 1986 “potato diet”, tax treatment of consumer credit was also extremely favorable: interest was totally deductible.²⁰ The stock market also boomed: real share prices almost doubled between 1982 and 1983.

However, most accounts of the Danish consolidation stop at 1986. What happened next is equally interesting. As we have seen, after a few years the attempt at “internal devaluation” failed, as the incomes policy managed to contain wage growth only until 1986. In the meantime, the exchange rate appreciation and the lackluster productivity performance meant that relative unit labor costs slowly worsened. Eventually, the trade balance worsened so much that the government was compelled to increase sharply interest rates and introduce other measures to cool demand. Between 1987 and 1989 GDP growth halted, thereafter it was about 1 percent per year until 1993; consumption declined by a cumulative 4 percent between 1987 and 1989.

Thus, Denmark displayed the standard pattern of exchange rate stabilizations, with a sudden but short lived boom driven by domestic demand²¹ and a gradual worsening of competitiveness that eventually led to a prolonged slump. Ades, Kiguel and Liviatan (1993) attribute the boom in domestic demand also to overconfidence: GDP and consumption forecasts consistently exceeded realizations during those years, boosting consumption and especially investment. Inflation was also expected to decline faster than it did in reality, thus leading to a fast decline in nominal interest rates and in nominal and real wages.

²⁰ See Table 14 in 1986/87 ES, p. 33.

²¹ Interestingly, not all contemporaries had the same perception: some viewed the recovery of those years as driven mostly by investment and exports: “The current recovery is more ‘healthy’ [than that of 1976-79] because it is based on exports and investment” (1985/86 ES p. 23).

IRELAND

The story of the two Irish stabilizations has been told many times.²² Between 1982 and 1984 the government attempted to cut the deficit by raising personal income and consumption taxes. The primary budget deficit did fall by 3.7 percent of GDP between 1982 and 1986; this however was less than the discretionary increase in taxes (as estimated by IMF), due to a lackluster growth performance and significant increases in social transfers and public wages.²³ As a consequence, in 1986 public debt was 110 percent of GDP, 30 percentage points of GDP higher than in 1982; the overall deficit had declined by only 2.5 percent of GDP, the primary deficit by little more than 3 percent of GDP.²⁴ Thus, what is regarded as the prototypical revenue based consolidation was not a success story. By all accounts, in 1987 the mood in the country was gloomy, with a palpable sense of an impending crisis. In this paper, I focus on the second consolidation, that started in 1987 and is widely associated with an impressive economic turnaround.

Budget timeline. In March 1987 a new minority government was formed by the former opposition party Fianna Fail. While Fianna Fail had campaigned on a populist platform, once in office it changed its mind and started a drastic fiscal consolidation, that lasted until 1989. In that year, the deficit was 2.6 percent of GDP, against 10.6 in 1986. In the same period, the primary balance switched from a deficit of 2 percent of GDP in 1986 to a surplus of 4.6 percent in 1989. For the first time since the beginning of the seventies public debt had stopped growing as a share of GDP, and actually declined by 10 percentage points. GDP growth went from .4 percent in 1986 to 5.6 percent in 1989 and 7.7 percent in 1990.

Estimating a narrative measure of fiscal policy changes is particularly challenging in Ireland. The Irish budget process at the time was extremely complicated. Some decisions for year t – except,

²² See e.g. Dornbusch (1989) for the first stabilization, and Giavazzi and Pagano (1990), McAlesee (1990), and Honohan and Walsh (2002) for the second.

²³ In 1985 and 1986 in particular, public sector wage increases, in part awarded by an arbitrator, caused a sizable overshoot of public spending. For instance, in 1985 the arbitrator awarded a 10 percent increase to all school teachers in excess of the increase for all public sector workers.

²⁴ Here and in the remainder of the paper the cyclically unadjusted budget figures refer to the general government and are usually taken from the OECD *Economic Outlook*.

crucially, most decisions on social transfers and government wages and employment - were taken in the Fall of year t-1 in a document called the “Estimates”, while decisions on transfers and on taxes were taken in the January Budget of year t. To complicate things further, it is never exactly clear what is the reference value for a change in, say, government spending in these documents: whether the previous year outcome, or some notion of “constant legislation” spending, or the Estimates of the previous period, etc.

Because of this complexity, it appears that IMF sometimes misses one of the two documents. A case in point is 1989: IMF – which, to repeat, only considers discretionary *improvements* in the primary balance – reports a value of zero, because the 1989 Budget “introduced a number of tax cuts and spending increases” (IMF, footnote 54 p. 46). However, the 1989 Estimates also introduced substantial spending cuts, almost double the spending increases of the Budget: as a result, 1989 was the third year of the fiscal consolidation.

More importantly, IMF does not count the contribution of a tax amnesty that netted 1.7 percent of GDP in 1988, nor the introduction of self assessment that netted .3 percent of GDP on a permanent basis. With these two measures, the consolidation of the years 1987-88 would be equally divided between spending cuts and tax increases. This interpretation is consistent with at least one account by an insider: “Briefly, there was no significant reduction in the real volume of current spending as a result of Bord Snip I [the expenditure review set up by the new government in 1987]. There was a further squeeze on capital spending, a mistake in retrospect, but most of the adjustment came on the revenue side. The ‘slash and burn’ stories about 1987, references to the finance minister as ‘Mac the Knife’, decimation of public services and so forth are just journalistic invention. It never happened.” (McCarthy 2010, p. 45).

Overall, if one compares the last year of the consolidation, 1989, and the year preceding the consolidation, 1986, I estimate a discretionary change in the primary balance of only 2.8 percent of GDP, all from spending cuts: almost half of these cuts fell on capital spending.²⁵ If one, like IMF, stops at 1988, then I estimate an improvement of 4.5 percent of GDP, almost equally divided between spending cuts and revenue increases. As mentioned, this is due to the large amnesty of 1988. As a comparison,

²⁵ Ireland is the only country where I was able to estimate the breakdown between capital and current spending cuts.

over the period 1987-88 IMF calculates cumulative spending cuts by 2.5 percent of GDP and tax increases by .4 percent of GDP (IMF does not count 1989 as a consolidation year).²⁶

These figures, however, ignore temporary measures, like the tax amnesty. When temporary measures are important, a more appropriate measure of fiscal consolidation is one that answers the question: on average, how much were discretionary expenditures (taxes) lower (higher) in each year of the consolidation, relative to the year preceding the start of the consolidation? This is equivalent to including all discretionary measures, weighted by the time they were in effect. The figures in this case are 2.2 percent of GDP of spending cuts and .7 percent of tax increases.

Thus, the consolidation was significant, but not so large as it is often believed; and the contribution of tax increases was larger than usually assumed.

Inflation, wage dynamics, competitiveness, and interest rates. In 1979 – three years before the first fiscal consolidation - Ireland had stopped pegging to the sterling and joined the European Exchange Rate Mechanism (ERM). Like in many exchange rate based stabilizations, this soon led to a large decline in CPI inflation, which came down from a peak of 20.4 percent in 1981 to 3.8 percent in 1986 (see Table 8).

The nominal and real interest rates declined until 1983, as the punt managed to avoid an appreciation by keeping the central parity during two realignments when the DM revalued, and by devaluing in 1983. But interest rate stopped falling afterwards, despite a further decline in inflation, as the punt started appreciating. Thus, until 1986 real interest rates remained extremely high and the long term interest rate differential with Germany fluctuated between 6 and 5 percentage points. As Walsh (1993) shows, during all the nineties the long term interest rate differential with Germany tracked closely the sterling exchange rate: it increased when the sterling appreciated, and fell when the sterling depreciated.

In the year to the summer 1986, the Irish pound had appreciated by 20 percent vis-à-vis the sterling pound. In August 1986 the government devalued the Irish pound by 8 percent within the ERM. The 1986 devaluation, however, was the last one until January 1993: ERM participation was regarded as a nominal anchor policy (see Dornbusch 1989 and Giavazzi and Pagano 1990), and “the year 1986 was a

²⁶ The actual figures calculated by the IMF are 3.1 percentage points of GDP of spending cuts and .5 of tax increases. However, IMF uses a figure for GDP at the denominator that turns out to be incorrect (see below); using the correct CSO figures gives the numbers I cite in the text.

watershed in Irish exchange rate policy” (Walsh 1993 p. 2). Initially, long term interest rates kept rising, because of fears of budget slippages and further devaluations: in October 1986 they reached 13 percent. Pressure on the Irish punt and on long term interest rates abated only when the sterling stopped depreciating in early 1987. Happily, this coincided with the second fiscal consolidation, and turned out to be a key difference relative to the first, failed consolidation.

The years of the failed stabilization 1982-86 saw also the abandonment of centralized wage setting and the move to decentralized wage setting (see Durkan 1992). The government, having embarked in a process of tax increases, realized that it had nothing to offer at the negotiating tables and withdrew from the process. However, this did not prevent a strong deceleration of wage inflation: average manufacturing earnings increased at a rate of 14.5 percent in 1982 and 7.5 percent in 1986, less than in the UK.

As part of the new stabilization package, in 1987 the government returned to a tripartite wage bargaining process; in October it published the *Program for National Recovery*, which had been agreed with the trade unions and the employers. It included two wage agreements, one for the public sector and the other between trade unions and employers in the private sector. It set a maximum increase in wages by 2.5 percent in 1988, 1989 and 1990. Table 8 shows that wage inflation came further down, from 7.5 percent in 1986 to 5.4 percent in 1990; real effective exchange rates based on unit labor costs and on wages in manufacturing, both of which had been worsening until 1986, improved dramatically.²⁷ As Honohan and Walsh (2002) put it, “wage restraint has been the hallmark of the recovery” (p. 28). “How much of this [improvement in competitiveness] should be attributed to the new pay negotiation environment? Despite the inconclusive econometric results, most observers regard the coincidence of timing of the reversal of the deteriorating trend in competitiveness with the new approach to pay bargaining as suggestive that the latter did pay dividends” (p. 33). Labor relations also changed radically: the number of strikes fell dramatically relative to the previous period, and relative to the UK;²⁸ this contributed to an impression of regime change that probably had important effects on private investment.

As Lane (2000) writes, low inflation was a precondition for wage restraint: the unions would probably not have accepted the latter without being sure of the former. In this respect, the second

²⁷ Measures of competitiveness based on unit labor costs in Ireland are somewhat misleading, because of the very large weight in manufacturing of a few multinationals that, because of transfer pricing and highly valued patented products, exhibit enormous profits per employee and a very small share of labor costs: see Honohan and Walsh (2002) p. 22.

²⁸ See Honohan and Walsh (2002) p. 32.

stabilization benefitted from the disinflation process of the first, failed, stabilization. In turn, the spending cuts were also probably a precondition for wage restraint, as they made possible a credible promise by the government to lower taxes in 1988 and 1989, by about .6 percent of GDP, in exchange for wage moderation.²⁹

As wage moderation set in the market learned that the exchange rate policy was credible; nominal interest rates fell precipitously to 8 percent in 1988. The spread with the long German rate fell from 5 percentage points in 1986 to 2 in 1989, then it went further down. In this, Ireland was helped by the appreciation of the sterling, which instead had been depreciating during much of the first stabilization. Thus, because the largest decline in inflation had occurred before 1987, the declines in nominal interest rates afterwards were also largely declines in the real rate, contrary to the experience during the first stabilization, when real interest rates increased.³⁰

GDP and its components. GDP growth was 0 in 1986. In the first year of the second stabilization, 1987, it rose to 3.5; it then reached almost 8 percent in 1990. By all measures, the second stabilization was a spectacular success.

For a long time growth was driven by exports, that rose at an average rate above 10 percent between 1987 and 1990. This strong performance of exports started in the second half of 1986, hence before the fiscal consolidation, and can be attributed to two factors: the growth of export markets, on average 8.8 percent between 1985 and 1988, in particular in the UK; and the improvement in competitiveness following the August 1986 devaluation, coupled with the wage restraint of 1987 and 1988.

Domestic demand was subdued for a long time. The average growth rate of consumption in 1987-88 was 2.8 percent, the same as in 1985-86 - two recession years. Data on sales are consistent with the notion that consumption growth was modest: sales started to pick up only in 1988:Q3, but until then they remained below the 1985 and 1986 levels.³¹

²⁹ Both tax cuts are missed by IMF; they do not show explicitly in Table 6, were the 1988 tax cut is summed algebraically with the effects of the tax amnesty.

