Session 1

AUTOMATIC STABILISERS AND DISCRETIONARY FISCAL POLICY

GOVERNMENT FISCAL AND REAL ECONOMY RESPONSES TO THE CRISES: AUTOMATIC STABILISERS VERSUS AUTOMATIC STABILISATION

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This paper looks at the discretionary fiscal and real economy support measures introduced by EMU Member States in response to the crises. The analyses build on a data base assembled by the Commission on individual crises response measures with a view to survey the implementation of the European Economic Recovery Programme (EERP). The paper first provides a broad overview of the types of crises-related measures taken, including broad estimates of their budgetary dimension. On this basis it appears that on an aggregate level, the discretionary support has been in line with agreed principles of being timely, temporary and targeted. Member States with restricted fiscal space has overall taken a more restrictive stance than those with more room of manoeuvre. The paper then looks at how these discretionary measures complement the "automatic" budget stabilisation. It appears that, in budgetary terms, about half of the discretionary measures add to the areas already covered by automatic stabilisers while the other half address other areas such as investments, industrial sectors and vulnerable groups particularly hit by the crises. The overall experience may suggest that it has been helpful with agreed ex ante *principles for how discretionary stimuli should be provided and that the provision of discretionary stimulus under such conditionality can work to strengthen the budgetary stabilisation capacity in a flexible way.*

1 Introduction

The economic crises have provoked substantive policy responses, in the EU and globally. The role of discretionary fiscal stimulus as an ingredient in a successful policy response was initially vividly debated and the stance among EU policy makers was arguably relatively cautious. The cautiousness was rooted in a consensus, built-up over many years and backed up by historical evidence,[1] that discretionary fiscal stimulus suffers from problems related to the design, implementation and reversibility of measures. Therefore, in normal circumstances the fiscal stabilisation job should be restrained to the "free play" of the automatic stabilisers as they are relatively well targeted and by nature also timely and temporary. Moreover, it has been argued that in the EU/euro area the size of government is relatively large implying that also automatic stabilisers are sufficiently large.[2]

Nevertheless, as the depth of the crises manifested itself with more strength, and as stimulus through monetary policy appeared partially impaired, the worries of entering into an outright depression led to a change of hearts. Despite quickly deteriorating fiscal positions, the concern about using discretionary fiscal policy for stabilisation purposes were overridden by the greater concern about economic developments and the risk of economies being locked into a state of depression. Policy makers in the EU/euro area thus opened up to the idea that it would be appropriate with additional fiscal stimuli given that this was not a normal downturn. Discretionary fiscal stimulus was seen as an insurance policy, both from an economic perspective, to reduce the risk of a depression, and possibly also from a political economy perspective to get acceptance from

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The views expressed in the paper are those of the authors and do not necessarily represent those of the European Commission.

[1] See, for example, the annual European Commission reports *Public Finances in EMU*.

[2] See, for example, Deroose, Larch and Schaechter (2008).

tax payers for the much larger public efforts to support the financial system. Against the background of the simultaneous discussions at global level in the G20 context, in the EU, this stimulus policy was manifested in the so-called "European Economic Recovery Plan" (EERP) adopted by the European Council in December 2008 based on a Commission proposal.[3] In essence, the EERP called for a coordinated EU crises response including a fiscal stimulus of overall at least 1.5 per cent of GDP over 2009-10 where measures should be "timely, temporary and targeted". Out of this Member States were asked to contribute with 1.2 per cent of GDP, where the size of national contributions should take into account fiscal space, whereas the remaining 0.3 per cent of GDP should come from EU level actions. Against this background the objective of this paper is to give an overview of how the discretionary stimulus under the EERP has been distributed in euro area Member States and how this support has complemented the stabilisation provided by the automatic stabilisers.

The paper is organised as follows. On the basis of the Commission "EERP data base", Section 2 provides a broad overview of the crises response measures taken in euro area member states. This includes the division of measures across policy objectives as well as their budgetary dimension including whether they are temporary or permanent. Section 3 then goes into more detail examining the sub set of discretionary measures that could be seen to top-up the automatic stabilisers. Section 4 follows with our concluding remarks.

2 Crises support measures in the euro area: an overview

The EERP called for a coordinated fiscal stimulus equivalent to 1.5 per cent of EU27 GDP over 2009-10, whereof 1.2 per cent of GDP should come from Member States. The stimuli measures should follow the "TTT principles", that is, being timely, temporary and targeted, whilst taking into account national starting points. In addition, priority should also be given to structural reform measures as part of the Lisbon strategy for Growth and Jobs. There has been continuous follow up exercises where the assessment of the Commission and the Council so far has been positive in that broadly these ambitions have been met.[4] That is, the implementation of the EERP has been showing good progress and been in line with the principles agreed in the EERP. The objective here is not to confirm or question this assessment but merely to provide an overview of the support measures to the real economy implemented by euro area Member States on the basis of the measures included in the EERP data base[5] (see Box 1 for a description of the structure of the data base).

2.1 The euro area budgetary dimension of EERP stimulus

Euro area budget positions have deteriorated sharply in connection with the crises. According to the Commission Autumn Forecast (Table 2), on average, euro area deficits is projected to widen by almost 5 per cent of GDP over 2009 and 2010 and the average deficit position in the euro area to approach 7 per cent of GDP in 2010. Clearly the consolidation requirements in the years to come will be challenging. A fair share of this deterioration can be expected to be reversed in the recovery phase, in so far that it depends on the cycle. In the

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[3] COM (2008) 800 final, 26/11/2008, *A European Economic Recovery Plan*. Available at: http://ec.europa.eu/commission_barroso/president/pdf/Comm_20081126.pdf

[4] Commission reports of the follow-up of the EERP have been presented in June 2009 and December 2009. See *Progress Report on the implementation of the European Economic Recovery Plan* of June 2009 and ditto, December 2009, available at http://ec.europa.eu/financial-crisis/documentation/index_en.htm

[5] For a detailed overview of the measures in the data base in May 2009, see European Commission (2009).

Box 1
Structure of the EERP Data Base

The EERP data base refers to reforms and measures that can help with the recovery process in the short-term, *i.e.* during 2009 and 2010, irrespective as to whether they were devised specifically as a response to the crises. The data base include information on reforms and measures that are relevant for (i) sustaining aggregate demand, (ii) sustaining employment, (iii) addressing competitiveness problems and (iv) protecting incomes of disadvantaged groups during that period. Financial market rescue packages are not included in the data base. However, consolidation measures are included in the data base. In practice, there is no clear separation between measures that are of a short term fiscal nature or a longer term structural nature. Accordingly, some "stimulus measures" can be purely of a budgetary and temporary nature or also be structural reforms with a budgetary impact. Measures have been classified according to *four broad types* of policy objectives with sub categories:

- *Measures and reforms aimed towards supporting industrial sectors, businesses and companies*, with sub-categories: (i) easing financing constraints for businesses/SMEs, (ii) sector-specific demand support, (iii) non-financial measures supporting business (e.g., regulatory) and (iv) sector-specific direct subsidies.

Table 1

Overview of the Number of Measures in the EERP Data Base

Member States	Policy Type				
	1 Supporting Industrial Sectors, Businesses and Companies	**2 Supporting a Good Functioning of Labour Markets**	**3 Supporting the Investment Activity**	**4 Supporting the Households' Purchasing Power**	**5 Budgetary Consolidation**
BE	16	25	11	14	15
DE	23	12	13	16	2
IE	7	4	9	10	30
EL	13	13	7	12	18
ES	50	16	20	17	7
FR	23	15	12	18	1
IT	43	29	20	27	21
CY	12	16	9	11	0
LU	8	3	7	8	0
MT	13	5	17	11	13
NL	18	8	32	3	1
AT	28	15	16	16	0
PT	16	8	7	11	0
SI	11	7	12	2	2
SK	10	10	7	8	4
FI	4	14	6	7	5
TOTAL EA 16	**295**	**200**	**205**	**191**	**119**
(percent of the total)	*29*	*20*	*20*	*19*	*12*

- *Measures and reforms aimed at supporting a good functioning of labour markets,* including: (i) promoting wage moderation, (ii) temporary working-time reduction, (iii) reduction of tax on labour, (iv) unemployment benefit system and social assistance and (v) easing labour market transitions (training, placement, other job-search help).
- *Measures and reforms aimed at supporting investment activity* including: (i) physical infrastructure, (ii) energy efficiency and (iii) R&D and innovation.
- *Measures and reforms that support household purchasing power*, including: (i) income support, general, (ii) income support, targeted and (iii) household subsidy for certain type of goods/services.
- *Budgetary consolidation measures*, including: (i) pure budgetary consolidation measure and (ii) financing of recovery measure.

In some cases, a measure can relevantly contribute to multiple policy objectives. For example, some labour market measures involving tax reductions also contribute to supporting household income. Also, tax reductions on the low paid can contribute both to supporting transitions on the labour market and bolstering income of vulnerable households. The resulting "double counting" implies that the 764 euro area measures are recorded 1010 times under different policy types. Measures have also been classified according to their duration. Temporary measures have a budgetary effect only in 2009 and/or 2010. They should be automatically reversed (e.g., measures with a limited budget envelope, a known ending date, or one-off measures). In that respect, investment projects are considered as temporary measures in the data base. Tax measures are considered as temporary only if the end date of the tax measure is indicated in the decision. If the reversal/change of the measure undertaken will require a new decision, it has been considered as permanent.

A detailed budgetary dimension (expenditures and revenues) of each measure for the year 2009 and 2010 is recorded in the data base in millions of Euro, with an indication of the "Off-budgets" or "below the line" amounts, essentially loan and guarantees, which potentially could have structural and possibly budgetary effects in the medium term. Figures are recorded as a change relative to the year 2008, also in 2010. In other words, if a measure is permanent, the amount of the stimulus is reported both for 2009 and 2010, while one-off measures appear only for the year when they occur. It should be noted that the information is in gross terms both on the expenditure and revenue sides and refers to the general government sector and state, regional, local and social security budgets.

Commission Autumn Forecast it is estimated that the cyclical budget component explains about half of the deterioration in the euro area as a whole (column 3). Nevertheless, in this juncture the estimates of the cyclical budget component are possibly more uncertain than ever, given the difficulty in knowing what are really the representative output gap as well as budgetary sensitivity to the cycle. Uncertainty is also increased by that some tax bases arguably have been structurally reduced in connection with the crises and much of such revenue will therefore not return in a future recovery.[6]

[6] See European Commission, *2009 Autumn Forecast* for some further comments on this issue.

Table 2

Budgetary Developments over the 2010-08 Period
(percent of GDP)

Country	Budget Balance 2010	Change Budget Balance (2010-08)	Change Cyclical Component (2010-08)	Change in CAB (2010-08)	Change Revenue Ratio (2010-08)	Change Expenditure Ratio (2010-08)	EERP Stimulus 2009 *(gross terms)*	EERP Stimulus 2010 *(gross terms)*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
BE	–5.9	–4.6	–2.4	–2.2	–0.8	3.8	1.1	1.1
DE	–5.0	–5.0	–2.9	–2.1	–0.4	4.6	1.7	2.4
IE	–14.7	–7.5	–3.1	–4.4	–0.5	7.0	0.7	1.0
EL	–12.3	–4.6	–2.1	–2.4	–3.4	1.1	0.6	0.0
ES	–10.1	–6.0	–1.9	–4.1	–1.4	4.6	2.4	0.8
FR	–8.3	–4.9	–1.6	–3.2	–2.4	2.4	1.6	1.4
IT	–5.3	–2.6	–2.3	–0.3	–0.5	2.1	0.8	0.8
CY	–5.7	–6.6	–1.6	–5.0	–1.4	5.2	2.3	1.9
LU	–4.2	–6.7	–3.1	–3.6	–0.5	6.2	3.4	2.2
MT	–4.4	0.3	–1.0	1.3	1.6	1.4	0.7	1.1
NL	–6.2	–6.8	–3.4	–3.4	–1.8	5.1	0.9	1.0
AT	–5.5	–5.0	–2.5	–2.5	–1.3	3.7	1.5	1.8
PT	–8.0	–5.3	–1.3	–4.0	0.3	5.6	1.1	0.6
SI	–7.0	–5.2	–4.2	–1.0	0.8	6.0	1.5	1.8
SK	–6.0	–3.7	–3.3	–0.4	–1.1	2.7	0.4	0.5
FI	–4.6	–8.7	–4.0	–4.7	–3.0	5.7	1.8	2.9
EA	**–6.9**	**–4.9**	**–2.4**	**–2.5**	**–1.2**	**3.7**	**1.5**	**1.5**

Source: European Commission (2009), *Autumn 2009 Forecast* and EERP data base.

On the basis of the EERP data base, the volume of the discretionary stimulus is estimated to be 1.5 per cent of GDP in 2009 and 1.5 per cent of GDP in 2010. This is in gross terms and compared to 2008 and as such seems to achieve the 1.2 per cent of GDP objective in the EERP with a margin. It should be noted that in some countries there has also been substantive measures taken in order to finance the stimulus or limit the budget deterioration given the lack of fiscal space (see Table 3). Therefore, in net terms the EERP stimulus is about a third lower than in gross terms (2 instead of 3 per cent of GDP). Overall, these figures indicate that roughly about a quarter of the deterioration of budget positions between 2008 and 2010 could potentially be explained by the EERP stimulus.[7] In other words, three quarters of the deterioration in budget positions is rather explained by other cyclical, structural or one-off factors.

[7] However, it should be noted that the information in the EERP data base is fully national accounts based, so the analysis here is only indicative, see also Box 1.

Table 3

Overview of Discretionary Stimulus in EU Member States

	Fiscal Policy													
	Change in Fiscal Balance (Aggregate over 2008-10)[1]	Discretionary Stimulus in 2009					Consol-idation Measures in 2009	Discretionary Stimulus in 2010					Consol-idation Measures in 2010	
		Overall (Gross Terms)	*of which:*					Overall (Gross Terms)	*of which:*					
			Measures Aimed at Households	Increased Spending on Labour Market	Measures Aimed at Businesses	Increased Investment Expenditure			Measures Aimed at Households	Increased Spending on Labour Market	Measures Aimed at Businesses	Increased Investment Expenditure		
	p.p. change	*percent of GDP*	*percent of GDP*	*percent of GDP*	*percent of GDP*	*percent of GDP*	*percent of GDP*	*percent of GDP*	*percent of GDP*	*percent of GDP*	*percent of GDP*	*percent of GDP*	*percent of GDP*	
BE	–4.6	1.1	0.5	0.2	0.2	0.2	0.0	1.1	0.3	0.5	0.1	0.1	–0.9	BE
DE	–5.0	1.7	0.5	0.4	0.5	0.4	0.0	2.4	1.1	0.4	0.4	0.4	0.0	DE
IE	–7.5	0.7	0.4	0.1	0.2	0.0	–5.4	1.0	0.6	0.2	0.2	0.0	–10.2	IE
EL	–4.6	0.6	0.5	0.1	0.0	0.0	–1.0	0.0	0.0	0.0	0.0	0.0	–1.8	EL
ES	–6.0	2.4	0.5	0.1	0.8	0.9	–0.3	0.8	0.2	0.0	0.1	0.5	–0.9	ES
FR	–4.9	1.6	0.3	0.1	0.9	0.3	0.0	1.4	0.3	0.0	1.0	0.1	–0.1	FR
IT	–2.6	0.8	0.2	0.1	0.3	0.2	–0.9	0.8	0.1	0.2	0.3	0.1	–0.8	IT
CY	–6.6	2.3	0.9	0.1	0.3	1.4	0.0	1.9	0.7	0.1	0.6	1.1	0.0	CY
LU	–6.7	3.4	1.6	0.3	0.3	1.1	0.0	2.2	1.4	0.0	0.5	0.3	0.0	LU
MT	0.3	0.7	0.2	0.0	0.2	0.2	–1.7	1.1	0.6	0.0	0.2	0.3	–2.2	MT
NL	–6.8	0.9	0.2	0.1	0.3	0.2	–0.2	1.0	0.2	0.1	0.3	0.4	–0.1	NL
AT	–5.0	1.5	1.1	0.3	0.0	0.1	0.0	1.8	1.3	0.3	0.1	0.0	0.0	AT
PT	–5.3	1.1	0.2	0.2	0.3	0.4	0.0	0.6	0.2	0.3	0.1	0.0	0.0	PT
SI	–5.2	1.5	0.1	0.1	0.8	0.4	–1.0	1.8	0.1	0.3	1.0	0.4	–1.7	SI
SK	–3.7	0.4	0.2	0.1	0.0	0.1	–0.5	0.5	0.3	0.1	0.1	0.1	–1.1	SK
FI	–8.7	1.8	1.0	0.0	0.2	0.3	0.0	2.9	1.7	0.1	0.5	0.4	–0.4	FI
EA16	**–4.9**	**1.5**	**0.4**	**0.2**	**0.5**	**0.4**	**–0.3**	**1.5**	**0.5**	**0.2**	**0.4**	**0.3**	**–0.6**	**EA16**

Notes. [1] European Commission services' *Autumn Forecast 2009*.
Source: European Commission services' data base on recovery measures.

2.2 The national budgetary dimension of EERP stimulus

The size of the EERP discretionary stimulus over 2009-10 nevertheless differs substantially across Member States. This could partially reflect differences in the depth of the crises and thus the need for additional stabilisation efforts, over and beyond the automatic stabilisers. However, it is arguably a stronger reflection of that the room of manoeuvre in terms of deficit and debt levels as well as external imbalances varied across countries going into the crises, in other words, some countries had more fiscal space than others.[8] As suggested by Table 3, discretionary stimulus efforts have been larger than average in Germany, Luxembourg and Finland. In all these countries the budget position was strong going into the crises and external imbalances limited. Additional stimuli have on the other hand been clearly below average in Ireland, Greece and Malta where the consolidation measures have more than offset any stimuli. Efforts have also been relatively small in Portugal, Slovenia and Slovakia. For other countries, the situation appears to be more mixed. In some countries where the fiscal space should be restricted, the stimulus has in any case been relatively strong, for example Spain where most of the efforts have been concentrated in 2009 (whereas consolidation measures are larger 2010).

2.3 The policy objectives of the EERP stimulus

According to the principles of the EERP, the real economy stimulus should be well targeted in order to achieve the highest demand impact. The support measures in the data base have been classified under four different policy objectives (see Box 1), namely: support to households and vulnerable groups; support to labour markets; support to industry and business and finally investment support.[9] In budgetary terms, Table 3 indicates that out of the total 3 per cent of GDP of support measures over 2009-10, about 0.9 per cent of GDP have been directed towards the support of households while the resources spent to support labour markets have been considerably less at 0.4 per cent of GDP, possibly reflecting the lagged impact of the crises on labour market conditions and unemployment. Measures to support businesses and product markets make up about 0.9 per cent of GDP and investments 0.7 per cent of GDP.[10] As regards the individual policy objectives the following broad observations can be made as regards the type of policies taken:

- *Measures to support household purchasing power.* General changes of income tax schemes have been implemented in several Member States which have the advantage of being transparent, easily implemented, unbiased towards specific sectors, and increase incentives to work. On the other hand, they may be less efficient since high income earners have a relatively low propensity to consume while they are often costly from a fiscal perspective, which may explain their limited scope in many Member States.[11] Finally, a relatively large number of countries have introduced measures that target low income households although they often are of a quite limited overall size in terms of budget impact. As low income households also covers unemployed persons it would seem to be a group negatively hit by the crises.
- *Measures and reforms aimed at supporting a good functioning of labour markets.* Many of them facilitate flexibility within firms (through retraining and working time arrangement) or labour market transition between firms (through job placement, training, and encouragement to

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8 See Section IV.3 in *Public Finances in EMU-2009* where an indicator of "fiscal space" is presented.

9 The financial sector support schemes are not covered by the data base.

10 In terms of a simple measure counting, around 29 per cent has been directed towards measures that support businesses, 20 per cent to supporting labour markets, 20 per cent to investment activities, and 19 per cent as support to households' purchasing power (including vulnerable groups). See Table 1 in Box 1.

11 Even so, general tax reductions have been more pronounced in Member States where these tax cuts, in particular on labour income, have been part of a longer term structural policy agenda to lower taxes on labour.

geographical mobility). Reduction of taxes on labour is applied in many Member States and can boost both labour demand and labour supply while supporting household purchasing power. As regards measures with the potential to directly affect wages in the short term they have been relatively scarce. There have however been measures to boost labour demand through reductions in social security contribution, cutting income taxes. Rebates on social security contributions to boost labour demand have been taken in a number of euro area members and have then typically been made conditional upon job creation. Many euro area countries have either introduced new forms of public support to flexible working time or temporary unemployment, or extended the duration and/or the level of already existing public support (these measures are dealt with further in the next section).

- *Measures aimed at supporting industrial sectors, businesses and companies.* Overall, there have been quite a number of initiatives taken in these areas across euro area countries and the budgetary amounts involved are in cases substantial. Almost all euro area countries have moved to counteract the drying up of credit for businesses in various ways. Measures also relates to the support of sectors particularly hard-hit by the crisis, that is, automotive, construction, tourism varying on the country. As regards demand measures, car-scrapping schemes have been implemented in several countries (FR, PT, IT, ES, LU, DE, AT, SK, CY, NL, IE) with the German version being the most extensive example. Other sectors where demand support measures have been taken are construction (FR, IE, ES).
- *Measures to support investment activity.* This relates to physical infrastructure, R&D and energy efficiency. The prominence attached to public investment in recovery efforts varies considerably across Member States, with the largest increases in spending as a percentage point of GDP observed in DE, CY, ES, NL, SI while support to investment in euro area countries facing larger budgetary restrictions are less. Nearly all Member States have announced measures aimed at supporting investment in physical infrastructure. By type of physical infrastructure, a majority of the measures aim at supporting investment in transport infrastructure. The biggest group of them are related to the road and/or railway sectors.

2.4 The temporary versus permanent dimension of EERP measures

According to the principles of the EERP, the stimulus measures should be of a temporary nature unless they are part of a longer term reform agenda with a positive structural impact. Therefore, the measures in the data base have also been classified as being "temporary" or "permanent" in terms of their budget impact (see Box 1 for classification criteria used). The information has admittedly not always been complete and the dividing line between the two concepts not always fully clear.

On the basis of the classification made in the data base, out of the 1.5 per cent of GDP of overall stimulus in 2010, 0.6 per cent of GDP is classified as being of a temporary nature, thus implying that their budgetary impact should fade off. In the context of the accumulated 3.0 per cent of GDP discretionary stimulus over 2009 and 2010, this suggests that the large majority share of the budgetary impact would indeed be of a temporary nature. Looking at the temporary measures in the field of labour markets and income support, they amount to 0.2 per cent of GDP in 2009 and 2010. In this category, most measures have well-known ending dates or budgets clearly limited in time. The proportion of permanent measures to support households' purchasing power is also significant: 0.3 per cent in 2009 increasing to 0.6 per cent of GDP in 2010 and the measures concerned are concentrated in the field of labour taxation and income support. The budgetary impact of temporary measures to support business is amounts to 0.4 per cent of GDP in 2009 and 0.2 per cent in 2010. Of course, there is also a fairly large amount of off budget measures that should be considered in this context, including loans and guarantees. However, these measures do

Table 4

The Temporary Versus Permanent Dimension of EERP Measures
(percent of GDP)

EA16	2009		2010	
Total temporary measures	**1.1**		**0.6**	
1. Supporting industrial sectors, businesses and companies	0.4		0.2	
2. Supporting a good functioning of labour markets	0.1		0.2	
3. Supporting the investment activity	0.4		0.2	
4. Supporting the household purchasing power	0.1		0.0	
Total permanent measures	**0.4**		**0.8**	
1. Supporting industrial sectors, businesses and companies	0.1		0.3	
2. Supporting a good functioning of labou markets	0.0		0.1	
3. Supporting the investment activity.	0.0		0.0	
4. Supporting the household purchasing power	0.3		0.5	
Total EERP measures in the Euro area	**1.5**		**1.5**	
Budgetary consolidation in the Euro area	**–0.3**		**–0.6**	
Member States	**Temporary Measures**	**Permanent Measures**	**Temporary Measures**	**Permanent Measures**
Belgium	0.4	0.7	0.1	1.0
Germany	1.2	0.5	1.0	1.5
Ireland	0.1	0.6	0.2	0.8
Greece	0.6	0.0	0.0	0.0
Spain	2.2	0.2	0.5	0.2
France	1.3	0.2	0.4	1.0
Italy	0.6	0.2	0.7	0.1
Cyprus	1.8	0.5	1.6	0.4
Luxembourg	0.7	2.7	0.3	1.9
Malta	0.3	0.4	0.4	0.7
Netherlands	0.5	0.3	0.6	0.4
Austria	0.2	1.2	0.3	1.5
Portugal	0.8	0.3	0.3	0.3
Slovenia	0.4	1.1	0.6	1.2
Slovakia	0.4	0.0	0.5	0.0
Finland	0.5	1.3	0.6	2.3
EA16	**1.1**	**0.4**	**0.6**	**0.8**

Source: European Commission and own computations.

not affect public deficits in the immediate future. Still, in 2010, 0.9 per cent of GDP consists of permanent measures with a durable impact on budget balances. The bulk of these permanent measures (equivalent to 0.5 per cent of GDP) are aimed at supporting household purchasing power and a proper functioning of labour market, mainly via labour tax cuts. Their true motivation is often to strengthen incentives to work and is thus part of a longer term agenda. At a country level, Germany, Finland, Luxembourg and Austria seem particularly concerned.

3 EERP measures, automatic stabilisers and automatic stabilisation

The recognition that discretionary fiscal stimulus can be a useful stabilisation tool has seemingly revived the interest in questions linked to automatic stabilisation and the complementary role of discretionary policies. Issues are whether there are efficient ways to strengthen the automatic stabilisers? Can discretionary stimuli become more like the automatic stabilisers, for example by increasing their automaticity by using *ex ante* rules ensuring that additional stimuli is well targeted and temporary? Therefore, the recovery measures in euro area member states[12] are classified according to what extent they deepen the impact of existing automatic stabilisation or whether they broadened their impact by focussing on recipients otherwise not covered. As above, the information draws on a Commission data base set up for the surveillance of the implementation of the European Economic Recovery Programme (EERP).

3.1 Automatic stabilisers and their freedom to play: a budgetary versus a stabilisation perspective

Euro area members benefit from the stabilisation provided by their large and encompassing welfare states. Indeed, it is today consensual advice, qualified on the availability of fiscal space, that the budget automatic stabilisers should be allowed to "play freely", including in downswings. However, what it actually implies in practice to let the automatic stabilisers "play freely" can be addressed from different sides of the same coin and below a differentiation is made between the "budgetary impact" side or the "stabilisation provision" side.

Arguably, the most common approach is to look at the automatic stabilisers from a "budgetary impact" perspective. Focus is then on estimating the cyclical budget component which is defined through the elements in the budget that vary systematically with the cycle, thus inducing to a counter-cyclical movement in the budget deficit position. The budget elements involved come from both the revenue side and expenditure side of the budget. On the revenue side, cyclically sensitive tax bases such as personal and corporate income taxes, social security contributions and consumption taxes are taken into account. Work has also been done to look at capital taxes linked to movements in asset prices.[13] If tax rates are progressive it adds to the size of the automatic stabilisers. On the expenditure side, the measurement of automatic stabilisers is usually confined to unemployment benefits as unemployment rates vary counter-cyclically. It is more difficult to find clear automatic cyclical patterns for other expenditure areas, but also here work is on-going.[14] In addition, there is a debate on where the line should be drawn between what is really automatic or discretionary. In some cases it can be observed that government behaviour is such that certain measures are taken over time systematically with the cycle albeit they formally require a discretionary decision and thus are not rules based. Overall, the budgetary impact from the automatic stabilisers is mainly associated with the tax side. According to the standard approach, the budgetary elasticity used to capture the size of the cyclical component (the elasticity is about 0.5 in the euro area on average and is multiplied with the estimated output gap), about 80 per cent stem from the tax side (0.4) wile the remaining 20 per cent stem from the unemployment benefit contribution (0.1).[15]

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[12] While the EERP covers the whole EU27, in this paper for reasons of limited resources, the discussion has been limited to euro area countries.