³⁰ The steep decline in nominal interest rates is likely to have prompted a large increase in the value of government debt held by households; the exact effect is difficult to quantify since we do not have measures of government debt at market values.

³¹ Contemporary sources had the same impression: in October 1987, hence about three quarters after the budget plans had been announced, the 1987/88 ES writes: "Trade statistics for the first three quarters of the year show a major expansion of exports due to renewed growth of the exports of foreign companies and to the strong rise in United Kingdom imports [...]. At constant prices, the external balance improvement is the major

The pattern exhibited by gross fixed capital formation is even starker: it was negative in 1987 and 1988, and turned positive only in 1989 after 7 consecutive years of negative numbers. Figures for the aggregate can be misleading, because of the large cuts to public sector investment, and the Central Statistical Office data do not have a breakdown between government and private gross fixed capital formation. But investment in machinery and equipment tells a similar story: it increases by less than 2 percent in 1986 and 1987, well below the rate of growth of GDP, and starts growing at 17 percent only in 1989.

Why this difference with the standard story of the Irish miracle? The OECD data typically used in international comparisons are very different (see Table 10): for instance, relative to CSO data the rate of growth of GDP in 1988 is more than 2 percentage points higher in OECD data, the rate of growth of consumption in 1989 is more than double, and gross fixed capital formation turns positive (and large, at 5 percent) already in 1988.

As it turns out, following an inquiry of mine the OECD Statistical Directorate realized that it had not received the revised Irish national accounts for 1970-1995, hence these were not available for incorporation in the *Economic Outlook* database. The OECD has communicated to me that the Irish CSO data are more appropriate for historical analysis.³²

Thus, there was no explosion of domestic demand in Ireland following the second Irish consolidation: for almost two years after the start of the consolidation, GDP growth was driven largely by exports. At the same time, the budget consolidation of 1987-89 was substantial but not “brutal”, and tax increases (particularly from the tax amnesty) were significant.

But what can account for the difference between the two consolidations, 1982-86 and 1987-89? After all, as Giavazzi and Pagano (1990) correctly point out, exports were strong even during the first stabilization (see Table 9). The most often cited difference is in the composition of the budget consolidation, which was tax- based during the first and spending based during the second. It is easy to see why it could matter: spending cuts made room for tax cuts on labor income, which in turn enhanced competitiveness; wage reductions in the public sector, that were announced repeatedly during the first stabilization but implemented only during the second, enhanced the confidence in the ability of the government to carry out its programme and set the stage for more wage moderation in the private sector (see Hoanhan 1989 p. 205) .

factor behind the projected 2 percent expansion in GNP this year. By contrast, most of the component of domestic demand remain rather depressed .. Retail sales have been weak for most of the year ..” (p. 30).

³² Historical data for Ireland have been temporarily suspended in the new issue of the *Economic Outlook* pending a complete integration of the new series.

Table 8 shows that a second important difference was the behavior of wages and relative unit labor costs in manufacturing. They were growing, although at declining rates, in the first stabilization, and declining during the second. As we have seen, the change in labor relations was the key to this development. All indicators of competitiveness worsened dramatically in 1986, the year growth came to a halt after two years which averaged growth above 2.5 percent, only slightly below the figure for 1987-88.

A third difference, that is rarely mentioned,³³ is the behavior of real long term interest rates.³⁴ Table 7 shows that these were high and rising during the first stabilization, and declined at the beginning of the second stabilization. The decline of the spread with the German long rate was particularly pronounced. The reason is that during the first stabilization inflation and inflation expectations were coming down fast because of the depreciation of the sterling; but precisely for the same reason the Irish rates remained high. As mentioned above, in this sense the second stabilization could afford low real rates because inflation had come down already and the sterling was now appreciating for the first two years. Thus, although both stabilizations were exchange rate based, the second benefitted from the appreciation of the sterling, which improved competitiveness and allowed the nominal and real interest rate to decline.³⁵

It is also important to understand the similarities and differences between the second stabilization and the experience of Denmark. Like Ireland, Denmark pursued an exchange rate based stabilization, and achieved a remarkable decline in nominal and real interest rates. In both countries the exchange based stabilization was initially sustained by wage moderation and the involvement of the government in the wage formation process. On the other hand, Denmark's consolidation occurred in a boom, rather than in a recession as in Ireland; and it was not spending based, but it was equally divided between revenue increases and spending cuts.

But perhaps the key difference is that in Denmark the expansion that occurred at the time of the consolidation was driven by domestic demand; in Ireland, for a long time it was driven mostly by exports. Three possible explanations stand out. During the consolidation Denmark suffered from a deterioration of relative unit labor costs, while Ireland experienced an improvement, because of the

³³ Dornbusch (1989) emphasizes the role of high real interest rates during the first stabilization, but was writing just at the beginning of the second stabilization.

³⁴ Because I do not have data on expected inflation over this period, I compute the real long term interest rate as the difference between the nominal rate and inflation over the last year.

³⁵ Also, during the first stabilization, the primary deficit came down as fast as during the second, but started from a higher level: high real interest rates combined with still high primary deficits meant growing debt.

appreciation of the sterling, of a few realignments in which it did not follow the DM, and a much better productivity performance. Second, Denmark experienced a house price and a stock market boom at the time of the consolidation, both much stronger than in Ireland, partly because of the steeper decline in interest rates. Third, the term structure remained steeper in Denmark, providing an incentive for higher consumption.³⁶

It is useful to summarize the main conclusions. (i) The Irish budget consolidation of 1987-89 was smaller and more tax based than previously thought; (ii) for several quarters the GDP expansion was mostly export-driven; consumption and private investment recovered 6 to 8 quarters after the start of the consolidation, and their recovery was more subdued than previously thought; (iii) in 1987-89 Ireland pursued an exchange rate based stabilization, after a substantial devaluation and a large decline in inflation; but, crucially, it did manage to depreciate the punt during a few realignments, and relative to the sterling; (iv) this second stabilization saw a decline of long rates and an even more pronounced decline of the differential with Germany. This was helped by the appreciation of the sterling, which statistically is associated with a reduction in the Irish rates. The decline in the long rate was not large, but it was in marked difference to the first stabilization, which had suffered from high and increasing real rates; (v) the decline in inflation made possible a substantial wage moderation, that was also instrumental in enhancing competitiveness and in signaling a change in regime; incomes policies by the government were instrumental in consolidating the process of wage moderation; (vi) the budget consolidation probably played an important role in ensuring the credibility of a regime shift to low inflation, wage moderation, and lower interest rates.

³⁶ Giavazzi and Pagano (1990) offer another explanation: the more advanced credit markets for consumers in Denmark. However, as observed by Drazen (1990) in his comments to the paper, the numbers on the *change* in consumer credit in the two countries do not seem to be large enough to explain the difference in the behavior of consumption. Three more factors are often mentioned as explanations of the Irish boom of 1987-90 (see e.g. Whelan 2010): the inflow of EU structural funds, investment by multinationals, and emigration, which eased unemployment. The first two, however, started in earnest after 1989 (see e.g. Barry 2000); the role of the latter is difficult to assess, and deserves more scrutiny. Obviously, it can still be the case that the large investment by multinationals in the nineties was made possible by the change in regime signalled by the budget cuts of 1987-89.

FINLAND

The next two case studies, Finland and Sweden, differ from the first two because they pursued a budget consolidation after abandoning a peg. During the eighties, in Finland financial deregulation and tax incentives for housing investment fuelled a boom characterized by huge capital inflows, large private sector indebtedness, and asset price inflation. In the early nineties Finland suffered the worst recession of all OECD countries. Real GDP fell by 14 percentage points between the 1990 peak and the 1993 trough. The recession was exacerbated by four factors: a banking crisis when asset prices collapsed, the demise of the Soviet Union, a deterioration of the terms of trade, and the decision to defend the peg to the ECU against speculative attacks. By late 1991 the central bank had raised the overnight lending rate to 50 percent, while the one month interbank Helibor rate stood at 27 percent. Because inflation was low, real interest rates were extremely high throughout the recession. The government finally agreed to devalue in November 1991 by 12 percent vis à vis the Ecu; the decision to float the Markka in September 1992 was followed by a further depreciation by 15 percent.

Meanwhile, the budget balance moved from a surplus of 7 percent of GDP in 1989 to a deficit of 8 percent in 1993. Contrary to other countries, interest payments did not play a role: the change in the primary balance was virtually identical. During the same years, government debt as a share of GDP quadrupled, from 14 percent to 56 percent.

By the end of 1992 Finland was widely considered the basket case of Europe. Then, like in many other countries, GDP growth turned positive in late 1993; in 1994 it was 4 percent, the highest in Europe, and it stayed there for several years.

Budget timeline. IMF reports a discretionary improvement in the budgetary position in each of the years 1992 to 1997, with cumulative spending cuts of 12.1 percent of GDP and a cumulative consolidation of 11.4 percent of GDP. It is easy to see why this is probably a considerable overestimate of the discretionary consolidation. Over the same years, the cyclically unadjusted primary balance improved by about 7 percent of GDP; thus, cyclical conditions would have caused a *worsening* of the balance by 4 percent of GDP – yet except for 1992 these were years of very high growth.

This can be seen even more clearly for the years 1994 and 1995, which saw a cumulative GDP growth of about 8 percent. The cyclically unadjusted primary balance improved by 3.4 percent of GDP; IMF reports a cumulative discretionary improvement by 5.1 percent of GDP, once again implying that in

those two years cyclical factors caused an increase in the deficit by almost 2 percent of GDP despite the exceptionally high growth.

My reconstruction of the discretionary improvement in the budget balance over the 1992-98 period is less than half the IMF estimate: 4.9 percent of GDP against 11.4 (see Table 11). Spending cuts amount to only 1 percent of GDP; the remaining 4 percent are tax increases. Thus, this was a much smaller fiscal consolidation than in IMF data, and it was revenue based. In contrast, in the IMF data it was all spending based.

What explains this discrepancy between the IMF estimates and mine? Often several supplementary budgets undid the budget cuts decided in the January budgets; in some cases IMF misses these supplementary budgets, in others it mentions them but does not consider their effects on the ground that they had a countercyclical motivation.³⁷ As I discuss above, I am skeptical that motivations can be detected so sharply; and in many cases the spending increases were probably motivated not by countercyclical considerations, but by political pressure to ease the effects of the January budget cuts. In fact, many of these spending increases were financed by tax increases, which is also the reason why IMF reports virtually no tax increases: for example, in 1996 supplementary budgets increased revenues by 1.75 percent of GDP, but this does not appear in the IMF estimates. In the end, omitting these discretionary changes offers a highly distorted picture of discretionary fiscal policy during these years.

In addition, my data (and, *a fortiori*, the IMF data) almost certainly underestimate the extent of tax increases during the consolidation, because the effects of changes in tax rates are not always quantified in the budget documents. Thus, between 1992 and 1994 several measures to increase taxes were adopted (see e.g. the list in 1993 ES pp. 81 and 84 and 1995 ES p. 104) but their effects did not appear in any document.

Note also that during these years the central government increased spending on several measures to support the banking system, by about 10 percent of GDP between 1991 and 1995;³⁸ if these were included, cumulatively spending would *increase*, instead of decreasing, over these years. Banking support operations were indeed widely perceived as government spending, much as the support of the banking system in the US and the UK has been a major item of contention in the debate on fiscal policy during the recent financial crisis. As it is well known, however, exactly how to treat bank support measures is not obvious: for instance, a capital injection is a financial investment to be counted

³⁷ See IMF footnotes 30, 31 and 32, pp. 29-31.

³⁸ This figure includes loans, preferred capital, and ordinary shares acquired by the Government Guarantee Fund; I do not consider guarantees, which would add another 6.5 percent of GDP. See 1996 ES p. 48 for details on bank support measures by type and year.

below the line, but a capital injection in a bank that is essentially bankrupt is a capital, or even a current, transfer. Furthermore, some loans are repaid, but repayment might escape measurement as they are seldom given the same prominence as the original loan.

Turning to actual developments, the fiscal consolidation process of 1992-98 can be divided into two phases, which coincide with two different governments. In 1992, the government elected in March 1991 announced a fiscal consolidation program based on a new medium-term framework. I estimate that by the end of its mandate in 1994 this resulted in a cumulative improvement in the discretionary balance by 4.4 percent of GDP, equally divided between spending cuts and tax increases. During this period, the only year with a substantial spending cut was 1993;³⁹ this was followed in 1994 by a large tax increases of 2.3 percent of GDP, from two supplementary budgets.⁴⁰ The discretionary improvement in the primary balance estimated by IMF over the same period is double my estimate, all of it from spending cuts.

Contemporaries could be forgiven if they did not realize that a brutal spending based consolidation was under way. Headline numbers did not help: the general government deficit was still 6.1 percent of GDP in 1995, above the 1992 level; similarly, government debt as a share of GDP was larger in 1995 than in 1992.

In April 1995 a new government took office, and immediately introduced an austerity package. However, my data and IMF present two radically different pictures of what happened next. Overall, between 1995 and 1998 I estimate a further improvement in the discretionary primary balance of only .8 percent of GDP; during this period, discretionary spending actually *increased* by .5 percent of GDP. IMF instead estimates spending cuts by 4.7 percent of GDP and tax *cuts* by 1.3 percent of GDP.

The difference on the spending side is due to two years, 1995 and 1997. In 1995 the new government did make good on the promise to cut spending by 2 percent of GDP: this is the number reported by IMF. However, the January budget of the outgoing government had already included an increase in government spending by 2.4 percent of GDP, due to the costs of EU accession (spending increased mainly because the government compensated farmers for the abolition of tariffs). Two supplementary budgets, one in late 1994 and the second in early 1995, further increased 1995 spending

³⁹ Here and in what follows it is sometimes hard to attribute spending cuts to a given year. The third supplementary budget increased spending by 1.7 percent of GDP; because it was approved in October 1992, I attribute it to 1993. If instead it were to be attributed to 1992, it would imply a spending cut in 1992 and an increase in spending in 1993.

⁴⁰ There was a further increase in taxes because of the decision to postpone tax refunds to 1995; of course this also shows up in 1995 as a tax cut.

by almost 1 percent of GDP.⁴¹ As a result, in 1995 discretionary spending actually *increased*, instead of falling as reported by IMF.

In 1997 a spending cut of 1 percent of GDP was offset by a cut in employers' contributions, largely due to the *Incomes Policy Agreement* of late 1995 (see below) that traded wage moderation for tax cuts. However, once supplementary budgets are included, spending actually increased, and other tax increases nearly offset the tax cuts.

On the tax side, the difference between my data and IMF is mostly due to 1996, when a supplementary budget introduced a tax hike by 1.5 percent of GDP that was ignored by IMF.

Inflation, wage dynamics, competitiveness, and interest rates. Thanks to the November 1991 devaluation and the subsequent floating of the Markka in November 1992, the nominal effective exchange rate depreciated by 25 percent between 1991 and 1993 (see Table 13).⁴²

At the beginning of the consolidation phase interest rates were very high, due to the attempted defense of the Markka. They fell fast after the devaluation and subsequent floating: the three months Helibor (interbank) interest rate fell from 17 percent in September 1992 to 7.5 percent in June 1993. The spread with the German interest rate had disappeared by that date. The long term interest rates also came down considerably, but because the short term interest rate had been pushed up by the defense of the Markka against very strong speculation, the yield curve from negatively sloped became positively sloped at the beginning of 1994, with the differential between the 10 year and the three months interest rate at about 2 percent (this is about the time when durable consumption - but not yet nondurable consumption - started to grow: a steep yield curve with very low short interest rates is the right time to buy durable goods).

What made possible this decline in nominal interest rates? Like in the case of Ireland, there are three plausible candidates. First, the budget consolidation, although as we have seen smaller than commonly thought, signaled a change of direction. Second, an often overlooked event that took place at the same time was the formal adoption in February of 1993 of inflation targeting, signaling another change in regime. Third, the nominal depreciation translated into a real depreciation thanks to wage

⁴¹ Another supplementary budget in November 1995, which I attribute to 1996, further increased spending by .6 percent of GDP in connection with the employment measures of the *Employment Programme* of fall 1995.

⁴² In October 1996, Finland joined the European Monetary System, thus ending the period of floating.

moderation.⁴³ During 1992-93 manufacturing unit labor costs fell by almost 15 percent, and relative unit labor costs fell by an impressive 45 percent. Two successive centralized wage agreements⁴⁴ in 1992 and 1993 froze contractual wage increases. This contributed to the enormous gains in competitiveness in those two years. In fact, in June 1993 the 1993 ES wrote "When market confidence improved by the announcement of a government package aiming at fiscal consolidation, and by a pay settlement implying no wage increase for a second consecutive year, short term interest rates were allowed to ease gradually" (p. 33).⁴⁵

In 1995, however, these gains in competitiveness were threatened by a combination of nominal appreciation and wage slippages. At the end of 1993, the government had disengaged itself from the tripartite negotiations for 1994, and negotiations became entirely decentralized. After a moderate round of wage settlements for 1994, negotiations in late 1994 set contractual wage increases for 1995 at 4 percent, partly as a consequence of the tightening labor market. That year hourly earnings in manufacturing increased by 7 percent, unit labor costs by 5 percent, and relative unit labor costs in manufacturing by 15 percent, thanks also to the appreciation of the nominal exchange rate.

As inflation expectations rose and doubts about the stabilization emerged, interest rates moved back up in 1994 and especially in 1995. To counteract the inflation threat posed by the decentralized wage settlements of late 1994, between December 1994 and February 1995 the Central Bank increased its tender rate by 1 percentage point.

At this point, the government, concerned that high wage settlements could undo the effects of its austerity package, returned to the table and promoted a new round of tripartite negotiations. These ended with an *Incomes Policy Agreement* in October 1995 that set an increase in wages of 1.8 percent in 1996 and 1.3 percent in 1997. The government contributed by enacting a tax cut for 1997. Unit labor costs stopped growing in 1996 and then declined in 1997; relative unit labor costs declined by more than 5 percent in each of those two years. At the same time, consumer confidence picked up again. Between October 1995 and March 1996, after the October 1995 *Incomes Policy Agreement* and the

⁴³ Honkapohja and Koskela (1999) p. 36 put forth an interesting reason for wage moderation in Finland during these years: they argue that the costs of job loss are increasing in the level of household indebtedness.

⁴⁴ In Finland wage negotiations occur first at a centralized level; although not binding, they set the tone for the more decentralized negotiations that follow.

⁴⁵ Obviously interest rates came down in the rest of Europe too, but the descent was particularly fast in Finland. Because expected inflation also declined fast, thanks to the moderate wage agreements, real interest rates stayed fairly high. However, if government debt is net wealth and it is in nominal terms, a decline in the nominal interest rate pushes up its real value.

Employment Programme, the Central Bank cut the tender rate by 3.5 percentage points (see 1996 ES p. 38).

Thus, the 1995 *Incomes Policy Agreement* explicitly traded wage moderation for lower income taxes and social insurance contributions; this agreement was instrumental in gaining back competitiveness after the slippages of 1994 and 1995. It is here that the modest budget cuts of those years might have had the most important effect: by enabling the government to enact tax cuts in support of the incomes policies that started in late 1995. As Jonung, Kiander and Vartia (2008) write: “perhaps the biggest change in the 1990’s in Finland was the adoption and wide acceptance of a policy of long term wage moderation” (p. 35).

Indices of consumer confidence shed further light on this, by allowing tracking changes in consumer sentiment at a higher frequency. Three questions were asked in Finland before 1995: on unemployment prospects if the country, on the intention to make major purchases, and on general economic conditions in the next 12 months (see Figure 2).⁴⁶ Confidence had started improving before the fiscal consolidation. It fell in the second half of 1994 when tripartite wage negotiations broke down, and recovered at the beginning of 1996, when the *Incomes Policy Agreement* was reached, but also one year after the austerity programme by the new government was announced. Thus, the timing of the measure of consumer confidence also points to the importance of wage agreements and incomes policies as a signal of regime change.

GDP and its components. As the large depreciation set in, exports began to pick up in 1992, and grew at an average rate above 10 percent per year until 2000 (see Table 14). However, all components of private domestic demand initially tanked. GDP growth was very negative in 1992, still negative in 1993, and turned positive only in 1993:3. After that it posted an average growth of about 4.5 percent until the end of the decade.

Total private consumption started increasing only in 1994, after which it grew at above 3 percent until the rest of the decade; and private investment only in 1995, after which it kept growing at a very fast pace, between 8 and 19 percent.

Thus, the recovery was initially driven by exports; in fact, still in July 1996 the 1996 ES could write: “The divergence between exports and domestic demand has become very pronounced indeed,

⁴⁶ I multiply the balance of the responses to the unemployment question by -1, so that an increase in the index means higher confidence that unemployment will decline.

with the former at 150 percent and the latter at 75 percent of their 1990 levels by 1995” (p. 3). It was not until 1999 that domestic demand recovered the level of 1990.

In addition, as we have seen, 1994 was a year of large tax increases; 1995 was a year of spending increases, preceded and followed by even larger tax increases. Thus, it is hard to relate the consumption recovery to the crowding in effects of a spending based consolidation that did not actually take place in those years. It is tempting instead to relate it to the export boom and lower interest rates. As consumption of durables turned around in late 1993, the Ministry of Finance’s 1994 *Economic Survey* wrote that “although [...] *the tightening of taxation* [emphasis added] continued to reduce disposable income, [at the beginning of 1994] brighter economic prospects and a fall in interest rates raised consumers’ propensity to consume” (p.48).

Although the Finnish consolidation was implemented under a float and the Irish one under a peg, the two episodes have several features in common. On close inspection, they are both smaller and more revenue based than previously thought – in fact, in the case of Finland spending cuts were minimal, at around 1 percent of GDP cumulatively. Both entered the consolidation phase with a substantial depreciation - which was truly large in the case of Finland. In both countries the initial GDP expansion was driven by exports, and started before the consolidation; the growth of consumption started 6 to 8 quarters after the start of the consolidation; in both wage moderation played a key role; in both incomes policies by the government were instrumental in consolidating the process of wage moderation after a temporary slippage that threatened to derail the stabilization. In Finland, it was only after the new round of wage negotiations signaled a regime change that consumption and investment picked up. In addition, in Finland inflation targeting further contributed to a signal of regime change, and the nominal interest rate displayed a large decline.

Why then did the appreciation and loss of competitiveness of 1994-95 not lead to a prolonged slowdown like in Denmark almost ten years before? One can only speculate, but one plausible reason is that the government intervened to restore wage moderation, thus enhancing the credibility of the stabilization programme; second, because of booming demand abroad exports kept growing at a remarkable rate even during the temporary slowdown, except for 1996.

SWEDEN

The Swedish boom of the eighties and bust of the early nineties had several features in common with Finland. Financial liberalization with tax incentives for borrowing fuelled a consumption and housing boom, followed by a recession that started in 1990. Inflation fell, and the real interest rate rose drastically, causing a housing bust and a banking crisis. By 1993 unemployment was at 7.5 percent, and the budget deficit had increased to 11.2 percent of GDP from a surplus of 3.2 percent in 1989. Like in Finland, this dramatic worsening of the budget balance was not due to interest payments: the primary budget showed exactly the same deterioration.

Throughout the recession the government, like in Finland, tried to defend the exchange rate to anchor inflation expectations, causing a steep loss of competitiveness and a drastic hike in interest rates. Eventually, like in Finland, the Krona had to abandon the peg and began floating in November 1992. GDP kept declining in 1993, then it turned around in 1994, when it grew at 4 percent, a pace that it maintained to the end of the decade except for a brief respite in 1995 and 1996, when growth slowed to about 2 percent. By 1998 the budget was in surplus, reaching 3 percent of GDP in 2000.

Budget timeline. The consolidation started in 1993, and was over by 1998.⁴⁷ During this period, I estimate a discretionary change in the primary balance by 8.4 percent of GDP, 40 percent of which from spending cuts. IMF estimates a total improvement in the primary balance by 10.5 percent of GDP, more than 60 percent of which from spending cuts. Most of the difference between my estimate and IMF's estimates can be explained by the same factors that were at play in Finland: IMF does not count the higher spending due to EU accession, and it does not count some spending increases in supplementary budgets.

As a caveat, it should be noted that it is extremely difficult to reconstruct discretionary changes in spending and revenues in Sweden. For 1993 and 1994, IMF is based on two documents: the fiscal consolidation program of September 1992, and the 1993 Budget. For the crucial years 1995 to 1998, it is based entirely on the reconstruction of consolidation measures by the Ministry of Finance, with its breakdown by calendar year, made *ex post* in 1998. However, this source is not entirely reliable, because it is partly a political document; in fact, it includes only measures that cut spending or increased taxes, and reproduces as is the original deficit reduction plan of September 1994, later published as the *Convergence Program* for EU membership.

⁴⁷ On the Swedish consolidation, see Henriksson (2007).