[13] See, for example, Girouard and Price (2004).

[14] See, for example, Darby and Mélitz (2008).

[15] See Girouard and André (2005).

In order to measure the "stabilisation impact" of automatic stabilisers, the basic approach is to contrast a situation when they are allowed to "play freely" with a situation when they are restricted or "turned off".[16] There are several technical options available to do this, but in principle a simulation is made where the impact on growth when automatic stabilisers are playing freely is compared to the situation when the fluctuation in budgetary revenues are fully compensated by tax hikes and expenditure increases by expenditure cuts. This approach follows the apparent logic of the definition of automatic stabilisers from the budgetary impact side. Nevertheless, an issue to consider is what the results imply in terms of stabilisation provision and the support provided to households (in a down turn) through the automatic stabilisers. In particular, if the benchmark for comparison is the case when all taxes and expenditures are lump sum (or alternatively a strict budget annual budget balance rule applies) the question arises what the results actually implies, especially if the underlying question is how much stabilisation or support that has been provided through the budget.

Consider an illustrative example. A household before a downturn earns 100 and faces a proportional income tax rate of 50 per cent. It then pays 50 in tax, leaving a net income of 50. If in the downturn the household gross income fall by half to 50, it then pays 25 in taxes, seeing its net income half to 25. Thus, government tax revenue falls by 25. If the benchmark is proportional taxes then one would conclude that there is no stabilisation provided. However, arguably, if the benchmark used instead is lump sum taxes (as described above) this would be described as a case with a support of 25 to households from the automatic stabilisers through the tax side. Nevertheless, household income fall by half and the fact that the governments abstain from raising the tax rate to 100 per cent, in order to keep tax income at 50, appear to be a rather indirect and "virtual" stimulus seen from the point of view of households.

From the other side of the coin, *i.e.* the "stabilisation provision" side the perspective is reversed and it is in fact the non-cyclicality of government expenditures that provide the bulk of the automatic budget stabilisation. The basic mechanism is that the majority of government expenditures are not cyclically sensitive, and thus not cut or increased in a rules based and pro-cyclical way, which provides a large block of stability in the economy. This is not new, it is a common empirical conclusion that the degree of stabilisation tend to increase with the size of government.[17] From this perspective, letting the automatic stabilisers to "play freely", in a down turn, implies focussing on that:

- planned non-cyclical expenditures are not cut;
- unemployment benefits are paid according to set rules and are not cut;
- that there is full financing, through borrowing, of expenditures despite the fall in revenues, *i.e.*, there are no pro-cyclical tax hikes to compensate for falling revenues.

In a debate on whether and how the automatic stabilisers can be strengthened it arguably makes a difference whether the discussion is framed around a definition of automatic stabilisers seen from the "budgetary impact" or "stabilisation provision" perspective as described above. Inputs in this debate seemingly often take a budgetary impact perspective as the starting point and therefore focus on the revenue side looking at the progressivity of tax rates, temporary changes in tax rates and, on the expenditure side, temporary increases in the generosity of the unemployment benefit system. However, if the final objective is to strengthen automatic stabilisation, then mechanisms to ensure that government non-cyclical expenditures are financed to be spent according to plan in bad times, not suffering from cuts, should also stand in focus together with mechanisms in good times to ensure that expenditures meant to be temporary do not become

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[16] See, for example, Sekkat, Van den Noord, Buti and Martinez-Mongay (2002).

[17] See, for example, Fatás and Mihov (2001).

permanent. Indeed, there is an asymmetry at play here where in many countries, over time, expenditures have been raised permanently in good times leading to a gradual increase in the size of the public sector and tax pressure over time, possibly leading to higher inefficiencies in the economy.

3.2 An overview of the EERP stimulus measures in relation to automatic stabilisers

The discretionary stimulus measures taken and planned by euro area member states in the context of the EERP are examined below from an automatic stabilisation perspective. The typology allows for observations that are relevant in a more general discussion on how to strengthen automatic stabilisation and how discretionary stimulus would fit in this context. A distinction can also be made between "direct" stabilisation measures referring to measures that add additional support to the economy and "indirect" stabilisation measures that defend against pro-cyclical volume cuts.

- Discretionary measures that add on top of the automatic stabilisers: expenditure side
  1) top up of unemployment benefits;
  2) financial resources for agencies, local government etc, to finance planned expenditures including public employment.
- Discretionary measures that add on top of the automatic stabilisers: revenue side
  3) Changes in tax rates (income, corporate or consumption taxes) and social security contribution rates, including to what extent there is an impact on progressivity.
- Discretionary measures that provide stimulus complementing automatic stabilisers
  4) Investments over and beyond original plans, additional benefits to targeted and vulnerable groups, other.

Indeed, given that the automatic stabilisers are generally not designed with stabilisation provision as the primary objective,[18] and that this thus to a large extent is a by-product, it is not obvious that, depending on the type and size of the shock,[19] the stabilisation provided is sufficiently well targeted. An issue to examine is therefore how much of the discretionary stimulus provided under the EERP that relate to areas outside the coverage of existing automatic stabilisers and how much that has directly built on the existing structures of automatic stabilisers.

At an aggregate level, Table 5 suggests that, in budgetary terms, the split is fairly even between measures that build on, and thus deepen or broaden, the provision of automatic stabilisation and other stimulus measures, for example measures that relate to increased investment expenditures which is the ticket item together with additional support to households and vulnerable groups. Looking instead at the consolidation measures, Table 6 suggests that there have been noticeable pro-cyclical cuts in public expenditures (worth 0.2 per cent of GDP) and increases of other taxes. The discussion below looks at these elements in more detail, seen from the expenditure and revenue side of the budget.

3.2.1 Discretionary stimulus that build on the automatic stabilisers: expenditure side

On the expenditure side, there are many examples of measures that either top up benefits

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[18] The primary objectives of tax systems are rather concerns linked to financing, equity and efficiency.

[19] Indeed, it is often remarked that if the there is a supply shock the automatic stabiliser scan be counter productive by postponing necessary adjustment.

Table 5

Stimulus measures in EERP data base, 2009-10

percent of GDP

Member States	Stimulus Related to the Automatic Stabilisation										Other Stimulus			
	Expenditure			Revenue										
	Top up of Unemployment Benefits	STWA	Financial Support for Government Expenditures and Public Employment	Labour Income Taxes		Social Security Contributions		Corporate Taxes		Consumption Taxes (VAT)	Other Taxes and Various Tax Credits	Investment Expendtiures	Expenditures to Support Vulnerable Groups	Other Stimulus (Regulatory, Sectoral Support, Easing Labour Market Transitions)
				Increasing Progressivity	Other	Employees	Employers	Increasing Progressivity	Other					
BE	0.1	0.0	0.0	0.3	0.0	0.0	0.2	0.0	0.0	0.2	0.3	0.1	0.4	0.1
DE	0.0	0.1	0.0	0.4	0.0	1.1		0.0	0.5	0.0	0.0	0.8	0.7	0.4
IE	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.8	0.3
EL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0
ES	0.1	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.1	0.6	0.5	1.2	0.0	0.3
FR	0.0	0.0	0.2	0.3	0.0	0.0	0.0	0.0	1.3	0.2	0.0	0.5	0.3	0.1
IT	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.2	0.3	0.4
CY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	2.5	1.1	0.6
LU	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.1	2.9	0.9	0.5	0.1
MT	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.5
NL	0.0	0.1	0.0	0.0	0.0	0.5	0.0	0.0	0.4	0.0	0.2	0.6	0.2	0.0
AT	0.0	0.2	0.0	0.0	1.8	0.2	0.0	0.0	0.1	0.2	0.1	0.1	0.6	0.1
PT	0.1	0.1	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.1	0.1	0.4	0.4	0.2
SI	0.0	0.5	0.3	0.1	0.0	0.0	0.0	0.6	1.7	0.0	0.0	0.0	0.1	0.1
SK	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.1
FI	0.0	0.0	0.5	0.0	2.3	0.0	0.7	0.0	0.1	0.3	0.0	0.7	0.2	0.1
TOTAL EA 16	**0.0**	**0.1**	**0.1**	**0.2**	**0.1**	**0.4**		**0.0**	**0.5**	**0.1**	**0.2**	**0.6**	**0.4**	**0.3**
percent total	*1%*	*2%*	*3%*	*6%*	*4%*	*12%*		*0%*	*16%*	*5%*	*7%*	*20%*	*14%*	*9%*
Temporary	**100%**	**100%**	**364%**	**12%**	**20%**	**35%**		**0%**	**67%**	**41%**	**52%**	**83%**	**31%**	**84%**

directly or work to widen and soften eligibility criteria. While generally of a temporary nature, such measures do increase stabilisation properties if maintained. However, in this case there would be efficiency concerns related to the incentives to work looking forward. While measures that increase the generosity of unemployment systems arguably provide additional support in a direct way, measures that protect already planned demand provide support only indirectly. In the debate on fiscal rules it is recognised that annual budget balance rules can have a pro-cyclical impact, and that multi-annual rules are preferable from this perspective (such as the "close-to-balance over the cycle" rule in the Stability and Growth Pact). In this context the relationship between local government, where much of the consumption takes place, and central government, where much of the revenues are collected could be important as local level borrowing is in many cases restricted from the centre. However, the measures included in the data base do not reveal that this has been a particular concern so far. There are examples of measures providing additional support to local government but then mainly related to subsidies for additional investments at local level. More precisely:

- *measures that top up unemployment benefits.* Measures under this heading has been taken in several countries (EL, IT, BE, PT, FR, ES), even though the budgetary impact has been overall rather small. Some countries decided to increase the generosity of unemployment benefits in level or in duration (in BE, EL, IT and PT). Others decided to extend their coverage to include temporary and interim workers (in FR, IT). In Spain a new allowance of 420 € for unemployed who have lost their eligibility to unemployment benefits was made available. In all these cases the measures are of a temporary nature. It should arguably be taken into account that the generosity of the existing unemployment insurance systems varies across euro area Euro area members in the starting points and accordingly also the need for additional top ups in times of rapidly deteriorating labour market conditions. The extension of benefit arrangements to groups formerly not insured, or who have lost their rights, can reach a large numbers of vulnerable households (recently laid-off workers, long term unemployed and other low-income households);
- *short term working schemes.*[20] In practice these schemes differ in nature across countries and it is not straightforward whether to see them as predominantly as a way to avoid lay offs, or whether they should be seen mainly as a way to top-up the salary for employees that otherwise would only get a part time based income. Indeed, in STW and temporary lay-off public schemes are also known as "partial" or "temporary unemployment", for example in Belgium, France and Luxembourg. Some Member States have introduced new short term working schemes (notably NL, PT, SI, SK), while others have extended the duration and/or the level of already existing ones (e.g., DE). Their coverage has been extended in BE, FR and IT to include employees on fixed-term contracts and in small companies. More generally, although STW schemes are justified in times of crisis, the main risk is that they can inhibit necessary restructuring, and this calls for strict time limits and eligibility criteria;
- *financial support to support to government, agencies etc., to support expenditures and public employment.* In this category measures have in fact only been identified in a few countries. In France, central government VAT repayments to local authorities have been speeded up. A general move towards shorter lags in principle helps to strengthen the efficiency of automatic stabilisers. In Germany, there has been some support to structurally weak communes to carry out investments. In Italy the financing for the payment of social security benefits have been strengthened. In order to strengthen local government finances, Finland increased the share of

[20] Short-time work (STW) can be defined as a temporary reduction in working time intended to maintain an existing employer/employee relationship. It can involve either a partial reduction in the normal working week for a limited period of time, *i.e.* a partial suspension of the employment contract, or a temporary lay-off (zero hours' week), *i.e.* a full suspension of the employment contract. In both cases, the employment contract continues and is not broken.

corporate income tax revenues that are directed to municipalities and allowed for the upper real estate tax limit for local governments to be increased.

3.2.2 Discretionary stimulus that build on the automatic stabilisers: revenue side

Automatic variations in VAT rates could be one way to strengthen the automatic stabilisers, *i.e.*, a rule based increase in good times neutralised by a rules based decrease in bad times,[21] with the key feature that is could be a measure that could be quickly implemented and of substantial budgetary magnitude, shifting consumption demand in time. The key example in the EU in this category has nevertheless come from outside the euro area, namely the temporary general VAT cut in the UK. Also, in the euro area there have been some cuts in VAT rates albeit generally of a targeted nature. Stabilisation properties can also be strengthened by measures that increase the progressivity in tax systems. In this context there has been a wide set of temporary measures taken with a view to support low income households or low income earners. In general such measures are both well targeted and in line with strategies to strengthen work incentives. More precisely:

- *income taxes.* Measures that relate to income taxes have been taken in about half of euro area countries and in several countries these are relatively substantial. To a large extent these measures have been permanent and this relates in particular to the income tax cuts in Finland and Austria, which broadly should be seen in a longer term agenda to reduce tax on labour and improve incentives to work. However, of course, to some extent these measures reduce the future degree of automatic stabilisation. Beyond these broader measures, quite a few countries have taken other income tax measures that indirectly increase the degree of progressivity, such as reduction in the bottom personal income tax rate (DE) or for low income earners (FR). In MT income tax bands have been revised by broadening the tax free range of household income, thus raising progressivity;
- *social security contributions*. For the euro area as a whole, measures with a view to cut social security contributions have been substantial even though actions have concentrated to a few countries and then in particular the temporary reductions in Germany. In the Netherlands, unemployment benefit premiums paid by employees have been abolished;
- *corporate taxes.* Measures with a view to reduce corporate taxation have been taken in a majority of countries and corporate taxes have been lowered on a permanent basis in several euro area countries (FR, DE, LU, SI, SK) and on a more temporary basis in others (NL, PT, EL, ES). In Germany, a main measure relate to an increase in depreciation rates and interest ceilings. In Slovenia, tax rates have been cut and the deductibility of investment costs has been increased. Also, in France the depreciation rate of investments have been increased;
- *consumption taxes.* Changes to consumption taxes. In Belgium there has been a targeted cut of VAT towards construction. As indicated above, in France, central government VAT repayments to local authorities have been speeded up.