As an example, that document includes as part of the consolidation Kr 20bn (1 percent of GDP) of extra revenues needed to finance the costs of EU accession, but it does not record on the spending side the Kr 20bn of new spending due to EU accession. In addition, like in the case of Finland, IMF does not consider several supplementary budgets and other measures not in the main budgets or in fiscal consolidation programs; and, for example, it only counts spending cuts in the 1995/96 budget, but not spending increases.

Unfortunately, hard data on the items not included in the Finance Ministry document of 1998 are hard to get, partly because - again like in the case of Finland - the effects of some tax or spending changes have not been quantified.

And again like in Finland, the result is that IMF most likely overestimates the size of the consolidation, and the share of spending cuts in it. For instance, IMF shows a fiscal consolidation in 1993 of 1.8 percent of GDP. However, the primary surplus declined by more than 3 percent of GDP; it seems unlikely that the recession by itself would have been responsible for a deterioration of the primary balance by about 5 percent of GDP (the OECD cyclically adjusted primary surplus falls by 1 percent of GDP). As it turns out, if one includes the effects of a June 1993 supplementary budget and of extra spending decided in the fiscal consolidation package of September 1992, there was hardly any decline in spending.

Another example is 1998, when IMF reports a discretionary consolidation of 1 percent of GDP. This exceeds the increase in the unadjusted primary surplus, implying that, without discretionary action the primary balance would have worsened, despite growth at 4 percent, the highest in the decade. The explanation is that IMF does not include extra spending for 1.1 percent of GDP, due to the five point programme to enhance job creation, which does not appear in the official Finance Ministry rendition of fiscal consolidation.

Turning to the main policy developments, like in Finland one can distinguish two phases in the Swedish consolidation. The first one runs from 1993 to 1994, and corresponds to the centre-right coalition government. The second phase corresponds to the Social-Democratic government that took office after the elections of September 1994.

During the first phase the discretionary improvement in the balance amounted to 3.4 percent of GDP, almost equally divided between spending cuts and tax increases. The second phase started with the November 1994 consolidation package, which together with the 1995/96 Budget of January 1995 and a supplementary budget in April envisaged a cumulative consolidation by about 4.5 percent of GDP by 1998. With subsequent modifications, this became about 5 percent of GDP, about two thirds of which

were tax increases. In particular, note that in 1995-96 the primary budget improved by 4.5 percent of GDP, but spending cuts amounted to only about .7 percent of GDP.

Inflation, wage dynamics, competitiveness, and interest rates. Like Finland and, to a lesser extent, Ireland, Sweden entered the budget consolidation phase with a large depreciation following the decision to float the Krona in November 1992 - by almost 20 percent in 1993 in nominal terms on a multilateral basis. Like in Ireland and Finland, long interest rates came down quickly, from 10 percent to 7 percent by the end of 1993; the differential with Germany also declined sharply to 1.5 percent.

The candidate explanations for the decline in interest rates are the same as in Finland and, except for the inception of inflation targeting, as in Ireland. First, budget austerity. Second, in January 1993 – hence, at the same time as the start of the fiscal consolidation - Sweden adopted inflation targeting. Although it was decided that it would become fully operational in 1995, the Riksbank announced that it would pursue a target of 2 percent as of 1993. Inflation remained subdued in 1993, less than 4 percent, and there was no upward pressure on inflation expectations after the float. Third, the consolidation years were characterized by a surprising degree of wage moderation, with a short-lived slippage in 1995 and 1996 – again like in Finland. Apart from the slack in the labor market and the sense of national crisis, one important reason for wage moderation was probably the move to inflation targeting in January 1993, which “had a profound impact on the behavior of labor market participants” (Jonung et al. 2008, p. 37). As a sign of confidence in the Riksbank, a non-indexed two-year collective agreement was signed in 1993 for 1994 and 1995, and three year agreements were signed thereafter.

Sweden did not have a formal incomes policy agreement like Finland. But the “internal devaluation” package of September 1992 added to the exchange rate depreciation, by reducing employers’ social security contributions, financed by an increase in VAT. Thus, in early 1991 a two-year centralized bargaining kept contractual wage increases at a low 2 percent for 1993, which including wage drift would have caused hourly wages to increase at about 4 percent; the reduction in social security contributions decreased it back to 2 percent (see 1993 ES p. 7). Also, unlike Finland, in 1993 Sweden had a tax reform that reduced the marginal tax rate on labor.

Together with improvements in productivity and the depreciation of the nominal exchange rate, this implied large declines in multilateral unit labor costs, by almost 40 percent between 1992 and 1995!

But then, again like in Finland, from late 1994 wage settlements drifted up;⁴⁸ also, the Krona appreciated from the second half of 1995. As a result, unilateral and multilateral unit labor costs increased sharply in 1996. The results of the wage negotiations and higher inflation expectations prompted the Riksbank to increase the repo rate sharply;⁴⁹ the long interest rate rose as well. Then the appreciation of the Krona reined in inflation,⁵⁰ and wage settlements showed signs of moderation; this allowed the Riksbank to decrease the repo rate by a cumulative 4 percent between January and December 1996. The differential with Germany was back to 1.25 in September 1996 percent and to .75 percent in December 1997. At the end of 1996, inflation was down to 0.⁵¹

GDP and its components. The first year of the consolidation, 1993, saw GDP fall by 2 percent. Domestic demand collapsed: private consumption fell by almost 4 percent, as the reduction in house prices increased the savings rate while the reduction in the deductibility of interest payments increased the net-of-tax interest payments on mortgages. Investment declined by 15 percent. Thanks to the large depreciation, exports grew by 8 percent, and more in the following years. This was also helped by the recovery abroad, which concentrated on investment goods and consumer durables that have a large share in Swedish exports. 1994 saw the beginning of a recovery, with GDP increasing by 4 percent, again led by exports, and, in the second part, by investment and consumer durables. But consumer surveys show a continuing deterioration of consumer confidence, which 1994 ES p. 9 attributes to “higher interest rates and the announcement of tax increases and other budget consolidation measures”. In fact, private consumption grew in 1994 at the fairly modest rate of 2 percent. Investment was stronger: machinery and equipment grew by 25 percent, although dwelling fell further by 33 percent (until 1994 the official Swedish statistics do not distinguish between government and private investment).

As we have seen, the first two years of the new government’s consolidation program, 1995 and 1996, saw an improvement in the primary balance by 4.5 percent of GDP, which was almost entirely

⁴⁸ The increase in 1996 was partly due to technical reasons, as “[T]he finalisation [of the 1995 agreements] was spread out through the year, so that recorded wage growth was artificially low in 1995 with a corresponding increase in early 1996.” (1998 ES p. 31).

⁴⁹ See Ministry of Finance (2000), Annex 5, for a detailed discussion of monetary policy in those years.

⁵⁰ “The reduction in headline inflation during 1996 and into 1997 owed much to lower interest rates and the preceding appreciation of the krona” (1998 ES p. 39).

⁵¹ The yield curve became very steep: this did not reflect inflation expectation, but probably a risk premium against European currencies, reflecting uncertainty on EMU participation (1997 ES p. 51).

financed by taxes. GDP growth remained high in 1995 at around 4 percent. It was still driven by exports and by investment; private consumption remained subdued, at 1 percent. Most of the modest recovery in consumption was led by durables and car registration: “Other indicators, such as retail sales, convey an impression of continued retrenchment in consumer spending”. (1997 ES p. 19)

Then in the second half of 1995 and first half of 1996 growth slowed markedly, in parallel with the hike in interest rates, the appreciation of the Krona and the relapse in wage moderation. Export growth declined sharply, and in the first half of 1996 GDP growth fell to 0; only housing investment was strong. Private consumption and exports started recovering in the second half of 1996. By 1997 exports had recovered their high rate of growth of above 10 percent

Thus, except for 1996, during the consolidation period exports always exhibited a growth rate near or well above 10 percent. In contrast, private consumption grew slowly after the rapid declines of 1990 to 1993, and it really started picking up only in 1998, towards the end of the five year consolidation. Still in 1998 the perception was that growth was driven by exports and investment: “The economy is now in the fifth year of an expansion which has relied on exports and business fixed investment for most of its momentum.” (1998 ES p. 17)

In many respects, the Swedish consolidation of the nineties is similar to the Finnish consolidation that occurred at the same time, and to the Irish consolidation of the previous decade. Like them, its discretionary component is smaller and more revenue based than previously thought. Particularly like in Finland, the budget consolidation was preceded by a large depreciation. The expansion was driven initially by export and by investment; the growth of consumption was muted for a long time after the start of the consolidation. Wage moderation was an important factor that reinforced the decline in interest rates; in turn, tax reductions made possible by spending cuts were important in consolidating the process of wage moderation after a temporary slippage. Like in Finland, the budget consolidation was contemporaneous with the introduction of inflation targeting.

7. Conclusions

In this paper, I have looked more closely at four episodes of large fiscal consolidations. Two of these episodes occurred immediately after pegging the exchange rate, while two occurred in the opposite circumstances, immediately after floating. I have argued that typically these consolidations relied on tax increases to a much larger extent than previously thought.

All four were associated with an expansion. But only in the Danish exchange rate based stabilization was domestic demand the initial driver of growth; and, as the effects of incomes policies faded, after four years the gradual loss of competitiveness led to a slump that lasted six years. This is consistent with the experience of several exchange rate based consolidations. In the second exchange rate based stabilization, Ireland, exports were the engine of growth for several quarters, as relative unit labor costs fell because of wage moderation and a concomitant appreciation of the main trading partner's currency, the sterling.

In the two consolidations under a float, Finland and Sweden, the initial boom was also driven by exports, following extremely large depreciations after the abandonment of the fixed exchange rate. The adoption of inflation targeting, which occurred at the same time as the consolidation in both countries, also helped maintain competitiveness by reducing inflation and inflation expectations.

In all episodes, interest rate declined quickly, also helped by wage moderation and by the nominal anchor (the exchange rate in the exchange rate based stabilizations, and inflation targeting in the two episodes under a float). Wage moderation was essential to maintain the benefits of the depreciations and to make possible the decline of the long nominal rates. Incomes policies were in turn instrumental in achieving wage moderation, and in signaling a regime shift from the past. Often these policies took the form of an explicit exchange between lower taxes on labor and lower contractual wage inflation; however, international experience shows that incomes policies can rarely be sustained for long periods, and the experience of Denmark is consistent with this pattern.

These results cast doubt on some versions of the "expansionary fiscal consolidations" hypothesis, and on its applicability to many countries in the present circumstances. A depreciation is not available to EMU members, except possibly vis à vis non-Euro members. An expansion based on net exports is not available to the world as a whole. A further decline in interest rates is unlikely in the current situation. And incomes policies are not popular nowadays, and in any case probably ineffective for more than a few years.

However, even in the short run budget consolidations were probably a necessary condition for output expansion for at least three reasons: first, they were instrumental in reducing the nominal interest rate; second, they made wage moderation possible by signaling a regime change that reduced inflation expectations; third, for the same reason they were instrumental in preserving the benefits of nominal depreciation and thus in generating an export boom.

Table 1: Business investment growth during large consolidations

# obs.	mean	t-stat.	# obs.	Mean	t-stat.
Expansionary consolidations					
“during” – “before”			“after” – “during”		
16	8.65	2.82	16	-5.90	-2.13
Contractionary consolidations					
“during” – “before”			“after” – “during”		
48	.44	.27	48	2.01	1.43

Alesina and Ardagna (2010) dataset

Table 2: Denmark, discretionary budget measures

	Spending	Revenues	Surplus	Spending	Revenues	Surplus
				IMF	IMF	IMF
1983 total	-1.8	0.9	2.8	-1.8	0.9	2.8
cumulative	-1.8	0.9	2.8	-1.8	0.9	2.8
1984 total	-1.2	1.5	2.7	-1.7	0.7	2.4
cumulative	-3.1	2.4	5.5	-3.6	1.6	5.1
1985 total	-0.9	0.3	1.1	-0.8	0.8	1.5
cumulative	-4.0	2.7	6.6	-4.3	2.4	6.7
1986 total	0.0	2.1	2.1	0.0	0.0	0.0
cumulative	-4.0	4.7	8.7	-4.3	2.4	6.7
1987 total	0.0	0.2	0.2	0.0	0.0	0.0
cumulative	-4.0	4.9	8.9	-4.3	2.4	6.7

Source from columns 2 to 4: : OECD *Economic Survey of Denmark*, various issues

Table 3: Denmark, interest rates

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Nom. long	19.9	20.0	21.2	15.0	14.4	11.6	10.1	11.3	9.9	9.7	10.6
Nom. short	17.6	15.2	16.8	12.7	11.7	10.3	9.1	10.1	8.5	9.6	10.9
Real long	7.6	8.3	11.1	8.1	8.1	6.9	6.4	7.3	5.3	4.9	8.0
Real short	5.3	3.5	6.7	5.8	5.4	5.6	5.5	6.1	3.9	4.8	8.3
Long – short	2.3	4.8	4.5	2.3	2.7	1.3	0.9	1.2	1.4	0.1	-0.3
Long – long DEU	11.3	9.8	12.2	6.8	6.3	4.4	3.8	4.9	3.3	2.6	1.9

Source: OECD *Economic Outlook*, No. 88; Long term interest rate for Germany until 1990: OECD *Economic Outlook* No. 72

Table 4: Denmark, competitiveness indicators

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Hourly earn., manuf. ¹		9.4	9.9	6.6	4.7	4.8	5.1	9.0	6.6	4.5	4.8
ULC, all economy ²	11.0	9.2	9.2	6.6	3.9	4.1	2.8	8.9	5.3	3.5	2.7
ULC, manuf. ²	7.1	9.2	8.6	2.7	5.8	6.0	7.8	10.8	3.2	0.9	4.0
Nom. eff. exch. rate ²	-7.3	-5.5	-3.4	0.9	-2.3	2.2	5.7	3.6	-1.1	-1.6	8.1
Relative ULC, manuf. ²	-10.0	-4.9	-1.2	1.6	0.9	4.1	8.8	11.5	-0.2	-4.7	
Relative nom. wages, manuf. ³	-8.6	-6.6	-1.9	2.1	-3.0	1.2	6.6	9.5	-0.2	-3.2	3.9
Relative ULC, all economy ³	-12.2	-6.8	-2.6	0.3	2.1	3.8	10.1	11.9	0.4	-4.3	8.9
Labor prod. per person, all economy ¹	1.3	1.2	3.5	2.3	2.7	1.3	1.0	0.6	1.8	1.6	2.5
Labor prod. per person, manuf. ¹	4.6	1.4	3.8	8.3	-0.1	-1.6	-0.7	-2.2	1.8	4.4	-2.1
Labor prod. per hour, all economy ¹	0.0	3.0	2.9	2.6	3.0	2.2	0.8	2.8	3.0	2.7	3.0
Labor prod. per hour, manuf. ¹	4.3	2.9	2.6	7.5	0.1	0.7	-2.0	0.3	2.2	6.0	-1.5
CPI ³	12.3	11.8	10.1	6.9	6.3	4.7	3.7	4.0	4.5	4.8	2.6

Notes: An increase in measures of the nominal exchange rate or relative ULC or wages is an appreciation.

Sources: ¹ OECD *Main Economic Indicators*; ² OECD *Economic Outlook* No. 88; ³ EUROSTAT

Table 5: Denmark, GDP and its components

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
GDP	-0.4	-0.9	3.7	2.7	4.2	4.0	4.9	0.3	-0.1	0.6
Priv. Consumption	-2.8	-1.7	1.4	2.0	3.8	4.3	7.5	-1.9	-1.7	0.0
Exports	5.7	8.5	3.2	4.6	3.5	6.0	1.3	4.9	8.8	4.7
Gr. Dom. Cap. Form.	-11.1	-17.6	10.3	4.3	11.2	15.3	19.3	2.3	-6.4	1.6

Source: Statistics Denmark

Table 6: Ireland, discretionary budget measures

	Spending	Revenues	Surplus	Spending	Revenues	Surplus
				IMF	IMF	IMF
1997 total	-1.17	0.27	1.43	-0.90	0.42	1.31
cumulative	-1.17	0.27	1.43	-0.90	0.42	1.31
1988 total	-1.41	1.73	3.14	-1.57	0.00	1.57
cumulative	-2.58	2.00	4.57	-2.46	0.42	2.88
1989 total	-0.39	-2.12	-1.73	0.00	0.00	0.00
cumulative	-2.96	-0.12	2.84	-2.46	0.42	2.88

Sources for columns 2 to 4: *Estimates and Financial Statements*, various years

Table 7: Ireland, interest rates

	1982	1983	1984	1985	1986	1987	1988	1989	1990
Nom. long	17.1	13.9	14.6	12.8	11.2	11.3	9.4	9.2	10.3
Nom. short	16.3	13.2	13.2	11.9	12.5	10.8	8.0	10.0	11.3
Real long	-0.1	3.4	6.0	7.3	7.5	8.1	7.2	5.1	6.9
Real short	-0.8	2.7	4.6	6.5	8.8	7.7	5.9	5.9	8.0
Long – short	0.7	0.8	1.4	0.9	-1.3	0.4	1.3	-0.9	-1.0
Long – long DEU	8.0	5.7	6.5	5.6	4.9	4.9	2.8	2.0	1.6

Source: OECD *Economic Outlook*, No. 88; Long term interest rate for Germany until 1990 and short term interest rate for Ireland until 1983: OECD *Economic Outlook* No. 72

Table 8: Ireland, competitiveness indicators

	1982	1983	1984	1985	1986	1987	1988	1989	1990
Hourly earnings in manuf. ¹	14.5	11.6	10.5	8.7	7.5	5.8	5.3	4.8	5.4
ULC, all economy ²	11.6	9.6	4.0	4.0	7.3	0.5	-0.9	0.9	-0.3
ULC, manuf. ²	11.6	9.6	4.0	4.9	5.9	-3.6	-4.1	-2.7	-2.1
Nom. eff. exch. rate ²	-4	-2.6	-3.6	1.6	8.0	-4	-1.9	-7	8.6
Relative ULC, manuf. ²	5.0	4.9	-0.7	1.5	9.3	-6.2	-7.3	-6.8	0.3
Relative nominal wages, manuf. ³	4.5	3.2	-3.1	0.4	8.5	-4.3	-2.6	-5.4	0.8
Relative ULC, all economy ³	4.6	-6.7	-7.4	-3.2	2.6	-10.5	-7.0	-5.4	2.2
Labor prod. per person, manuf. ¹	1.2	14.2	14.8	1.6	0.4	9.4	7.1	5.1	6.7
CPI ²	17.1	10.5	8.6	5.5	3.8	3.2	2.1	4.1	3.3

Notes: An increase in measures of the nominal exchange rate or relative ULC or wages is an appreciation.

Sources: ¹ OECD *Main Economic Indicators*; ² OECD *Economic Outlook* No. 88; ³ EUROSTAT

Table 9: Ireland, GDP and its components, CSO data

	1982	1983	1984	1985	1986	1987	1988	1989	1990
GDP	1.49	-0.73	3.21	1.95	0.43	3.64	3.00	5.61	7.71
Priv. Consumption	-4.30	-1.79	0.86	2.74	2.80	2.06	3.60	3.35	3.23
Exports	4.47	10.53	16.25	6.60	2.71	13.88	8.15	11.42	9.17
Gr. Dom. Cap. Form.	-4.51	-8.61	-2.65	-7.90	-0.49	-2.34	-0.17	13.52	13.86
Mach. and Equipm.	-9.37	-2.61	-2.09	-7.65	1.64	1.52	1.75	16.57	10.72

Source: Central Statistical Office

Table 10: Ireland, GDP and its components, OECD data

	1982	1983	1984	1985	1986	1987	1988	1989	1990
GDP	2.28	-0.24	4.35	3.09	-0.43	4.66	5.22	5.81	8.47
Priv. Consumption	-7.06	0.85	2.01	4.59	2.01	3.32	4.49	6.52	1.41
Exports	5.54	10.45	16.59	6.58	2.89	13.72	9.02	10.31	8.73
Gr. Dom. Cap. Form.	-3.41	-9.29	-2.52	-7.71	-2.79	-1.14	5.24	10.13	13.40
Mach. and Equipm.	-8.42	-3.79	-3.30	-8.51	-1.44	5.24	10.06	14.23	8.49

Source: OECD *Economic Outlook* database

Table 11: Finland, discretionary budget measures

	Spending	Revenues	Surplus	Spending	Revenues	Surplus
				IMF	IMF	IMF
1992 total	0.91	0.00	-0.91	-0.91	0.00	0.91
cumulative	0.91	0.00	-0.91	-0.91	0.00	0.91
1993 total	-2.17	0.00	2.17	-3.71	0.00	3.71
cumulative	-1.25	0.00	1.25	-4.62	0.00	4.62
1994 total	-0.86	2.27	3.12	-2.76	0.69	3.45
cumulative	-2.11	2.27	4.38	-7.38	0.69	8.07
1995 total	2.61	-0.09	-2.70	-2.28	-0.63	1.65
cumulative	0.50	2.18	1.68	-9.66	0.05	9.71
1996 total	-1.44	1.75	3.19	-1.48	0.00	1.48
cumulative	-0.94	3.93	4.87	-11.14	0.05	11.19
1997 total	0.38	-0.14	-0.52	-0.94	-0.71	0.24
cumulative	-0.57	3.79	4.35	-12.08	-0.65	11.43
1998 total	-0.29	0.26	0.55	0.00	0.00	0.00
cumulative	-0.85	4.05	4.90	-12.08	-0.65	11.43
1999 total	0.48	-0.55	-1.03	0.00	0.00	0.00
cumulative	-0.37	3.49	3.87	-12.08	-0.65	11.43

Sources from columns 2 to 4: *Economic Survey of Finland*, Ministry of Finance, various issues; *OECD Economic Survey of Finland*, various issues

Table 12: Finland, interest rates

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Nom. long	13.2	11.7	12.0	8.8	9.0	8.8	7.1	6.0	4.8	4.7
Nom. short	14.0	13.1	13.3	7.8	5.4	5.8	3.6	3.2	3.6	3.0
Real long	7.8	8.8	10.3	5.6	4.3	5.0	3.0	2.0	2.2	1.8
Real short	7.8	8.8	10.3	5.6	4.3	5.0	3.0	2.0	2.2	1.8
Long – short	-0.8	-1.4	-1.3	1.1	3.7	3.0	3.5	2.7	1.2	1.8
Long – long DEU	4.5	3.3	4.1	2.3	2.2	1.9	0.9	0.3	0.2	0.2

Source: OECD *Economic Outlook*, No. 88; Long term interest rate for Germany until 1990: OECD *Economic Outlook* No. 72

Table 13: Finland, competitiveness indicators

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Hourly earnings in manuf. ¹	9.76	6.14	2.08	1.55	4.48	7.06	3.83	2.81	3.65	3.17
ULC, all economy ²	9.21	5.96	-1.48	-4.26	-1.93	2.84	0.75	-0.88	2.21	0.96
ULC, manuf. ²	7.32	7.76	-5.66	-7.15	-3.16	5.39	0.88	-4.24	-2.23	-2.82
Nom. eff. exch. rate ²	3.93	-2.87	-12.18	-10.01	13.39	15.00	-2.44	-2.09	3.21	2.67
Relative ULC, manuf. ²	5.31	-0.95	-20.74	-24.22	5.23	15.96	-5.47	-5.93	-0.28	0.30
Relative nominal wages, manuf. ³	4.53	-2.35	-16.97	-19.03	6.11	11.61	-3.61	-5.28	-0.64	-2.64
Relative ULC, all economy ³	4.19	-2.60	-21.23	-18.65	6.58	15.96	-3.70	-6.05	-1.75	-5.38
Labor prod. per person, all econ. ¹	1.84	-0.57	4.11	6.13	5.69	2.14	2.22	2.55	2.89	1.58
Labor prod. per person, manuf. ¹	1.82	-4.28	11.41	11.60	11.26	2.27	2.37	6.21	6.43	5.89
Labor prod. per hour, all econ. ¹	3.74	0.67	3.79	5.97	4.53	2.07	2.28	2.80	3.47	1.37
Labor prod. per hour, manuf. ¹	4.32	-0.57	11.64	10.53	8.93	2.13	2.72	5.39	5.79	7.10
CPI ²	6.15	4.31	2.92	2.19	1.09	0.79	0.63	1.19	1.40	1.16

Notes: An increase in measures of nominal or real exchange rate is an appreciation.