3.2.3 Discretionary measures that add stimulus outside the areas covered by automatic stabilisation and consolidation measures

About half of the overall stimulus provided under the EERP relate to measures targeted to areas outside the coverage of automatic stabilisation. The larger items are investments expenditures, where multipliers are potentially large, and towards households and vulnerable groups where in the current juncture the propensity to consume could also be relatively large. As

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[21] See, for example, SOU (2002).

Table 6

Consolidation Measures in EERP Data Base, 2009-10

Member States	Budgetary Consolidation Measures							
	Expenditure				Revenue			
	Cuts in Expenditure Support to Government Agencies, etc. Cut in Public Employment and Wage Freeze	Cuts in Investment Spendings	Reduction in Social Benefits Transfers that Affect Vulnerable Groups	Elimination of Various Subsidies	Increase in Labour Income Taxes (PIT)	Increase in Corporate Taxes	Increase in Consumption Taxes (VAT)	Other Taxes (Raising Taxes on Alcohol, Higher Excise Duties on Fuel
BE	–0.3	0.0	–0.1	0.0	–0.2	–0.1	0.0	–0.3
DE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
IE	–4.0	–3.2	–1.2	0.0	–2.2	–0.3	–0.2	–4.7
EL	–0.8	0.0	0.0	0.0	0.0	0.0	0.0	–2.0
ES	–0.2	0.0	0.0	0.0	0.0	–0.5	–0.2	–0.2
FR	0.0	0.0	–0.1	0.0	0.0	0.0	0.0	0.0
IT	–0.5	0.0	0.0	0.0	0.0	–0.4	0.0	–0.8
CY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	–0.8
LU	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MT	–0.3	0.0	0.0	–2.7	0.0	0.0	0.0	–1.0
NL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	–0.3
AT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SI	–1.2	0.0	0.0	0.0	0.0	0.0	0.0	–1.5
SK	–1.4	0.0	0.0	0.0	0.0	0.0	0.0	–0.2
FI	–0.1	0.0	0.0	0.0	0.0	0.0	–0.2	–0.1
TOTAL EA 16	**–0.2**	**–0.1**	**0.0**	**0.0**	**0.0**	**–0.1**	**0.0**	**–0.3**
percent of total	*25%*	*6%*	*4%*	*0%*	*5%*	*16%*	*4%*	*38%*
Temporary	**51%**	**0%**	**0%**	**0%**	**0%**	**49%**	**0%**	**40%**

pointed to in the previous section, there has also been substantial support to industry, in particular the automotive sector and construction sector, as well as measures to improve the access to finance.

As already pointed out (see Table 3), in terms of overall size, consolidation measures have been mainly concentrated to the countries with the most unbalanced fiscal positions, such as Ireland and Greece where the former have applied a broad based approach. In terms of the concentration of measures, Table 6 suggests that pro-cyclical cuts in public employment and wages have played a role, indicating that the automatic stabilisation has been reduced. A general positive feature is that investment spending has generally been protected. As regards tax increases, measures have concentrated on "other taxes"

In the case where the discretionary stimulus could be seen as a top up of the automatic stabilisers, a question is how much this has implied a "deepening", in terms of increasing their impact, and how much can been related to a "broadening" in terms of extending the coverage of recipients. For example, one way to increase the stabilisation properties of tax systems is to reduce

the lags between economic activity and the ensuing tax payments.[22] The smaller the lag the higher is the stabilisation properties and measures contributing towards this end therefore strengthen the stabilisation properties.[23] In particular, corporate income tax is paid with a lag on the basis of the income in previous years. There are some examples of measures that move in this direction that is, shortening the lags in the system, for example quicker repayments of VAT in some countries.

4 Concluding remarks

Euro area countries have addressed the impact of the crises by a broad use of the budgetary instruments available, including discretional fiscal stimuli. Generally, the automatic stabilisers have been allowed to "play freely" in the sense that the cyclical budget impact has, by and large, been allowed to influence budget positions without restraint, except in cases where the budgetary room of manoeuvre has been severely limited. For example, in Ireland substantial budget consolidation measures have instead been taken and in Greece such measures are currently in the pipeline.

The broad overview of the discretionary stimulus provided by euro area governments in the Commission's EERP data base indicates that they have been targeted towards investment expenditures, where multipliers are large, and towards households and vulnerable groups where in the current juncture the propensity to consume also should be relatively large. There has also been substantial support to industry, in particular the automotive sector and construction sector, as well as measures to improve the access to finance. It would seem that measures supporting labour markets have been relatively less prominent, possibly explained by the lag between growth and unemployment, even if the general impression is that in many countries the short-term working schemes have indeed helped to contain unemployment, even if only temporarily. Here, the absence of some type of measures, such as widening the access to early retirement schemes, which reduces labour supply, or large scale public employment creation schemes can also be positively noted as a break with the past. Moreover, most of the discretionary stimulus appears to be of a temporary nature while the bulk of stimulus measures with a more permanent impact have tended to relate to reductions in labour income taxes, contributing also to longer term agendas to reduce taxes on labour.

The crises have illustrated that while automatic stabilisation may be sufficient in normal cyclical conditions there is a role for discretionary policies in recessions and over-heating periods. The advantage of discretionary stimulus is that it can be designed to address the particular expressions of the crises/overheating at hand. This time, for example, the financial sector, the automotive sector and a sizeable fall in investments have been key characteristics and this is also where most of the discretionary stimulus has been directed. Measures to strengthen the existing automatic stabilisers will most likely not help in this respect. Likewise, proposals for rules based discretionary stimulus schemes, conditioned on pre-specified indicator based triggers, will most likely suffer from the same weakness.

Instead, the crises experience indicates the value of having a strategy and principles in place for how to best design and condition discretionary stimulus. The EERP could in this respect be seen as a success in that EMU members seem, so far, to have kept the agreed principles in mind in the national formulation of stimulus. In addition, the ability to also agree on common principles for the actual withdrawal of temporary measures to help ensuring that they indeed stay temporary is

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[22] Baunsgaard and Symansky (2009).

[23] It can be noted that in the estimation of the standard budgetary elasticity to the cycle by the OECD, a correction for the lag structure in corporate and personal income tax structures have been introduced (Girouard and André, 2005).

also positive.[24] This experience can be built upon and the principles for what, how and under what conditions discretionary stimulus policies could play a positive role can be further developed, whilst acknowledging that there must be enough flexibility to allow the measures taken to be well targeted given that each crises/overheating period will be different from the one before.

This argument is supported by another key lesson illustrated by the crises, namely the importance of having enough fiscal space going into a down turn not to be forced to adopt a pro-cyclical fiscal stance. In the coming years, the challenge of fiscal consolidation is a commonly shared one. This will require cuts in public expenditures and higher tax revenues. A gradual trimming of the size of government can promote efficiency but may also lead to less automatic stabilisation, given that the provision of stabilisation increase with government size. In this context, the impact of policies on the degree of automatic stabilisation should not be a primary concern. Indeed, there has been some research indicating that an optimal government size could lie as at such a low level as 40 per cent of GDP, a level that most euro area countries have bypassed.[25] Tax increases can on the other hand strengthen the automatic stabilisers but again at the possible expense of efficiency, of course depending on the design choices. Again, efficiency should be the primary concern and not the impact on stabilisation.

The overview of the discretionary measures taken by euro area members in this paper only provides some tentative indications at best, in particular as regards the interplay with the automatic stabilisers and the provision of automatic stabilisation. However, looking forward and with the benefit of increasing hindsight, there will surely be opportunity to draw more substantiated lessons from the experience with budget based stabilisation tools from this economic crises episode, hopefully in time to shape policies already in the upcoming recovery.

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[24] Council of the European Union (2010), "Council Conclusions on Exit Strategies for Crises-related Measures in Labour and Product Markets", 7588/10, 16 March.

[25] See Buti *et al.* (2003).

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ARE THE EFFECTS OF FISCAL CHANGES DIFFERENT IN TIMES OF CRISIS AND NON-CRISIS? THE FRENCH CASE

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1 Goal of the paper and motivation

This paper shows that the impact of changes in budgetary variables on real GDP, investment, consumption and employment varies in sign and magnitude in times of crisis and non-crisis. To this end, a regime-switching process is embedded in standard macroeconomic equations in order to take into account different budgetary regimes. Our purpose is threefold.

First, we aim at reconsidering the non-monotonic effects of fiscal policy over the business cycle by distinguishing, on the one side periods of severe recessions or depressions (crises) and, on the other side, "normal" periods (expansions or moderate recessions). For illustration purpose, we consider the French case, since our study can help in judging the quantitative impact of the fiscal package ("plan de relance") undertaken by the French fiscal authorities in 2008, considering both Keynesian and non-Keynesian effects may be observed at different times.

Secondly, we consider the nonlinear response of a variety of fiscal measures targeted to private consumption, business investment, private employment, in addition to the real GDP. Indeed, non-monotonic responses to fiscal changes are likely to be more precisely estimated if we consider the components of the GDP but not only the real GDP itself. The reason is that, the nonlinear response of the GDP to fiscal changes most of the time can be explained by the private sector's behavior (because any policy modifies market confidence, expectations among the public about future outcome and accordingly the agents' decisions).

Thirdly, and more importantly, we are searching for nonlinear fiscal impacts in the form of regime-switching effects. Doubts about the successfulness of the recent massive fiscal interventions in the world rely on the recognition that there are fiscal regimes and that the latter alternate in a stochastic way. Regime-switching approaches to modeling fiscal policy have been an important aspect of the theoretical literature in endogenous growth models. Fiscal policy regimes have been identified as Keynesian or Ricardian regimes, low debt-output or high debt-output regimes, passive and active regimes, etc.[1]

The key idea is that the economy is unstable – and unpredictable – in terms of its reaction to budgetary changes (that is stochastic changes over time in the multipliers) due to two features. The first feature is the time-varying nature of fiscal policy reaction functions. Fiscal interventions vary over time in terms of magnitude and in terms of the instrument used (tax or spending) according to governments' policy objectives, to the macroeconomic environment and to the state of public finances (fiscal space).[2] Since changes in fiscal policy switch in stance and nature due to political

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[1] In a pioneering paper, Sutherland (1997) shows that high public debt during times of crisis may reverse the effects of fiscal policy in an exogenous stochastic growth model. Davig (2004) derives regime-switching macroeconomic equilibria from an endogenous growth model in which agents face a signal extraction problem on forthcoming fiscal policies. Minea and Villieu (2008) propose an endogenous growth model *à la* Barro which exibit a regime-switching effect of fiscal deficits on economic growth, depending on public debt ratio.

[2] There are examples in the literature of regime-switching tests of fiscal behaviors (see Favero and Monacelli, 2005; Thams, 2006; and Claeys, 2008).

and economic circumstances, they are better understood by relating them to different regimes. The second feature is the changing nature of the cyclical response to fiscal changes because agents' reaction to budgetary policy depends upon elements that are not under the direct control of the governments themselves (liquidity constraints, adjustment costs, leverage effects, Barro-Ricardo effects, credit market imperfection, etc.

A common modeling approach, mainly empirical, usually used by researchers, consists in providing evidence of asymmetric effects of fiscal changes on the economy between regimes that are defined according to a prior belief by the researcher: expansion and recession phases in the business cycle, times of fiscal contractions and fiscal expansions, regimes of active and passive budgetary rules, large and persistent or small and non-persistent fiscal impulses, times of binding liquidity constraints and "good" times, etc. The models contain dummy variables that capture structural breaks or threshold functions allowing for a dependence of fiscal multipliers to the level of an exogenous variable (for instance public debt ratio).[3]

An alternative approach, mainly theoretical, relies on the simulations of general equilibrium-based models in which fiscal rules (determining spending, taxes, or debt) are governed by a two-state Markov chain variable and agents make a probabilistic inference regarding the future rule and state of the economy to take their decisions. These models are based on the assumption of asymmetric information between governments and the private sector (firms and households). The latter thus use Bayesian procedures to learn the regime generating the expected future variables on which they base their investment and consumption decisions (debt/output ratio, tax, or spending).[4]

This paper adopts the second approach. Since, we search to differentiate the budgetary effects on the macroeconomic variables between times of crisis and non-crisis, we can assume that the root cause of the differing fiscal effects is the high uncertainty facing the public and private sectors. Crises appear occasionally, suddenly, with no specific regularity; they are characterized by huge depressions that make them different from standard business cycle troughs. Further, their duration is not predictable. For governments, in such a context, fiscal policy requires more flexibility and decisions are influenced by the forecasts of the future state of the economy. Their belief can be represented by probabilities. For the private sector, profit- and consumption-maximizing decisions are influenced by fiscal policy and, as shown in the aforementioned papers, agents solve a signal extraction problem when the information on both the state of the economy and fiscal policy is incomplete and asymmetric. These decisions are well described in a probabilistic framework involving Markov-switching variables.

Though we adopt the Markov-switching framework to study the non-monotonic effects of fiscal policy in times of crisis and non-crisis, our approach differs from those of the previous papers in the literature in the sense that it is not theoretical. Instead, we add to the previous literature by considering econometric models. Simulations derived from micro-founded models provide us with qualitative features, which need to be completed with quantitative measures. We thus consider a set of reduced-form equations that can be derived from the Markov-switching general equilibrium models mentioned in footnote 1, and, we estimate them.

We estimate time-varying probability Markov-switching models (TVPMS) to see whether the effects of fiscal policy on the real economy vary in France between times of crisis and non-crisis. These two regimes are identified endogenously, so that we do not need to preliminary separate episodes of huge contractions and expansions of the business cycle. Further, we are able to identify the variables influencing the probability of a switch between regimes. We assume

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[3] For typical examples, we refer the reader to Perotti (1999); Giavazzi *et al.* (2000 and 2005); Minea and Vilieu (2008); and Tagkalakis (2008).

[4] See Dotsey (1994); Ruge-Murcia (1995); Dotsey and Mao (1997); and Davig (2004).

temporary variations in the budgetary variables and focus our attention on the effectiveness of fiscal measures at stimulating aggregate demand and output in the short run. This seems realistic as during exceptionally severe crises governments' fiscal measures consist of temporary interventions and are centered on Keynesian demand management and fine-tuning of the business cycle. Prices and the exchange rate are thus assumed to be fixed and fiscal changes only cause aggregate demand variables to fluctuate.