Sources: ¹ OECD *Main Economic Indicators*; ² OECD *Economic Outlook* No. 88; ³ EUROSTAT

Table 14: Finland, GDP and its components

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
GDP	0.5	-6	-3.5	-0.8	3.6	4	3.6	6.2	5	3.9
Priv. Consumption	-1.1	-3.7	-3.8	-3.5	2.4	4.5	3.8	3.3	4.6	2.8
Exports	1.7	-7.2	10	16.3	13.5	8.5	5.9	13.9	9.2	11.1
Priv. Gr. Dom. Cap. Form.	-5.7	-20.6	-17.9	-13	-1.6	18.5	9.3	9.2	13.3	4

Source: Statistics Finland

Table 15: Sweden, discretionary budget measures

	Spending	Revenues	Surplus	Spending	Revenues	Surplus
				IMF	IMF	IMF
1993 total	-1.25	.67	1.92	-1.39	.42	1.81
cumulative	-1.25	.67	1.92	-1.39	.42	1.81
1994 total	-0.52	0.95	1.47	-0.59	0.19	0.78
cumulative	-1.76	1.62	3.39	-1.98	0.61	2.59
1995 total	-1.11	1.69	2.80	-2.10	1.40	3.50
cumulative	-2.88	3.32	6.19	-4.08	2.01	6.09
1996 total	0.43	2.20	1.77	-1.20	0.80	2.00
cumulative	-2.44	5.51	7.96	-5.28	2.81	8.09
1997 total	-1.76	-0.87	0.89	-0.90	0.60	1.50
cumulative	-4.21	4.64	8.85	-6.18	3.41	9.59
1998 total	0.60	0.20	-0.40	-0.60	0.40	1.00
cumulative	-3.61	4.84	8.44	-6.78	3.81	10.59

Source for columns 2 to 4: OECD *Economic Survey of Sweden*, various issues

Table 16: Sweden, Interest rates

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Nom. long	13.2	10.7	10.0	8.6	9.7	10.3	8.1	6.7	5.0	5.0
Nom. short	13.7	11.6	13.1	8.4	7.4	8.8	5.8	4.1	4.2	3.1
Real long	2.8	1.3	7.6	3.8	7.6	7.8	7.5	6.0	5.3	4.5
Real short	3.4	2.2	10.7	3.7	5.3	6.3	5.3	3.5	4.5	2.7
Long – short	-0.5	-0.9	-3.1	0.2	2.3	1.5	2.2	2.5	0.8	1.9
Long – long DEU	4.5	2.3	2.2	2.1	2.8	3.4	1.8	1.0	0.4	0.5

Source: OECD *Economic Outlook*, No. 88; Long term interest rate for Germany until 1990: OECD *Economic Outlook* No. 72

Table 17: Sweden, competitiveness indicators

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
hourly earnings in manuf. ¹	8.5	5.5	4.6	3.3	4.1	5.4	6.6	4.4	3.6	1.8
ULC, total economy ²	11.4	6.3	-0.1	0.3	0.9	0.1	4.7	0.5	0.3	-0.9
ULC, manuf. ²	7.8	7.7	-0.5	-7.6	-7.2	-2.5	4.5	-4.4	-4.7	-6.8
Nom. eff. exch. rate, chain-linked ²	0.4	0.9	2.4	-17.7	1.2	0.4	10.1	-3.3	-0.2	-0.3
Relative ULC, manuf. ²	2.5	2.9	-2.7	-26.8	-6.4	-4.1	12.8	-7.2	-6.4	-7.0
Real eff. exch. rate, nom. wages ³	2.8	1.2	-1.4	-18.8	0.2	-1.1	13.6	-4.4	-3.4	-4.5
Real eff. exch. rate, ULC ³	1.2	2.6	-1.5	-25.1	-6.7	-4.1	12.6	-7.5	-6.6	-9.5
Labor prod. per person, all econ. ¹	1.1	0.4	2.1	5.4	5.3	3.1	2.6	4.4	2.4	2.5
Labor prod. per person, manuf. ¹	2.0	0.5	5.2	10.1	15.5	7.0	3.7	9.3	6.6	9.7
Labor prod. per hour, all econ. ¹	1.4	1.3	1.0	4.3	2.8	2.8	1.8	4.1	2.5	2.0
Labor prod. per hour, manuf. ¹	1.2	0.8	4.3	7.1	10.4	6.4	3.5	9.6	6.5	9.0
CPI ²	10.4	9.4	2.4	4.7	2.2	2.5	0.5	0.7	-0.3	0.5

Notes: An increase in measures of nominal or real exchange rate is an appreciation.

Sources: ¹ OECD *Main Economic Indicators*; ² OECD *Economic Outlook* No. 88; ³ EUROSTAT

Table 18: Sweden, GDP and its components

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
GDP	1.0	-1.1	-1.2	-2.1	4.0	3.9	1.6	2.7	4.2	4.7	4.5
Priv. Consumption	-0.5	0.9	-1.3	-3.6	2.1	1.1	1.8	2.8	3.3	4.0	5.3
Exports	2.1	-1.9	2.0	8.3	13.5	11.3	4.4	13.8	9.0	7.2	11.7
Gr. Dom. Cap. Form.	0.2	-8.5	-11.3	-14.6	7.0	9.9	4.7	0.6	8.8	8.7	5.7
Mach. and Equipm.	-0.2	-12.0	-13.8	-14.4	25.1	23.7	7.5	3.5	9.7	6.3	1.7
Dwellings	7.2	-2.4	-11.6	-33.5	-33.6	-23.5	8.9	-8.1	5.4	13.3	14.8
Other Construction	-2.0	-5.9	-6.4	-2.1	13.9	11.4	-1.9	-6.2	2.6	-2.6	2.9

Source: Statistics Sweden

References

- Ades, A., M. Kiguel, and N. Liviatan (1993): "Exchange-rate-based stabilization: Tales from Europe and Latin America", World Bank Policy Research Working Paper WPS 1087
- Alesina, A. and S. Ardagna (1998), "Tales of Fiscal Adjustment," *Economic Policy*, Vol. 13, No. 27, pp. 487–545.
- Alesina, A. and S. Ardagna (2010): "Large Changes in Fiscal Policy: Taxes versus Spending," in: *Tax Policy and the Economy*, Vol. 24, ed. By Jeffrey R. Brown (Cambridge, Massachusetts: National Bureau of Economic Research)
- Alesina, A. and R. Perotti (1995): "Fiscal Expansions and Adjustments in OECD Economies", *Economic Policy*, n.21, 207-247.
- Alesina, A. and R. Perotti (1997): "Fiscal Adjustments In OECD Countries: Composition and Macroeconomic Effects," *International Monetary Fund Staff Papers*, v44(2,Jun), 210-248.
- Alesina A., R. Perotti, and J. Tavares (1998): "The Political Economy of Fiscal Adjustments", *Brookings Papers on Economic Activity*, Spring
- Andersen, T. and O. Risager (1990): "Wage formation in Denmark", in Calmfors, L. (ed.): *Wage formation and macroeconomic policies in Nordic countries*, Oxford University Press
- Angrist, J. and J.S. Pischke (2008): *Mostly Harmless Econometrics: An Empiricist's Companion*, Princeton University Press
- Baker, D. (2010): "The myth of expansionary fiscal austerity", Center for Economic and Policy Research, Washington DC
- Barry, F. (2000): "Convergence is not automatic: Lessons from Ireland for Central and Eastern Europe", *The World Economy*, November
- Barry, F. and M. B. Devereux (1995): "The expansionary fiscal contraction hypothesis: a neo-keynesian analysis", *Oxford Economic Papers*, 47, 249-64
- Benetrix and P. R. Lane (2011): "Financial Cycles and Fiscal Cycles", mimeo, University College Dublin
- Bergman, U. M. and M. M. Hutchinson (2010): "Expansionary fiscal contractions: Re-evaluating the Danish case", *International Economic Journal*, 24(1), 71-93
- Bertrand, M., E. Duflo, and S. Mullainathan (2004): "How much should we trust difference-in-difference estimates?", *The Quarterly Journal of Economics*, February, 249-75
- Blanchard, O.J. and R. Perotti (2002): "An Empirical Characterization of the Dynamic Effects of Changes in Government Spending and Taxes on Output", *The Quarterly Journal of Economics*, 1329-1368.

- Bradley, J. and K. Whelan (1997): "The Irish expansionary fiscal contraction: a tale from one small European economy", *Economic Modelling*, 14, 175-201
- Broadbent, Ben, and Kevin Daly, 2010, "Limiting the Fall-Out from Fiscal Adjustment," Goldman Sachs Global Economics Paper No. 195 (New York: Goldman Sachs)
- Devries, P., J. Guajardo, D. Leigh, and A. Pescatori (2011): "A new action-based dataset of fiscal consolidations", IMF WP/11/128, at <http://www.imf.org/external/pubs/cat/longres.aspx?sk=24892.0>
- Dornbusch, R. (1989): "Ireland's disinflation", *Economic Policy*, April, 173-201
- Drazen, A. (1990): "discussion of Giavazzi and Pagano", in Blanchard, O. and S. Fischer, eds: *NBER Macroeconomics Annual 1990*. Cambridge, Mass. and London: MIT Press, pp. 111-115.
- Durkan, J. (1992): "Social consensus and incomes policy", *The Economic and Social Review*, vol. 23, No. 3, 347-63
- Favero, C., F. Giavazzi, and J. Perego (2011): "Country heterogeneity and the international evidence on fiscal policy", mimeo, IGER – Bocconi University
- Fedalino, A., A. Ivanova, and M. Horton (2009): "Computing cyclically adjusted balances and automatic stabilizers", International Monetary Fund Technical Notes and Manuals, Fiscal Affairs Department
- Giavazzi, F. and M. Pagano (1990): "Can Severe Fiscal Contractions Be Expansionary? Tales of Two Small European Countries," in Blanchard, O. and S. Fischer, eds: *NBER Macroeconomics Annual 1990*. Cambridge, Mass. and London: MIT Press, pp. 75-111.
- Giavazzi, F. and M. Pagano (1996): "Non-Keynesian Effects of Fiscal Policy Changes: International Evidence and the Swedish Experience," *Swedish Economic Policy Review*, Vol. 3, No. 1, pp. 67–103.
- Guichard, S., M. Kennedy, E. Wurzel, and C. André (2007): "What promotes fiscal consolidation: OECD country experiences", OECD Economic Department working paper ECO/WKP(2007)13
- Hardy, P., L. Kamener, and L. Karotie (2011): "European fiscal consolidations: four factors that will support success", The Boston Consulting Group
- Hauptmeier S., Heipertz M. and L. Schuknecht (2007): "Expenditure Reform in Industrialized Countries: A Case Study Approach", *Fiscal Studies*, vol. 28, no. 3, pp. 293–342.
- Henriksson, J. (2007): "Ten lessons about budget consolidations" The Bruegel Essay and Lecture Series
- Honkapohja, S. and E. Koskela (1999): "The economic crisis in the 1990s in Finland", The Research Institute of the Finnish Economy, Discussion paper No. 683

- Honohan, P. (1989): "Comments to Dornbusch", *Economic Policy*, April, 202-205
- Honohan, P. and B. Walsh (2002): "Catching up with the leaders: the Irish hare", *Brookings Panel on Economic Activity*, I, 1-57
- International Monetary Fund (2010): "Will it hurt? Macroeconomic effects of fiscal consolidations", Chapter 3 of *The World Economic Outlook*, October
- Jayadev, A. and M. Konczal (2010): "The boom not the slump: the right time for fiscal austerity", The Roosevelt Institute
- Jonung, L., J. Kiander, and P. Vartia (2008): „The great financial crisis in Finland and Sweden", Economic Paper, DG ECFIN
- Krugman, P. (2010): "Myths of austerity", *The New York Times*, July 1, 2010, at <http://www.nytimes.com/2010/07/02/opinion/02krugman.html?ref=paulkrugman>
- Krugman, P. (2011): "When austerity fails", *The New York Times*, May 22, 2011, at <http://www.nytimes.com/2011/05/23/opinion/23krugman.html?ref=paulkrugman>
- Lane, P. R. (2000): "Disinflation, Switching Nominal Anchors and Twin Crises: the Irish Experience", *Policy Reform*, Vol. 3, 301-326
- Lassen, D. (2010): "Fiscal consolidations in advanced industrialized democracies: economics, politics, and governance", Rapport till Finanspolitiska radet 2010/4, University of Copenhagen
- Lilico, A., E. Holmes and H. Samen (2009): "Controlling spending and government deficits: Lessons from history and international experience", Policy Exchange
- Ljungman, G. (2008): "Expenditure ceilings – a survey", International Monetary Fund Working Paper WP/08/282
- McAleese, D. (1990): "Ireland's economic recovery", *Irish Banking Review*, Summer, 18-32
- McCarthy, C. (2010): "Ireland's second round of cuts: a comparison with the last time", in: Springford, J.: *Dealing with debt: lessons from abroad*, CentreForum Canada, Ernst & Young, 41-54
- Morris, R. and L. Schuknecht (2007): "Structural Balances and Revenue Windfalls: the Role of Asset Prices Revisited," European Central Bank Working Paper Series No. 737.
- Ramey, V.A. (2011): "Identifying Government Spending Shocks: It's All in the Timing", *The Quarterly Journal of Economics*
- Rigobon, R. and T. Stoker (2005): "Censored Regressors and Expansion Bias", mimeo, MIT
- Romer, C. and D. Romer (2010): "The Macroeconomic Effects of Tax Changes: Estimates Based on a New Measure of Fiscal Shocks," *American Economic Review*, Vol. 100, No. 3, pp. 763-801.

- Walsh, B. (1993): "Credibility, Interest Rates and the ERM: The Irish Experience", *Oxford Bulletin of Economics and Statistics*, 55, issue 4, p. 439-52
- Whelan, K. (2010): "The enduring influence of Ireland's 1987 adjustment", *Irish Economy* blog, <http://www.irisheconomy.ie/index.php/2010/08/20/the-enduring-influence-of-irelands-1987-adjustment/>
- Wolswijk, G. (2007): "Short- and Long-Run Tax Elasticities—the Case of the Netherlands," European Central Bank Working Paper Series No. 763 (Frankfurt: European Central Bank).

Figure 1: The censoring bias of the IMF approach

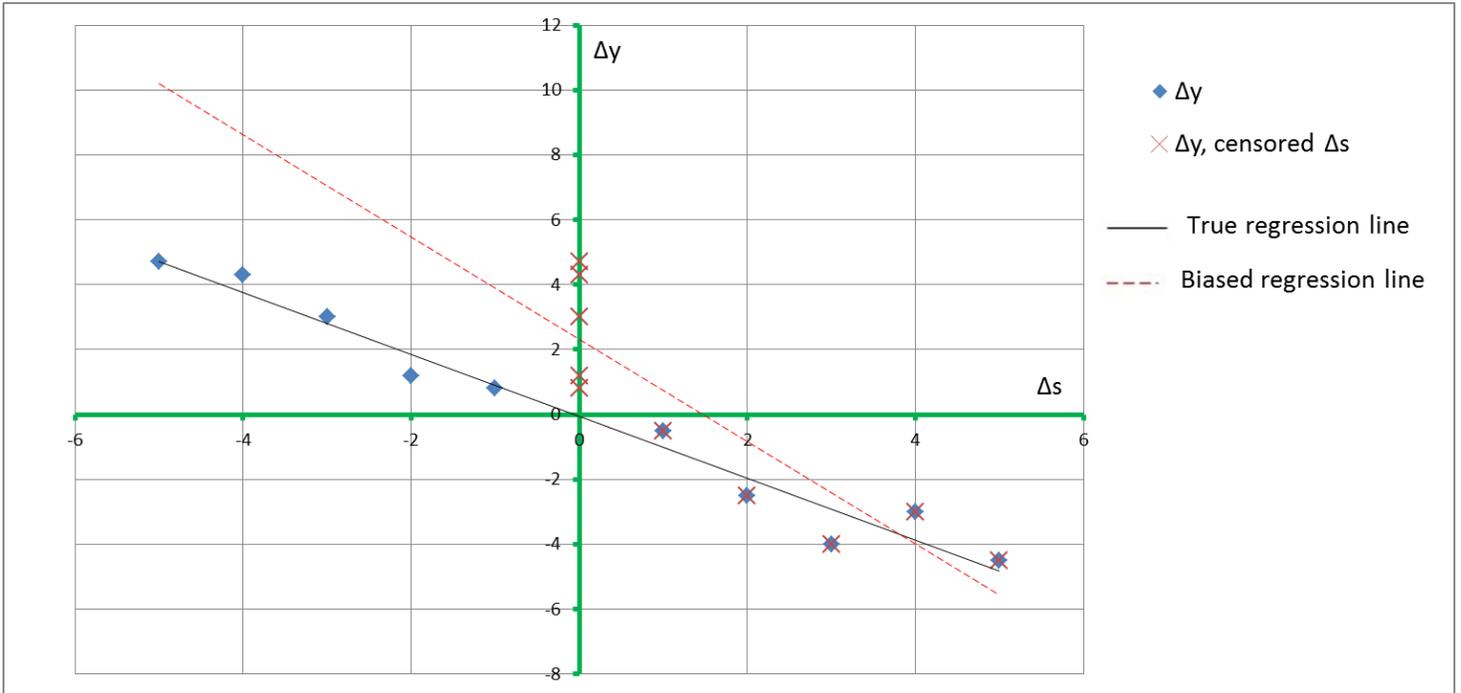
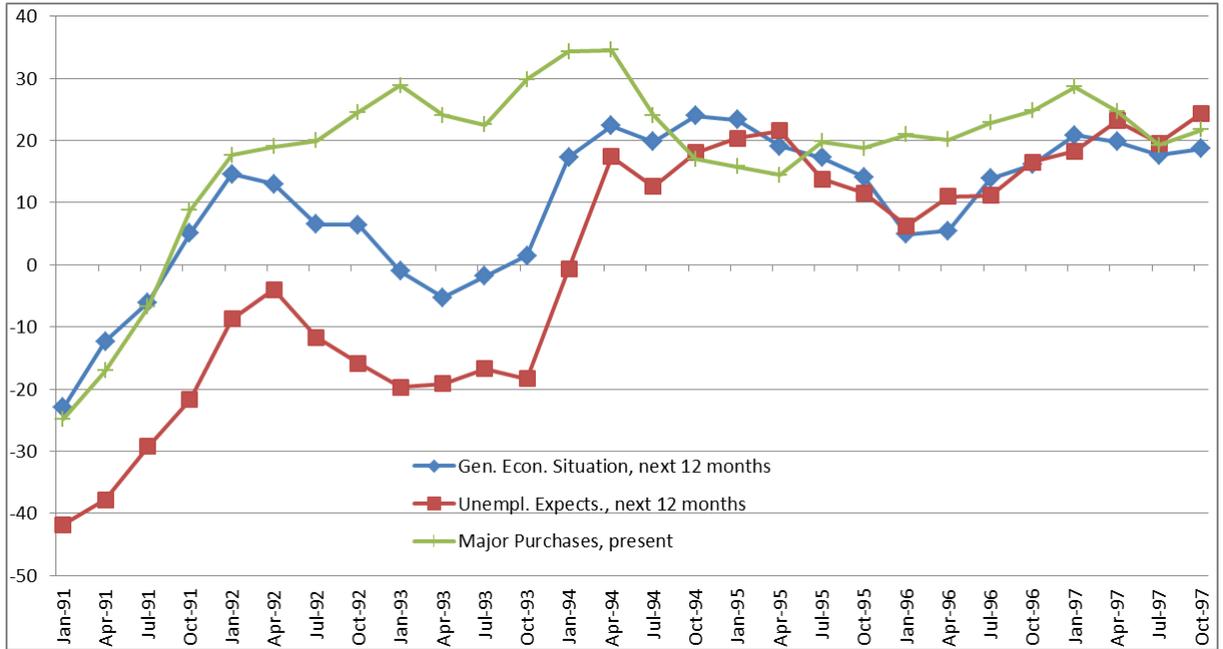


Figure 2: Finland, consumer confidence



Comments on Perotti's paper

Carlo Cottarelli¹

Perotti's paper provides an excellent contribution to the debate on the effects of fiscal policy. The paper is extremely rigorous and effective in scrutinizing previous results obtained by Alesina, Ardagna and Perotti himself, as well as by work included in the Fall 2010 issue of the IMF's World Economic Outlook. And Perotti is equally tough in criticizing his own earlier work as he is with the work undertaken by IMF staff.

This paper is convincing and his message is, in many respects, sobering. The evidence from the case studies presented casts significant doubts on the hypothesis that the current fiscal problems of advanced countries can be addressed without implications for economic growth simply by focusing the fiscal adjustment on the spending side rather than the revenue side. In this respect, while Perotti's criticism of some aspects of the methodology followed by the IMF paper is valid his policy conclusions are not very different: we should not expect a painless fiscal adjustment. Fiscal tightening will have to be carefully managed because it is likely, in a number of cases, to lead to a slowdown of economic activity. Let me be clear about one point: the fact that fiscal tightening – even one focused on cutting expenditure – is likely to have a negative impact on demand and growth does not mean it should not be implemented (failure to do so would imply the risk of even more negative effects on economic stability and growth). But it does imply that the issue of demand management when fiscal policy is tightened cannot be disregarded.

How concerned should we be? I prefer to be optimistic, so I will list three factors that may help in achieving fiscal consolidation in a relatively satisfactory growth environment. None of them in itself is sufficient, but, altogether, they may give rise to some optimism.

The first relates to the timing and magnitude of the fiscal adjustment. Fiscal policy was expanded as private sector demand weakened. As the latter strengthens less support from fiscal policy will be needed. In this respect coordination with monetary policy will be essential. While it is true that interest rates will not be able to fall further, the fiscal tightening should imply that they should rise less than what would normally be expected in an economic upswing. We should also keep in mind that, even in the absence of a decline in policy interest rates, the strengthening of credit markets should help reduce the cost of borrowing, or increase the availability of credit, for the private sector (of course the strength of the process will depend on the pace at which bank's capital is rebuilt). This withdrawal of fiscal support as private sector demand recovers is essentially what we project to happen in our World Economic Outlook at the aggregate level. Let's however keep in mind one thing: that a simple reversal of the process that took place since 2007 will not bring the fiscal accounts back to where they were for a number of reasons, the most important being the step loss of potential output – and related revenues (about 3 percentage points of GDP for the average of advanced economies) – that has taken place during the great recession, which is not expected to be recovered any time soon. This means that the fiscal tightening would have to go well beyond the reversal of the fiscal stimulus and of the automatic stabilizers.

The second reason for some moderate optimism refers to the role of emerging economies. They can potentially increase their role as engine of demand and growth for the world. Of course, this requires an increasing reliance by these economies on domestic demand,

¹ International Monetary Fund.

including as a result of exchange rate appreciation. As noted by Perotti's paper, exchange rate depreciation cannot help all countries at the same time. But advanced countries can collectively depreciate vis-à-vis emerging economies. Their fiscal accounts are in a much better shape and much less fiscal adjustment, if any, is needed for them. Here the problem is that, while rising, the share of emerging economies in world demand is not big enough to fully offset fiscal tightening in advanced economies. Yet, some positive support will come from here.

One small digression: countries with a pegged exchange rate can restore external equilibrium – and ultimately long-term growth – through internal devaluation, that is through declines in prices and wages or increases in productivity that boost competitiveness. This, in a way, is the German approach: its competitiveness is leading to an export-led recovery. It is also the approach followed by some Eastern European countries (the Baltics, Romania, Bulgaria). A variant of this is the so-called, fiscal devaluation: a revenue-neutral switch between labor taxation to consumption taxation. This is being attempted in Portugal. The effects on employment and output of such a switch have been studied for decades. The conclusion of this literature is that, typically, these effects are fairly small and take a long time to materialize. But, in the current conditions of high unemployment, the effect could be stronger: a switch from, say, employer's social security contributions to consumption taxes may be the way to achieve a decline in real wages that, in the presence of downward rigidity of nominal wages, would not take place.

The third factor that can make us be hopeful relates to reforms to boost potential output growth. Here of course I am aware of the fact that fiscal contraction acts by reducing aggregate demand, so an issue of demand management does remain. But the point is that by boosting potential growth, and the related revenues, countries will need less fiscal contraction. A corollary of this is that any fiscal tightening that is implemented should be designed to improve – or at least not damage – potential growth: so cutting distortionary tax expenditures is better than increasing headline rates; and targeted spending cuts are better than cuts across the board. Targeted spending cuts are more sustainable and were at the core of some successful fiscal consolidations like the one implemented by Canada in the second half of the 1990s. The problem here is that all these reforms that affect potential growth typically take time to yield results.

The bottom line is that, *ceteris paribus*, a fiscal tightening will reduce economic activity, but the factors I listed – the cyclical recovery of private sector demand, a rebalancing of demand towards emerging economies, and reforms aimed at boosting potential output – while probably insufficient taken in isolation, can all together help advanced economies in addressing their fiscal problems without necessarily jeopardizing the prospects for medium-term growth.