We examine the effects of various types of taxes and various targets for government spending. A common wisdom for modeling the effects of shocks is to compute impulse response functions after "shocking" the non-systematic component (innovations) of the budgetary variables. Another way to proceed, used in this paper, consists in introducing a stochastic process in the coefficients of estimated equations where the parameters are regime-dependent and where the manner in which regime shifts occur is specified by a probability distribution function defining the probability of transition from either regime to another. In this type of models, changes in the budgetary variables are considered as intra-regime shocks. For instance, a typical question is: what is the short-run impact of a 1 per cent change in government spending on the output if the likelihood that the economy is in a crisis regime is high? In this alternative approach, the uncertainty is not due to the fact that shocks are unanticipated, but to the fact that even when they are expected, the current state of the economy is not observed *ex ante*.

Finally, we do not distinguish between the discretionary and non-discretionary changes in the fiscal variables, but consider the effects of changes in the budgetary variables taken as a whole. Indeed, the effectiveness of fiscal changes depends upon both discretionary stimulus and the size of automatic stabilizers.

The paper is structured as follows. Section 2 presents the estimated equations. Section 3 discusses the econometric methodology of time-varying transition Markov-switching models. Section 4 presents the results, while Section 5 elaborates on some policy implications. Finally, Section 6 concludes.

2 Benchmark equations

In this section we lay out the equations that are estimated to study the nonlinear effects of budgetary policies between times of crisis and non-crisis. We consider four endogenous variables: first, private GDP; second, private consumption; third, business investment and fourth, employment. Each variable is fairly standard in macroeconomic models, the difference here being that we want to see which circumstances are most likely to give rise to a non-monotonic response of these variables to budgetary changes, be they positive (expansionary fiscal policy) or negative (consolidations).

Our reduced-form equations are linearised versions of the solutions derived from the theoretical set-ups mentioned in footnote 1, which introduce Markov-switching stochastic processes in micro-founded models of the economic growth. One difference is however the nature of the regimes that we consider. Since the theoretical models often focus on fiscal regimes, the regimes are defined accordingly. For instance, Davig (2004) distinguishes between a low debt/output regime and a high debt/output regime. Dotsey (1994) makes a difference between a low tax regime and a high tax regime. Here, the regimes are those of crisis and non-crisis. We neither impose any *ex ante* restriction about what is called a "crisis", nor on the years when the latter occurs. We simply keep in mind that, usually, a crisis is characterized, first by severe depressions (drop of the output and of the main components of aggregate demand) and secondly by shifts in key macroeconomic and policy variables (public debt ratio, taxes and spending, output gap, credit demand, etc). Since, we do not know *ex ante* the regime ("crisis" or "non-crisis") generating the

observed changes in the real GDP, consumption, investment or employment, we assume that the agents make a probabilistic inference on their occurrence, regarding the state of some key macroeconomic and policy variables (called transition variables) which reflect the "circumstances" under which the economy is likely or not likely to switch from either regime to the other.

Since the Markov-switching models are defined under the assumptions that all our variables are stationary, we consider the first differences of the exogenous/endogenous variables and the transition variables alike.[5] Besides, since our intention is to study the regime-switching effects of fiscal policy, in our benchmark equations, we assume that the switching between regimes is only driven by the fiscal variables (in addition to the lagged terms of the endogenous variables). Our equations include lags on the endogenous variables in order to capture costs of adjustments or partial adjustment dynamic behaviors.

2.1 Real private GDP

From standard arguments, changes in real private GDP y_t, are explained by control variables, namely the variations in the degree of openness, $open_t$, the real short-term interest rate, i_t , and budgetary variables F_t:

$$\Delta y_t = \varphi_1(s_t) + \lambda(s_t)\Delta y_{t-1} + \varphi_2 \Delta open_{t-i} + \varphi_3 \Delta i_{t-j} + \varphi_4(s_t)\Delta F_t + \sigma_y \xi_t \quad (1)$$

i, j (in indexes) are lags selected according to information criteria (AIC/BIC) and specification tests on the residuals (serial correlation and remaining nonlinearities). Δ denotes first differences. ΔF_t is a vector of contemporaneous and lagged changes of the budgetary variables. ξ_t is a stochastic disturbance with a variance σ_y. In our regressions, the best estimates (according to criteria described in the next section) were obtained when the growth rate or public debt or debt/GDP ratio were chosen as the transition variables.

2.2 Real private consumption

We estimate the following equation, whose dependent variable is the first difference of private real consumption:

$$\Delta c_t = \rho_0(s_t) + \rho_1(s_t)\Delta c_{t-1} + \rho_2 \Delta w_t + \rho_3(s_t)\Delta transf_t + \sigma_c \vartheta_t \quad (2)$$

ϑ_t is an error term with a variance σ_c^2. ω_t is a vector of contemporaneous and lagged values of households' real disposable income. Nominal income is defined as the sum of wages, households' other revenues (including financial revenues) and individual enterprises' EBITDA (earnings before interests, taxes, depreciation and amortization). $transf_t$ is a vector of contemporaneous and lagged values of transfers. Nominal transfers are positive if they are paid to households (for instance, social payments) and negative if they are paid by households (for instance contribution to social security). The "best" transition variable in our regressions is changes in unemployment. This equation can be derived from a theoretical model where households aim at maximizing a utility function upon consumption and labor, for given values of their revenues, taxes and transfers. We assume that labor supply is inelastic to the real wages in a context of high unemployment rate.

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[5] We applied unit root tests to our series, in a preliminary step, and concluded in favor of a rejection of the null of no unit root when they were in level. To avoid too many tables, the results are not reported but available upon request to authors.

2.3 Real business investment

We consider business investment and private employment equations that are assumed to be derived from profit maximization subject to a Cobb Douglass type production function with the inputs of capital and labor. We consider changes in firms' real investment rate, $\Delta invest_t$, as a function of contemporaneous and lagged changes in real GDP, Δy_t , *in* the real long-term interest rate, ΔR_t (both variables are in the vector of control variables X_t) and the following fiscal variables enter in the vector F_t : changes in corporate taxes, variations in subsidies and government spending. *j, k* and *l* are lags determined by information criteria. The equation is the following:

$$\Delta invest_t = \theta_0(s_t) + \theta_1(s_t) invest_{t-1} + \theta_2 \Delta X_t + \theta_4(s_t)\Delta F_t + \sigma_{inv}\omega_t \tag{3}$$

ω_t is an error term with a variance σ_{inv} , ΔX_t is the vector of contemporaneous and lagged changes of the control variables and ΔF_t is the vector of contemporaneous and lagged changes of the budgetary variables. The transition variable is the output gap (a proxy for the capacity utilization level).

2.4 Employment

Changes in private employment, ΔL_t , depend on the growth rate of current and past real GDP, represented by the vector $\Delta\,[(RGDP)]_t$ (on the variations of the unit labor costs (ratio of unit wages to labor productivity $(\Delta \frac{wages_{t-1}}{PROD_{t-1}})$). Adjustment costs are modeled by the lagged endogenous variable and we also consider public investment, $INVEST_{t-j}$. *i* and *j* are lags. Fiscal policy is assumed to influence two explanatory variables: on the one hand, the unit labor cost varies with, for instance, the employers' contribution to social security or taxes on labor demand; on the other hand, public investment is strongly correlated with government current expenditure and can be considered as an element of public demand. The transition variable is the variations of the output gap. The equation is the following:

$$\begin{aligned}\left([(\Delta L)]\right)_t = {} & \tilde{\varphi}_0(s_t) + \tilde{\varphi}_1(s_t)[(\Delta L)]_{t-1} + \tilde{\varphi}_2[(\Delta RGDP)]_t + \\ & + \tilde{\varphi}_3(s_t)\left[\Delta\left(\frac{[(wages)]_{t-i}}{[(PROD)]_{t-i}}\right)\right] + \tilde{\varphi}_4(s_t)\left[(\Delta INVEST)_{t-j} + \sigma_L \vartheta_t\right]\end{aligned} \tag{4}$$

ϑ_t is the error term with a variance $\sigma_L{}^2$.

3 Time-varying probability Markov-switching models

3.1 Definition

We consider an endogenous variable y_t which "visits" two regimes, one corresponding to times of crisis and the other to "normal times". The occurrence of a regime is referred by a variable s_t that takes two values: 1 if the observed regime is 1 and 2 if it is regime 2.[6] We assume that t=1,..,T.

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[6] We do not discuss here the question as whether the number of states is equal to or different from 2. This is an assumption in our case. However, several methodologies have been proposed to deal with the testing of the number of states to which we refer the interested reader (see, among others, Hamilton, 1991; Hansen, 1992; and García, 1998).

The observation of either regime 1 or 2 at time t depends upon the regimes visited by the endogenous variable during the previous periods, that is s_t is conditioned by s_{t-1} , s_{t-2} , …, s_{t-k} . At any time $\tau<t$, the regime that will be observed at time t is unknown with certainty. We thus introduce a probability P of occurrence of s_t given the past regime. Assuming, for purpose of simplicity, that s_t is a first-order Markov-switching process, we define:

$$P\left\{\frac{s_t}{s_{t-1}\,,\, s_{t-2}\,,\, ...,\, s_{t-k}}\right\} = P\left\{\frac{s_t}{s_{t-1}}\right\} \tag{5}$$

We further assume that the transition from one regime to the other depends upon a set of "transition" variables described by a vector z_t so that:

$$P\left\{\frac{s_t}{s_{t-1}}\right\} = P\left\{\frac{s_t}{s_{t-1}}\,,\, z_t\right\} \tag{6}$$

The relation between z_t and s_t is given by:

$$s_t = \begin{cases} 1, & if \quad \eta_t < a(s_{t-1}) + z_t' b\,(s_{t-1}) \\ 2, & if \quad \eta_t \geq a(s_{t-1}) + z_t' b\,(s_{t-1}) \end{cases} \tag{7}$$

where η_t is distributed as a Φ law. We accordingly define the transition probabilities as follows:

$$\begin{cases} P\left\{s_t = \dfrac{1}{s_{t-1}=j}\,,\, z_t\right\} = p_{1j}(z_t) = \Phi\left(a_j + z_t' b_j\right) \\ P\left\{s_t = \dfrac{2}{s_{t-1}=j}\,,\, z_t\right\} = p_{2j}(z_t) = 1 - \Phi\left(a_j + z_t' b_j\right) \end{cases} \tag{8}$$

where Φ is either the standard Logistic or Normal cumulative distribution function.[7]

Since the dynamics of the endogenous variable is assumed to be regime-dependent, then any influence of explanatory variables, represented by a vector x_t , may differ across regimes. We thus consider the following relationship:

$$y_t = \begin{cases} x_t' \beta_1\,(s_t) + \sigma_1(s_t)\,\varepsilon_t\,, & with\ a\ probability\ p_1(z_t) \\ x_t' \beta_2(s_t) + \sigma_2(s_t)\,\varepsilon_t\,, & with\ a\ probability\ p_2(z_t) \end{cases} \tag{9}$$

where $\varepsilon_t \sim N(0,1)$. $p_1(z_t)$ and $p_2(z_t)$ are the posterior (or unconditional probabilities) of regimes 1 and 2. The usual probabilistic properties for the ergodicity and the invertibility of (9) applies if we assume that y_t , x_t and z_t are covariance-stationary.

The above model can be generalized to a higher number of states (see Kim *et al.*, 2008) and encompasses several classes of Markov-switching models previously proposed in the literature (Goldfeld and Quandt, 1973; Diebold *et al.*, 1994; Filardo, 1994; and Hamilton, 1989).

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[7] Any functional form of the transition probabilities that maps the transition variables into the unit interval would be a valid choice for a well-defined log-likelihood function: logistic or Probit family of functional forms, Cauchy integral, piecewise continuously differentiable variables. The choice of a Logistic and Normal law is common wisdom in the applied literature.

3.2 Estimation and methodological issues

The above model is estimated via maximum likelihood (henceforth ML) with relative minor modifications to the nonlinear iterative filter proposed by Hamilton (1989). We define the following vectors: $\Omega_t = (x_t , z_t)$ the vector of observations of x and z up to period t; $\xi_t = (y_t , y_{t-1} , \ldots, y_{1)};\ \theta_t = (\beta_1 , \sigma_1 , a_1 , b_1 , \beta_2 , \sigma_2 , a_2 , b_2)$.

The conditional likelihood function of the observed data ξ_t is defined as:

$$L(\theta) = \prod_{t=1}^{T} f\left(\frac{y_t}{\Omega_t}, \xi_{t-1}; \theta\right)$$

$$f\left(\frac{y_t}{\Omega_t}, \xi_{t-1}; \theta\right) = \sum_i \sum_j f\left(\frac{y_t}{s_t} = i, s_{t-1} = j, \Omega_t, \xi_{t-1}; \theta\right) \tag{10}$$

where:

$$\times P\left(s_t = i, s_{t-1} = \frac{j}{\Omega_t}, \xi_{t-1}; \theta\right) \tag{11}$$

The weighting probability in (11) is computed recursively by applying Bayes's rule:

$$P\left(s_t = i, s_t = \frac{j}{\Omega_t}, \xi_{t-1}; \theta\right) = P\left(s_t = \frac{i}{s_{t-1}} = j, z_t\right) P\left(s_{t-1} = \frac{j}{\Omega_t}, \xi_{t-1}; \theta\right) = P_{ij}(z_t)\, P\left(s_{t-1} = \frac{j}{\Omega_t}, \xi_{t-1}; \theta\right) \tag{12}$$

We also have:

$$P\left(s_t = \frac{i}{\Omega_{t+1}}, \xi_t; \theta\right) = P\left(s_t = \frac{i}{\Omega_t}, \xi_t; \theta\right)$$

$$\frac{1}{f\left(\frac{y_t}{\Omega_t}, \xi_{t-1}; \theta\right)} \sum_j f\left(\frac{y_t}{s_t} = i, s_{t-1} = j, \Omega_t, \xi_{t-1}; \theta\right)$$

$$\times P\left(s_t = i, s_{t-1} = \frac{j}{\Omega_t}, \xi_{t-1}; \theta\right) \tag{13}$$

To complete the recursion defined by the equations (11) and (12), we need the regime-dependent conditional density functions:

$$f\left(\frac{y_t}{s_t} = 1, s_{t-1} = j, \Omega_t, \xi_{t-1}; \theta\right) = \frac{\Phi\left(\frac{y_t - x_t' \beta_1}{\sigma_1}\right) \Phi\left(a_j + z_t' b_j\right)}{\sigma_1\, P_{1j}(z_t)} \tag{14a}$$

$$f\left(\frac{y_t}{s_t} = 2, s_{t-1} = j, \Omega_t, \xi_{t-1}; \theta\right) = \frac{\Phi\left(\frac{y_t - x_t' \beta_2}{\sigma_2}\right) \Phi\left(a_j + z_t' b_j\right)}{\sigma_2\, P_{2j}(z_t)} \tag{14b}$$

The parameters of equations (8) and (9) are thus jointly estimated with ML methods for mixtures of Gaussian distributions. As compared with other estimators (for instance, the EM algorithm or the Gibbs sampler),[8] the ML estimator has the advantage of computational ease. As shown by Kiefer (1978), if the errors are distributed as a normal law, then the ML yields consistent and asymptotically efficient estimates. Further, the inverse of the matrix of second partial derivatives of the likelihood function at the true parameter values is a consistent estimate of the asymptotic variance-covariance matrix of the parameter values.

The influence of z_t on P_{1j} and P_{2j} gives information about the way the transition variables influence the probability of being in either regime or another. For instance, if regime 1 is the crisis regime, a positive (resp. negative value) of b_1 (resp. b_2) implies that the transition variable raises the probability of evolving in a time of crisis.

The optimal combination of the lags on the control and transition variables is determined by computing information criteria (Akaike and Schwarz) for each estimated model. To assess the fit of the estimated models to the data, we apply Ljung-Box tests to the expected standardized residuals as well as tests of remaining non-linearities (Hinich and Patterson's, 1989) Portmanteau bispectrum test and Tsay's 1996 test). The expected residuals are the weighted residuals with the weights equal to the probability of observing regimes 1 and 2 at each date.

4 Data and results

We apply the model to France. Data are quarterly, span the years from 1970 to 2009, and are taken from the OECD database. Time series for public finance variables were available at a yearly frequency and were interpolated to get quarterly observations. In order to avoid spurious dynamics stemming from the interpolation method, we simply estimate a "trend" between two observations. Except when their values are negative, the data are transformed into logarithm. Further, we take the first differences to cope with non-stationarity (unit root tests, available upon request to the authors, showed that the data contain a stochastic trend). We select the best estimated equations according to the information criteria (AIC/BIC), the inexistence of serial correlation in the residuals, the likelihood ratio test for TVPMS (the null hypothesis is constant probabilities). For each model, the initial values are those of a linear regression of the endogenous variables on the control and fiscal variables.

To avoid endogeneity biases due to the correlation between the endogenous variables budgetary variables, we use a two-step approach by first estimating a VAR system in level composed of the variables of the different equations.[9] Then, in a second step, we consider the forecasted in-sample values of the explanatory variables to apply the TVPMS model. As the second stage is linear in the variables, the two-step approach is applicable.

4.1 Real private GDP equation

Table 1a through 1c report the estimates obtained for the GDP equation. All the variables are expressed in real terms (they are deflated by the GDP deflator). The transition variable is the fourth-order moving average of the differentiated logarithmic real debt or debt ratio. The model detects two regimes corresponding respectively to periods of crisis (huge troughs in the real GDP cycle) and "normal periods" (expansions or moderate recessions). The model improves over a

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[8] See Diebold *et al.* (1994) and Filardo and Gordon (1993).

[9] By applying a Johansen test, we checked that the variables were cointegrated in levels.

Figure 1

Posterior-smoothed Probability of Regime 2 (Huge Falls in Real GDP)
(budgetary variable: government spending)

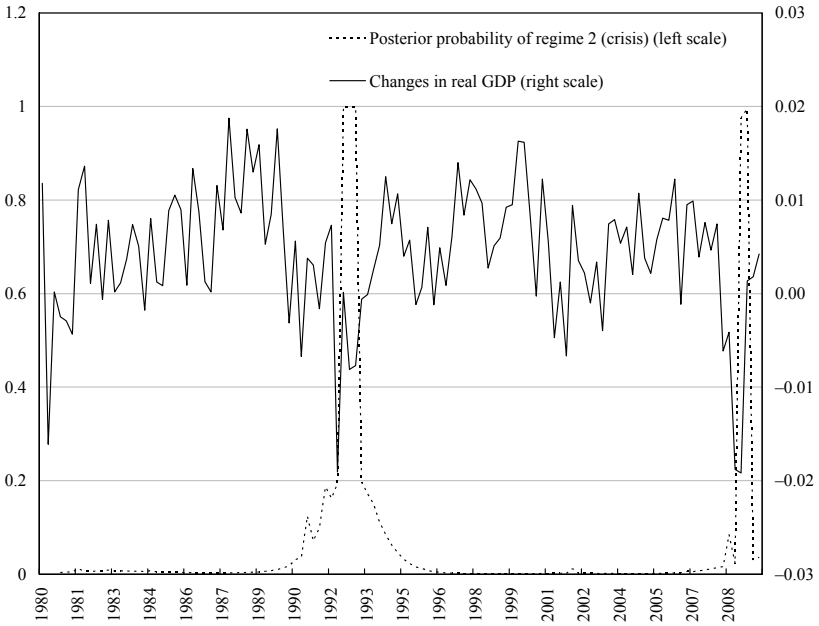
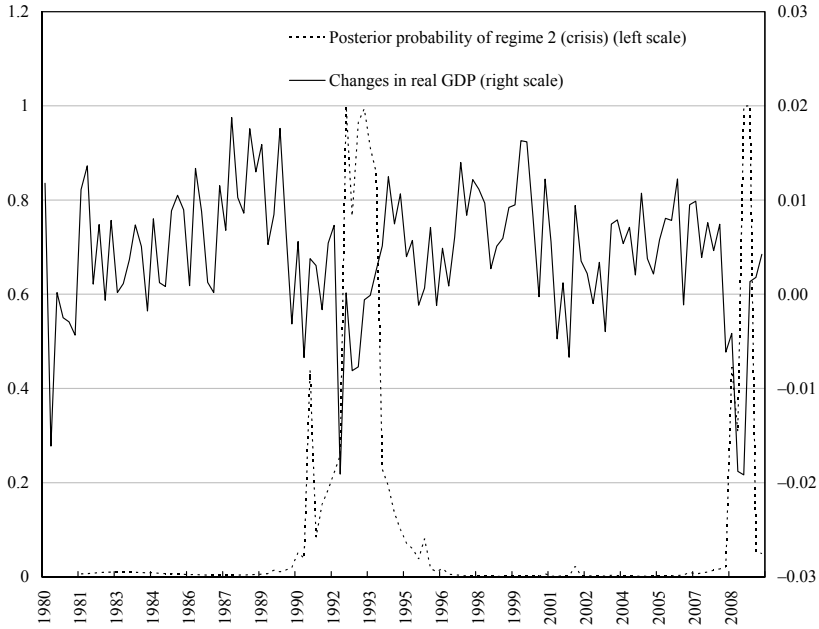


Figure 2

Posterior-smoothed Probability of Regime 2 (Huge Falls in Real GDP)
(budgetary variable: government spending – potential growth)



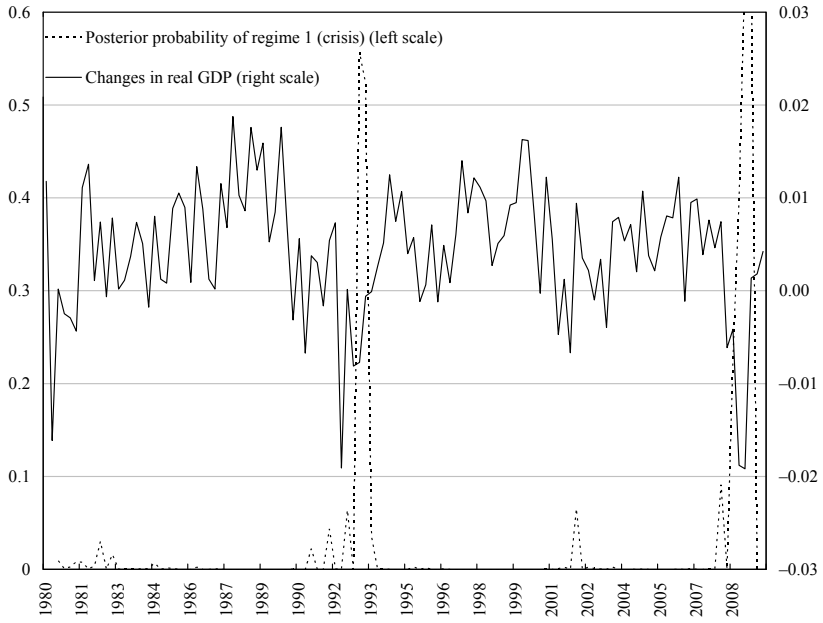
simple constant probability model *à la* Hamilton. Indeed, the likelihood ratio test for TVPMS is significant (the *p*-value lies under 5 per cent), thereby indicating a rejection of the hypothesis of constant transition probabilities. Figures 1 through 3 report the smoothed posterior probabilities of either regime 1 or 2 and we see that the smoothed probabilities approach 1 for the two years corresponding to the troughs of 1992/1993 and 2009. The model thus dichotomizes between a regime of crisis (regime 2) and a regime of non-crisis (regime 1). This is shown in Table 1a by the intercepts that are respectively negative (–0.013) and positive (0.005) in each regime. These intercepts capture the average GDP growth within each regime.

In Table 1a, evidence of an asymmetric effect of public expenditure is assessed by two different coefficients for regimes 1 and 2. Although both regimes are Keynesian (the estimated coefficients are positive), the impact of changes in government spending on the real GDP is higher when the economy is in crisis (regime 2) with a differing effect of 13 per cent (in comparison with regime 1). An increase in

public expenditure is therefore efficient to boost real GDP growth, in both times of crisis and non-crisis even though the impact is superior during crises. The control variables have the expected signs. A higher degree of openness increases the real private GDP, while a rise in the real short-term interest rate reduces it (though the latter does not appear to be statistically significant).

Figure 3

Posterior-smoothed Probability of Regime 1 (Huge Falls in Real GDP)
(budgetary variable: government revenues / GDP)



Changes in public debt across a year appeared to be the best transition variable (according to various criteria: residual tests, AIC/BIC criteria, remaining non-linearities tests). This variable provides information on the fact that any increase in the stock of debt may be interpreted by the private sector as a phenomenon paving the way to possible solvability and sustainability problems in the future. This can decrease the "performance" of the expenditure multiplier if the expectations yield Ricardian behaviors (people save the additional revenues stemming from the new expenditure to pay the future taxes). In terms of our econometric model, the probability of being in a "strong" multiplier regime (regime 2) should decrease if Ricardian behaviors are at work. In this case, we would expect a negative sign of the coefficient b_2 (and a positive sign of b_1) in equation (8). As is seen in Table 3, this is not the case.

On the other hand, a positive growth rate of the stock of debt implies a higher volume of expenditure, which could raise the magnitude of the impact on the real GDP if private investment and consumption fully and positively respond to public spending. In this case, we would instead expect a positive value of the coefficient b_2 and a negative value of b_1 (with at least one of both coefficients being statistically significant). To say it another way, a rise in public debt lowers the probability of being in regime 1, a regime in which public expenditure have the less significant impact on real GDP growth. This is the case here, as evidenced by the estimated coefficients. This would mean that, in France, there seems not to be Ricardian effects associated with an increase in the stock of debt. Such anti-Keynesian effects do not appear when we consider the aggregate real GDP. Instead, during the crisis regimes, increasing debt provides a fiscal space that reinforces the effects of government spending on the real GDP.

We further consider the difference between the growth rate of government expenditure and that of potential output, as an explanatory fiscal variable (instead of changes in government spending). The idea is that in the medium term, a large part of public expenditure is supposed to change according to potential GDP growth (in this case expenditure ratio to GDP remains

Table 1a

Real GDP – TVPMS Model for France, 1979:01-2009:04
(budgetary variable: Δ government spending)

Explanatory Variable	**Coefficient**	***T*-ratio**	***p*-value**
Intercept (regime 1)	0.005	2.26	0.023
Intercept (regime 2)	–0.013	–5.13	0.0
AR(1) coefficient (regime 1)	0.335	3.43	0.0
AR(1) coefficient (regime 2)	–0.196	–0.99	0.322
Residual standard error (regime 1)	0.005	14.60	0.0
Residual standard error (regime 2)	0.003	2.01	0.04
Δ government spending (*t*–2) (regime 1)	0.248	2.753	0.005
Δ government spending (*t*–2) (regime 2)	0.370	3.947	0.0
Δ degree of openness (*t*–1)	0.047	1.828	0.067
Real interest rate (*t*–1)	–0.0008	–1.019	0.308
Transition variable : Δ debt (*t*–1) (smoothed)			
a_1	8.77	2.59	0.009
a_2	–1.35	–0.25	0.799
b_1	–255.18	–1.847	0.064
b_2	67.44	0.322	0.746
Likelihood ratio test for TVPMS (null hypothesis: constant probabilities) Chi-squared(2): 8.834 with significance level 0.01206			
Tests on residuals Ljung-Box statistics (autocorrelation of order k): LB(k) LB(1): 1.134 significance level: 0.286 LB(2): 1.552 significance level: 0.46 LB(3): 1.568 significance level: 0.666 Linearity tests Hinich bispectral test (statistics and *p*-value): –3.285 0.99 Tsay test (statistics and *p*-value): 2.917 0.001			

constant). Then, a positive difference reflects a discretionary budgetary expansion, while a negative difference means an active fiscal consolidation.

Table 1b lists the estimates corresponding to this case. Again regimes 1 and 2 are respectively classified into "non-crisis" and "crisis" phases (see also Figure 2). However, the above conclusions change. Indeed, if we consider the effects of discretionary public spending (and not the combined effects of the discretionary and automatic stabilizers components of government expenditure, as is the case in Table 1a) the estimates suggest a non-monotonic effect of government spending with a positive and significant impact of the real GDP during crises, but no impact during non-crisis periods. An explanation may be the following. During crises, liquidity constraints are important and reinforce the impact of government expenditure on the activity. During non-crisis periods, crowding-out effects (a decreased in private investment due to the fact that government spending use up resources that would be available otherwise to the private sector) moderate the positive impact of the discretionary policy (this is confirmed further by the estimation of our investment equation). Another point that appears in Table 1b is that the delays of transmission of public spending to the activity differ whether we consider only the discretionary component ofpublic spending or public expenditure as a whole. In the first case, the transmission to the activity takes a longer time (the optimal lag for the government spending variable is 5 in Table 1b, while it is 2 in Table 1a).