One last point: many of the mechanisms I describe require time and, therefore, the fiscal adjustment should be relatively gradual whenever this is possible, that is whenever financing problems are unlikely to arise. It is therefore critical that, while gradual adjustment takes place, credibility is not shaken. Hence the need for clarity in the definition of medium-term fiscal adjustment plans, as well as for fiscal institutions that will ensure their implementation.

Discussion of “The ‘Austerity Myth’ ”

by Harald Uhlig²

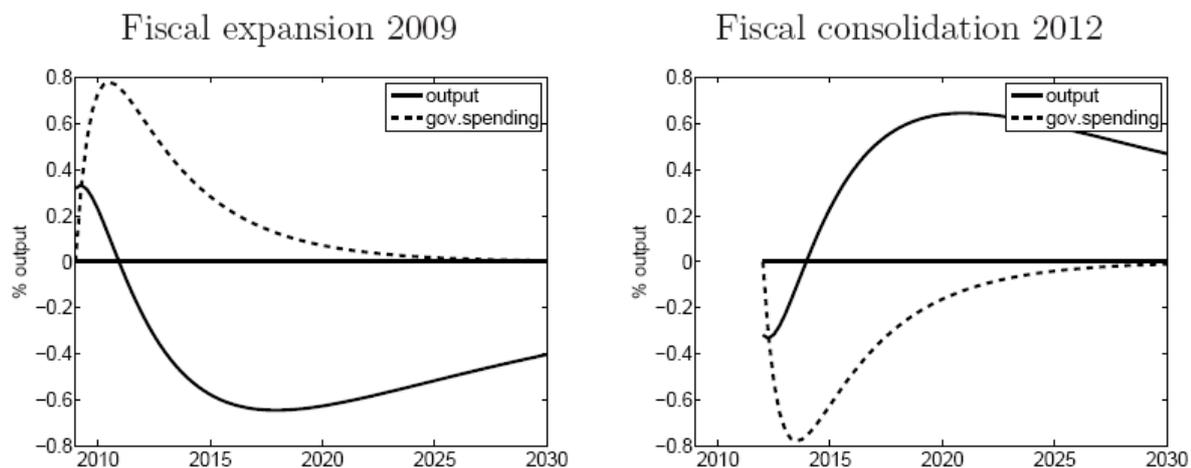
Economists answer questions. The paper by Perotti tackles a question of highest importance to policy makers: what are the effects of fiscal consolidation? The rise in default premia for a number of Euro zone countries as well as the turn of the public discussion away from fiscal stimulus in 2009 towards fiscal consolidation as we enter 2012 has moved this question even more to center stage.

Economists have answered this question in a multitude of ways. There are a number of fairly standard macroeconomic models out there, providing quantitative results. For example, Uhlig (2010) provides such an answer in a simple calibrated neoclassical growth model. That model lacks many features that may be crucial, but it does establish an important benchmark. The left panel of figure 1 shows the result for the US fiscal stimulus of 2009, assumed to eventually being financed with distortionary labor taxation. One can see the initial output boom, that many had hoped for, but that boom is not as large as stimulus-adherents claimed that it would be. Pretty soon down the road, the effect on output is actually negative rather than positive, as the need to raise taxes to pay for the initial largesse kicks in.

This model is entirely symmetric. One can therefore flip the dynamics upside down for a hypothetical consolidation in the US starting in 2012, that starts with a cut in government spending, see the right panel of figure 1. There is an initial dip in output, but it is perhaps not as bad as many would fear. Moreover, it is followed by a subsequent rise in output down the road, as the stimulating effects of future tax cuts are felt.

Figure 1

The effects of the US fiscal stimulus in 2009, according to Uhlig (2010), and of a hypothetical fiscal consolidation in 2012, per “flipping” the same results upside down.



Now, a multitude of details can make a considerable difference. But, as a starting point, it is probably wise to view government spending reductions as initially dampening economic activity and leading to subsequent expansion per lower taxes down the road. Put differently,

² University of Chicago, Dept. of Econ., huhlig@uchicago.edu.

fiscal consolidation may be a good idea, but it might be prudent to not oversell its advantages by also claiming that they will be expansionary initially. They might be. But often, perhaps they won't be.

Perotti addresses this very question directly: is fiscal consolidation per spending cuts expansionary in the short run? This is an impressive, intriguing, demanding, informative piece, with a wealth of insights and evidence, that I highly recommend studying in careful detail. My discussion can only scratch the surface and provide additional perspective.

Some of his paper attacks the IMF October 2010 “Economic Outlook” analysis. Essentially, the IMF replaces statistical analysis with “action-based” analysis. Perotti claims that the IMF got its econometrics wrong. He also claims, that details matter a lot, as his own case studies will show. Essentially, Roberto claims that

- the IMF neglected important data.
- the narrative is more complicated: there were wage restraints, and exchange rates mattered.
- further, there were less of a spending cut than IMF claims.

Perhaps, one can summarize the insight from Perotti’s paper as follows: it’s complicated.

The IMF study itself was a response to an earlier literature. The text here is a discussion (Uhlig) of a discussion (Perotti) of a discussion (IMF) of an assessment (Alesina-Ardagna, 2010) of an earlier literature: Giavazzi-Pagano (1990), Alesina-Perotti (1995), Alesina-Ardagna (1998) and others. As to the question whether spending cuts are expansionary in the short run, the answers seem to be: no (Uhlig), it’s complicated (Perotti), no (IMF), yes (Alesina-Ardagna 2010) and yes (Alesina, Ardagna, Giavazzi, Pagano), at the risk of oversimplifying. Of course, the precise answer always depends on the details. It would have been useful to get to an exact list and comparison of these details, and to see where these researchers are truly in disagreement and where they simply report answers to somewhat different experiments. It is beyond the scope of this discussion to attempt that.

1 Econometrics

A considerable part of Perotti’s paper deals with the examination and his critic of the econometric approach and evidence. The paper explains it nicely, but it may be useful to simplify the details given by Perotti even more with a specific and simplified example. Consider the following two versions of Perotti’s equations:

$$\Delta s = \alpha \Delta y + \varepsilon_s \tag{1}$$

$$\Delta y = -0.25 \Delta y - 2.5 \varepsilon_s + \varepsilon_y \tag{2}$$

The notation is as follows: Δs denotes the government surplus, Δy denotes the output change, ε_s is the policy change, ε_y is a business cycle shock and $\alpha > 0.25$ is the automatic stabilizer.

Suppose now, that data is given on Δs , Δy . The econometric challenge, that Perotti describes, is this: it is hard to estimate the ε_s -coefficient in equation (2), due to “second round” effects. The true coefficient according to the example above is minus 2.5. However, the policy intervention per ε_s and resulting changes in Δy will be mitigated by the automatic-stabilizer term, ie the $-0.25 \Delta y$ -term on the right-hand side of (2). Moreover, one does not have direct data on ε_s : instead, one needs to solve for it as well as the ε_y -shock from the two equations (1) and (2) and the available left-hand-side data. Since (1) only contains one

of the two shocks, one may hope to reverse-engineer the ε_s -intervention from the movements in Δs . But if there is an ε_s intervention, then the resulting movements in Δy will also affect Δs per the $\alpha\Delta y$ -term in (1), making this approach difficult.

Perotti points all this out, it looks correct to me, and it is a fine and fair point. But do note the following. To make things even more specific, suppose that $\alpha=0.5$ as well as $\varepsilon_s = 1$ and $\varepsilon_y = 0$. In that case, $\Delta y = -2$ per (2) and $\Delta s = 0$ per (1). This is remarkable: output goes up by two percent (if that is how $\Delta y = 2$ should be read), while the government surplus has not changed at all. Would one really want to call this a policy intervention and a consolidation of fiscal spending? Something is very odd here. I believe that the question posed is simply not particularly interesting. We may really not particularly care to figure out the coefficient on ε_s in equation (2). Rather, one may wish to find out, how much Δy changes, if Δs changes per policy choice, and that may be simpler to find out. One does need to be careful about the causality from ε_y to Δs , but perhaps this can be taken care of in a different manner.

2 Case studies

The paper by Perotti follows the econometric critique with a detailed examination of the evidence in particular cases. This is a remarkable, pain-staking, time-consuming and informative exercise. We need good data! I laud the efforts here to examine that data and to correct it appropriately, to the extent possible.

But I also ended up somewhat uncomfortable with the approach taken. Replicability is key to science. How replicable is the exercise here? For example one finds sentences such as these:

- p. 23: "IMF does not count the contribution of a tax amnesty that netted 1.7 percent of GDP in 1988".
- p. 32: "I estimate ... a cumulative improvement in the discretionary balance by 4.4 percent of GDP"

Would a good graduate student armed with the same material come to the same conclusions? The raw reporting of the facts is surely useful. But the paper often goes beyond that, by providing a causal interpretation. Examples are:

- p. 19: "However, the price of this policy of devaluations and realignments was high interest rates and a large differential vis-à-vis Germany"
- p. 28: "in Denmark the expansion that occurred at the time of the consolidation was driven by domestic demand; in Ireland, for a long time it was driven mostly by exports".

Well, perhaps. But there are many other potential candidates for a reasonable explanation. For example, there were general "world trends", such as the retrenchment of the welfare state in the early 80's. Are they unimportant to understand what was happening here? Finland is a remarkably unusual country in its own right, transiting from a semi-socialist economy in the shadow of the big Russian neighbour to an economy pulled up to a considerable degree by Nokia, the early champion of mobile phones. Was that of no importance? What is the right benchmark to use? How does one select the appropriate sample of countries?

Perotti's piece makes for fascinating reading. Perhaps, the reader is simply invited to draw its own conclusion from the presentation of the facts here as well as the particular interpretation given by the author. In some ways, then, it resembles a fine piece of journalism. I do not

mean this as a negative or disrespectful remark: on the contrary. Journalism at its finest, when well-researched and thoughtfully done, should command the highest of respect and is often a more important input to policy decisions than some scientific analysis. Perotti's piece is a bit in between, and that way, perhaps all the more relevant to the issue tackled. I just wish that a bit of a cleaner line had been drawn between the scientific, replicable part, and the interpretation-driven part. Perotti gives a masterful interpretation, of course, but without such a line, it may be too tempting for less careful researchers to proceed the same way in the future, and to increasingly blur the important distinction.

3 Conclusions

My conclusions then are as follows. Economists answer questions. Perotti addresses in particular the short-run effects of fiscal consolidation. Perotti's piece is a wonderfully informative contribution on several fronts: fascinating, dense, full of information and a highly recommended read.

Increasingly, though, governments have little choice but to consolidate, or else face the wrath of markets. And consolidation often is wise in the medium-to-long run. Perhaps, then, the short-run is not all that important, except that politicians should refrain from overselling potential short-run benefits. Perotti's piece here is a very useful reminder, and it is argued in practical, case-driven terms. Case studies are a great addition to our science, and yield additional and intriguing information that might be impossible to obtain from regressions or quantitative theory alone. It may be good to alert readers to the line where the scientific discipline of replicability is still imposed, and where it becomes an exercise with considerable discretion of the author. The latter is perfectly fine and may be even more important as input into policy making and as a fascinating read, as long as the reader is told about it.

References

- Alesina, A. and S. Ardagna (1998), "Tales of Fiscal Adjustment," *Economic Policy*, Vol. 13, No. 27, pp. 487 - 545.
- Alesina, A. and S. Ardagna (2010): "Large Changes in Fiscal Policy: Taxes versus Spending," in: *Tax Policy and the Economy*, Vol. 24, ed. by Jeffrey R. Brown (Cambridge, Massachusetts: National Bureau of Economic Research).
- Alesina, A. and R. Perotti (1995): "Fiscal Expansions and Adjustments in OECD Economies", *Economic Policy*, n.21, 207-247.
- Giavazzi, F. and M. Pagano (1990): "Can Severe Fiscal Contractions Be Expansionary? Tales of Two Small European Countries," in Blanchard, O. and S. Fischer, eds: *NBER Macroeconomics Annual 1990*, Cambridge, Mass. and London, MIT Press, pp. 75-111.
- International Monetary Fund (2010): "Will it hurt? Macroeconomic effects of fiscal consolidations", Chapter 3 of *The World Economic Outlook*, October.
- Perotti, R., "The 'Austerity Myth': Gain Without Pain?", this volume
- Uhlig, H., "Some Fiscal Calculus," *American Economic Review, Papers and Proceedings* 2010, vol. 100(2), pp. 30-34.