Table 1c shows estimates when the budgetary variable is the ratio of government revenues to GDP. The estimates are consistent with two different regimes characterized respectively by huge falls of real GDP (regime 1) and increases or moderate decreases in real GDP (regime 2) – see also Figure 3. The fiscal effect on GDP is statistically null in the second regime, but negative and statistically significant in the first. Accordingly, raising fiscal revenues is not harmful for the economy in times of "non-crisis", but may reduce production when the economy evolves in a crisis phase. Conversely, tax cuts can help to exit from a depression. How can we explain the asymmetric effect of tax revenues of the real GDP? Tax revenues affect production indirectly through their impact on aggregate expenditure (because they involve changes in disposable income, the cost of factors, wealth, etc). If the government reduces taxes with the goal of warding off a huge recession or depression, the increased disposable income of the private sector will be partly consumed and partly saved depending upon the propensity to consume, invest, import, etc. If these propensities are higher in times of crisis as compared with times of non-crisis (due for instance to liquidity constraints), then we can expect a stronger impact when the economy is evolving in a huge trough of the business cycle.

The control variables have the expected signs, respectively positive for the degree of openness and negative for the real short-run interest rate (though the latter does not carry a statistically significant sign).

4.2 Real private consumption

Table 2 shows the results for real private consumption when the unemployment rate is the transition variable. The theoretical literature points that, among the circumstances in which consumption may respond non-monotonically to fiscal variables, the uncertainty about the state of the economy is an important factor.

In France, we *do not* find any non-monotonic effect of fiscal policy on real private consumption between regimes of strong falls in consumption (crisis) and regimes of non-crisis, be the instruments taxes on income or social security transfers. The regimes identified by the model are plotted in Figures 4a and 4b. We see that the first regime is described as one in which consumption evolves in a trough. As indicated by the coefficients in Table 2, income taxes have no

Table 1b

Real GDP – TVPMS Model for France, 1979:01-2009:04
(budgetary variable: Δ spendgap = Δ government spending – Δ potential output)

Explanatory Variable	Coefficient	*T*-ratio	*p*-value
Intercept (regime 1)	0.004	2.424	0.015
Intercept (regime 2)	–0.009	–3.823	0.0001
AR(1) coefficient (regime 1)	0.148	1.422	0.155
AR(1) coefficient (regime 2)	–0.177	–0.654	0.512
Residual standard error (regime 1)	0.005	14.16	0.0
Residual standard error (regime 2)	0.004	3.45	0.0
Δ spendgap (*t*–5) (regime 1)	0.05	1.01	0.31
Δ spendgap (*t*–5) (regime 2)	0.296	2.45	0.014
Δ degree of openness (*t*–1)	0.073	3.025	0.002
Real interest rate (*t*–1)	0.0005	0.570	0.568
Transition variable : Δ debt (*t*–2) (smoothed)			
a_1	8.62	2.62	0.008
a_2	0.316	0.068	0.945
b_1	–270.62	–1.843	0.065
b_2	26.23	0.134	0.893

Likelihood ratio test for TVPMS (null hypothesis: constant probabilities)
Chi-squared(2): 5.331 with significance level 0.0695

Tests on residuals

Ljung-Box statistics (autocorrelation of order k): LB(k)
LB(1): 1.474 significance level: 0.224
LB(2): 2.492 significance level: 0.287
LB(3): 4.116 significance level: 0.249

Linearity tests
Hinich bispectral test (statistics and *p*-value): 2.429 0.0075
Tsay test (statistics and *p*-value): 0.983 0.476

Table 1c

Real GDP – TVPMS Model for France, 1979:01-2009:04
(budgetary variable: Δ (Government revenues / GDP))

Explanatory Variable	**Coefficient**	***T*-ratio**	***p*-value**
Intercept (regime 1)	–0.010	–3.272	0.001
Intercept (regime 2)	0.006	3.345	0.0008
AR(1) coefficient (regime 1)	0.0209	0.069	0.944
AR(1) coefficient (regime 2)	0.186	2.11	0.034
Residual standard error	0.005	14.957	0.0
Δ government revenues/GDP (*t*–1) (regime 1)	–0.257	–2.19	0.027
Δ government revenues/GDP (*t*–1) (regime 2)	–0.044	–1.032	0.302
Δ degree of openness (*t*–1)	0.058	2.293	0.021
Real interest rate (*t*–1)	–0.0008	–0.922	0.356
Transition variable : Δ debt ratio (*t*–1)			
a_1	1.019	0.759	0.44
a_2	5.743	3.798	0.0001
b_1	–24.47	–0.777	0.436
b_2	–111.11	–2.511	0.012
Likelihood ratio test for TVPMS (null hypothesis: constant probabilities) Chi-squared(2): 6.278 with significance level 0.043			
Tests on residuals Ljung-Box statistics (autocorrelation of order k): LB(k) LB(1): 1.093 significance level: 0.295 LB(2): 3.001 significance level: 0.222 LB(3): 4.35 significance level: 0.226 Linearity tests Hinich bispectral test (statistics and *p*-value): –0.343 0.634 Tsay test (statistics and *p*-value): 2.04 0.021			

Table 2

Real Private Consumption – TVPMS Model for France, 1970:01-2009:04

Explanatory Variable	Coefficient	*T*-ratio	*p*-value
Intercept (regime 1)	0.00031	0.348	0.727
Intercept (regime 2)	0.006	5.986	0.0
AR(1) coefficient (regime 1)	0.027	0.164	0.869
AR(1) coefficient (regime 2)	–0.243	–2.08	0.037
Residual standard error	0.003	10.41	0.0
Δ income taxes(t) (regime 1)	–0.0068	–0.300	0.763
Δ income taxes(t) (regime 2)	0.044	1.369	0.170
Δ transfers (*t*–1) (regime 1)	0.149	2.319	0.02
Δ transfers (*t*–1) (regime 2)	0.142	1.768	0.076
Δ social security(*t*) (regime 1)	–0.113	–1.919	0.054
Δ social security(*t*) (regime 2)	–0.02	–0.401	0.688
Δ real disposable income	0.139	2.158	0.03
Transition variable: unemployment rate (smoothed)			
a_1	–0.234	–0.354	0.723
a_2	1.319	2.02	0.043
b_1	163.83	2.793	0.0052
b_2	–22.97	–0.543	0.586
Likelihood ratio test for TVPMS (null hypothesis: constant probabilities)			
Chi-squared(2): 8.238 with significance level 0.0162			
Tests on residuals			
Ljung-Box statistics (autocorrelation of order k): LB(k)			
LB(1): 0.244 significance level: 0.62			
LB(2): 1.695 significance level: 0.428			
LB(3): 1.805 significance level: 0.613			
Linearity tests			
Hinich bispectral test (statistics and *p*-value): –1.968 0.975			
Tsay test (statistics and *p*-value): 2.079 0.019			

effects on real private consumption while the effects of transfers appear to be symmetric as we find a coefficient of quite similar size for both crisis and non-crisis regimes (around 0.14). Only the contributions to social security are associated with an asymmetric impact on consumption with a negative outcome only during times of crises.

The probability of being in a crisis regime increases with the unemployment rate, as expected (b_1 carries a positive sign). Finally, the real disposable income positively influences private consumption.

To summarize, only spending increases in the form of transfers to households raise the real private consumption (we have a Keynesian outcome for this variable), but the impact is symmetric. The finding that taxes have no significant effects on consumption can be interpreted with reference to several approaches of the economic literature. For instance, if we consider the effect of tax cuts, we can think that, during crises, there are non-Keynesian effects due to precautionary saving (as the unemployment rate increases) that offset the positive effect on

Figure 4a

Posterior-smoothed Probability of Regime 1 (Huge Falls in Private Consumption)

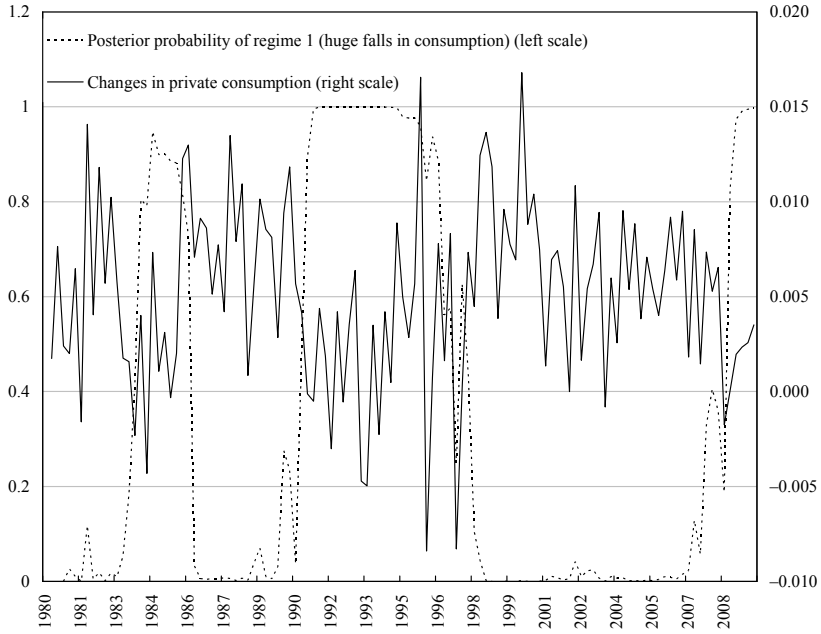
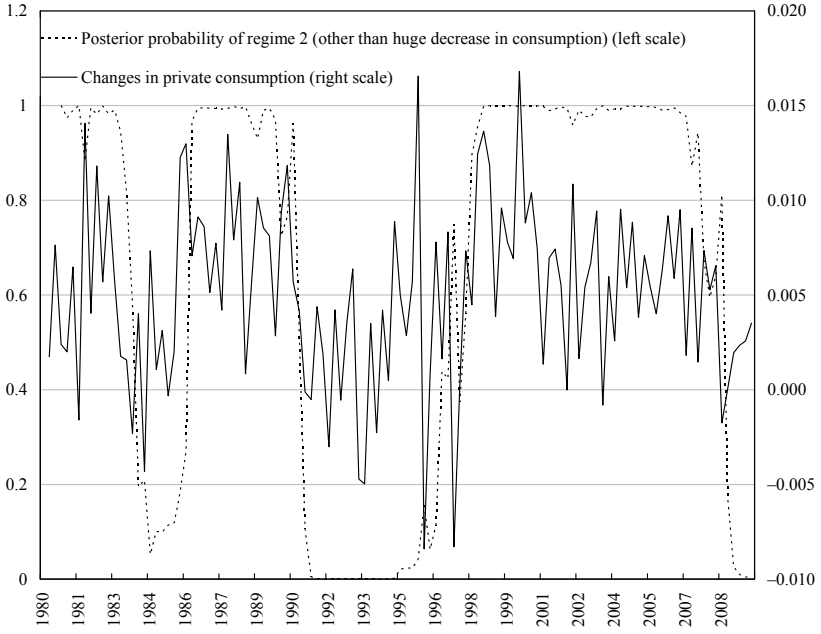


Figure 4b

Posterior-smoothed Probability of Regime 2 (Other Periods than Huge Falls in Private Consumption)



consumption. The size of precautionary saving may be more or less important depending upon whether households face strong liquidity constraints or not. Tax cuts are "consumed" if households are highly constrained (a situation observed during crises) and saved otherwise. This can explain why we obtain a negative sign for the income tax variable in the regime of crisis (–0.0068), but a positive one for the non-crisis regime (0.044). It is possible that the unemployment rate (which is our transition variable) determines whether households take or not their decision of consumption expenditure (in response to a tax decrease or increase) regarding their perceived permanent disposable income. When the unemployment is growing moderately or is decreasing (non-crisis regime), households are more inclined to smooth consumption in comparison with a situation in which the unemployment rate is increasing fast (as is observed in a crisis regime). In the latter case, consumption is constrained by their current income and this reduces the effect of precautionary saving.

4.3 Business investment

The estimates for business investment are reported in Table 3 and the smoothed posterior probabilities of being in either a regime of sustained increases in investment (regime 1) or in a regime of prolonged decreased (regime 2) are shown in Figures 5a and 5b. As seen in Figure 5a, the probability of the second regime "jumps" to 1 around some years that are generally considered as being times of crisis or important recessions : second oil price shock years, the year 1983 which was characterized by a restrictive budgetary policy, 1993, 2001-02 and, as expected, 2009. Conversely, in Figure 5a, we observe that the probability of being in regime 1 increases during the times when business evolves on an ascending trend The outcome of cuts in corporate taxes is an increase in investment in times of booming investment (regime 1). We indeed obtain a statistically significant coefficient of –0.08. Conversely, to mitigate an investment downturn, the instrument of direct tax does not prove efficient as the coefficient is statistically not different from 0 at the 5 per cent level of significance. One reason may be that, during the phases of a depressed activity, firms are more sensitive to demand-side variables than to fiscal discretionary measures.

Our results also point to a significant crowding-out effect of government spending on business investment only in times of booming investment (regime 1) (the coefficient is around –0.39). As is known from theory, there are several channels at play here. The reduction in business investment may occur because the spending is accompanied by a tax increase. As, we have just seen, any increase in corporate taxes does not have a significant impact on firms' investment behavior periods of booming investment (regime 1). Another mechanism is a reduction in private investment following a higher government borrowing. We tried to use the debt ratio as a transition variable to see whether this variable influences the reaction of business investment to government spending, but it appears not to be conclusive in explaining the asymmetries observed in the data. Crowding-out effects appears to be moderate during recessions or depressions (here non-significant in regime 2) because government spending expands the demand facing the private sector (through the multiplier) thereby implying an accelerator effect that is strong when firms suffers from unused capacities (stronger during the crises than during expansions). In the regression, we can see that the coefficients related to the impact of the real GDP are big in comparison to the others (the coefficients of lagged GDP terms sum to 1.56).

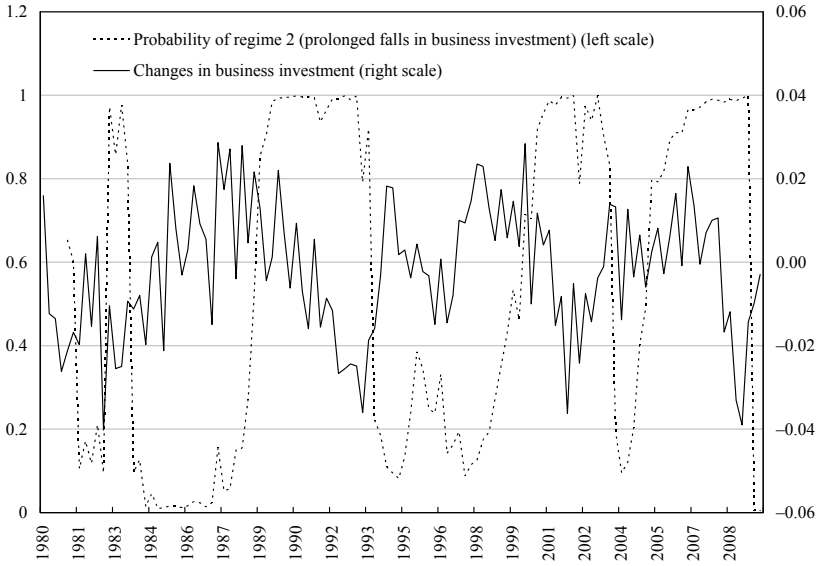
Government subsidies also appear to have an asymmetric impact on business investment with possible non-Keynesian effects in the second regime (crisis). The subsidies do not influence private investment during expansion phases – the coefficient is not statistically significant in regime 1 – but reduce it during recessions. One explanation can be that, during recessions, in addition to reducing capacities, firms also proceed to other internal adjustments (for instance, they deleverage to clean up their balance sheets or reduce their debts).

Turning our attention to the impact of the control variables, we see that the real GDP has an expected positive influence, while the real long-run interest rate acts negatively.

The diagnostic tests show that, while there are no residual correlations (the *p*-value of the Ljung-Box statistics are above 5 per cent), the residuals still contain remaining nonlinearities (both the Hinich and Tsay tests reject the null hypothesis of linearity). Accordingly, the investment behavior may obey to other type of nonlinearities.[10]

Figure 5a

Posterior-smoothed Probability of Regime 2 (Prolonged Decrease in Business Investment) and Changes in Business Investment

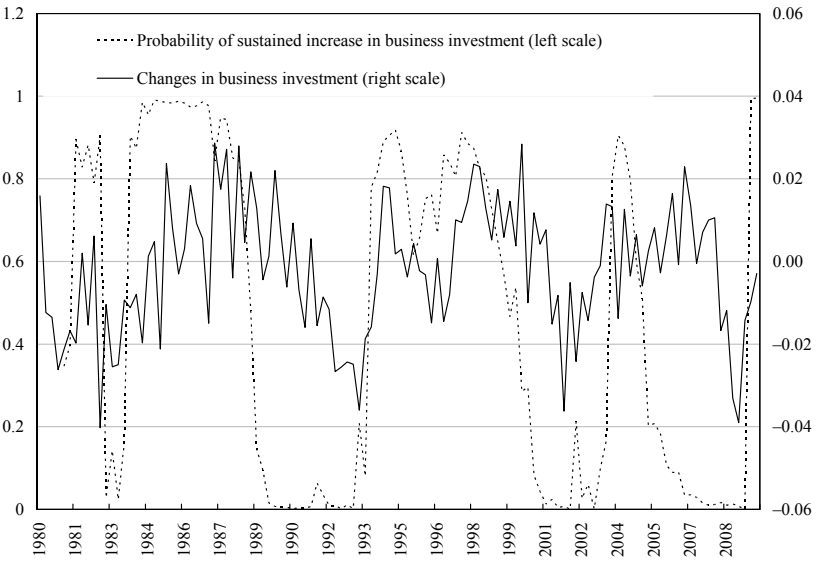


4.4 Private employment

We now consider the asymmetric impact of unit labor costs and public investment on private employment. The different ways the enterprises respond to the increase in public demand can lead to asymmetric reactions of private employment to changes in public investment. On the one hand, if, in response to higher total demand, they extend their existing capacity level with the same technology, this leads an upward shift of labor demand. On the

Figure 5b

Posterior-smoothed Probability of Regime 1 (Sustained Increase in Business Investment) and Changes in Business Investment



[10] For instance, since this variable is more volatile than the other components of total demand, nonlinearities may exist in the variance. However, considering these nonlinearities here would make the model cumbersome to estimate).

Table 3

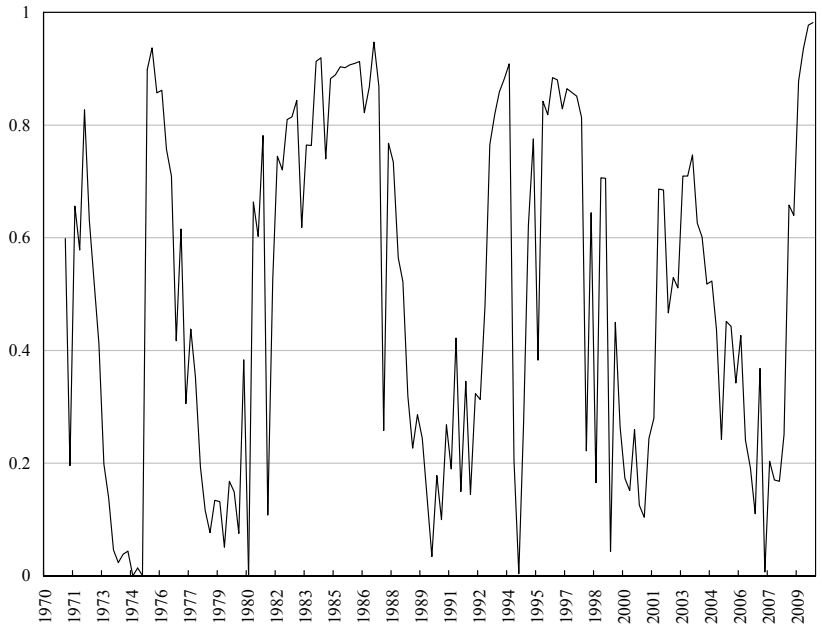
Business Investment – TVPMS Model for France, 1970:01-2009:04

Explanatory Variable	Coefficient	*T*-ratio	*p*-value
Intercept (regime 1)	0.008	2.55	0.01
Intercept (regime 2)	–0.003	–0.77	0.438
AR(1) coefficient (regime 1)	0.012	0.11	0.905
AR(1) coefficient (regime 2)	0.276	2.57	0.01
Residual standard error	0.01	14.57	0.0
Δ corporate taxes (*t*–3) (regime 1)	**–0.08**	**–2.21**	**0.027**
Δ corporate taxes (*t*–3) (regime 2)	**0.022**	**0.76**	**0.442**
Δ subsidies (*t*–2) (regime 1)	**0.048**	**1.27**	**0.201**
Δ subsidies (*t*–2) (regime 2)	**–0.17**	**–3.04**	**0.0023**
Δ government spending (*t*–3) (regime 1)	**–0.394**	**–2.422**	**0.015**
Δ government spending (*t*–3) (regime 2)	**–0.357**	**–1.16**	**0.244**
Δ real GDP (*t*–2)	0.430	1.928	0.053
Δ real GDP (*t*–3)	1.13	5.25	0.0
Real long-run interest rate (*t*–2)	–0.001	–3.38	0.0
Transition variable: output gap			
a_1	2.07	2.73	0.006
a_2	2.59	3.80	0.0
b_1	–1.063	–1.52	0.127
b_2	1.036	2.58	0.009
Likelihood ratio test for TVPMS (null hypothesis: constant probabilities) Chi-squared(2): 9.524 with significance level 0.0085			
Tests on residuals Ljung-Box statistics (autocorrelation of order k): LB(k) LB(1): 0.212 significance level: 0.644 LB(2): 5.532 significance level: 0.063 LB(3): 5.716 significance level: 0.126 Linearity tests Hinich bispectral test (statistics and p-value): –3.313 0.99 Tsay test (statistics and *p*-value): 2.624 0.0029			

other hand, if the additional investments incorporate labor saving technology, this leads negative employment effects. The positive demand-side effects are, in general, the result of higher expected profits. These are likely to occur during crises if, for instance, firms are facing strong liquidity constraints. Conversely, enterprises can choose to take advantages of the productivity gains associated with booms or expansions and accordingly to save labor.

Figure 6

Posterior-smoothed Probability of Regime 1 (Times of Crisis)



A fall in unit labor costs (measured by the ratio of unit wages to total productivity) can lead to an increase in employment as long as labor demand is sensitive to these costs. In our estimations, reported in Table 4, we retrieve these different effects.

Figure 6 shows that the posterior probability of being in regime 1 is around 1 for the years that are usually identified as years of crises (for instance the 2009 crisis, 1992-93 or the years following the two oil price shocks of the seventies and eighties). The estimated autoregressive coefficients, in Table 4, accord well with the fact that episodes of huge negative variations in private employment occur much more rarely than those of moderate diminutions or increases. The latter are more frequently observed so that the corresponding state is very persistent.

In the second regime (non-crisis), a decrease in unit labor costs comes along with an increase in private employment (the negative coefficient, –0.12, indicates a negative relationship between the two variables), while during times of crisis a fall in unit labor costs is accompanied by decreases in labor demand (as illustrated by the positive coefficient, 0.03). This findings reflects the inability of downward pressure in the cost of labor to stimulate employment if, at the same time, total demand is decreasing importantly as is the case in times of crisis.

The results also show asymmetric effects as regards the impact of public investment. We find that any increase results in higher employment in times of crisis (the coefficient carries a positive sign of 0.01), but a fall in non-crisis times. It may be the case that public investment appears as “manna” to firms when they face outlet constraints and that they trade-off between labor and productivity in non-crisis times.

As regards the other coefficients, we find that the higher the value of the output gap (the higher the value of actual production above potential output), the less likely the probability of evolving in the first regime (crisis), which accords with the fact that in the latter firms have many

Table 4

Private Employment – TVPMS Model for France, 1970:01-2009:04

Explanatory Variable	Coefficient	*T*-ratio	*p*-value
Intercept (regime 1)	–0.002	–4.91	0.0
Intercept (regime 2)	–0.0008	–2.83	0.004
AR(1) coefficient (regime 1)	0.579	13.76	0.0
AR(1) coefficient (regime 2)	1.144	11.83	0.0
Residual standard error (regime 1)	0.00078	11.90	0.0
Residual standard error (regime2)	0.00073	7.57	0.0
Δ unit labor cost (t–3) (regime 1)	**0.033**	**4.19**	**0.0**
Δ unit labor cost (t–3) (regime 2)	**–0.122**	**–8.38**	**0.0**
Δ public investment (t–3) (regime 1)	**0.016**	**3.25**	**0.001**
Δ public investment (t–3) (regime 2)	**–0.028**	**–3.64**	**0.0002**
Δ real GDP (t–1)	0.10	6.68	0.0
Transition variable : output gap			
a_1	0.916	2.00	0.044
a_2	–0.741	–1.40	0.161
b_1	–0.829	–2.134	0.032
b_2	0.132	0.523	0.60

Likelihood ratio test for TVPMS (null hypothesis: constant probabilities)
Chi-squared(2): 5.766 with significance level 0.0559

Tests on residuals

Ljung-Box statistics (autocorrelation of order k): LB(k)
LB(1): 2.366 significance level: 0.123
LB(2): 2.416 significance level: 0.298
LB(3): 3.907 significance level: 0.27

Linearity tests
Hinich bispectral test (statistics and *p*-value): 1.621 0.0525
Tsay test (statistics and *p*-value): 2.053 0.0182

unused capacities (b_1 is negative and statistically significant). The coefficient of the real GDP carries the expected positive sign.

5 Policy implications

The French recovery plan in the aftermath of the crisis was driven by some reductions in taxes and by a raise of public expenditure. Government spending increases accounts for the lion's share of this plan, so that we can say that it was mainly spending-oriented. However, beyond the crisis fiscal sustainability objectives will come back into the policymakers' agenda. This raises several important questions. Do we have reason to doubt the effectiveness of the standard Keynesian policy, as suggested by some economists? Do we observe nonlinear effects in the response of real GDP, private consumption, investment and employment to changes in taxes or spending (for instance, is the response of the economy likely to be weaker or higher during the crisis to a fiscal stimulus, than during the exit-crisis period)? To what extend will it be possible to conciliate both objectives of achieving fiscal sustainability and sustaining economic growth beyond the crisis?

These questions are important because France should begin a process of major fiscal adjustment (4 points off the cyclically-adjusted balance over a period of 3 years are enrolled in the revised stability program presented in January 2010). A central issue is whether such adjustment may have a relatively limited negative effect on growth. Our model can help to shed new light on this point by showing two distinct regimes associated with multipliers with different value or even sign.

What can we conclude about the effects of budgetary variables on the real GDP in France? First, there is evidence of asymmetric effects for both the multiplier of government expenditure and the fiscal multiplier, with differing effects during the phases of crisis and non-crisis. The following table summarizes our findings regarding the impact of the budgetary variables.

In light of the recent crisis, our results show that using the expenditure as the main instrument of the budgetary policy in order to cope with the drop of the real GDP and the employment rate was probably a better choice than a policy favoring recovery through fiscal cuts. Though tax cuts reduce the risk of a depression by raising the real GDP, the spending multiplier is larger than the one associated with tax cuts. Further, if we consider fiscal stimulus aimed at consumers and enterprises, a decrease in the direct taxes (corporate taxes or income taxes) is likely not to raise either consumption or private investment in times of crises. For reasons explained earlier, the propensity to spend out of such taxes may be offset by non-Keynesian effects. In the current juncture, transfers to households may help to support consumption which has the greatest contribution to GDP. However, direct subsidies to enterprises, in the current environment may not help due to the sharp fall in demand and the uncertainty facing the firms about how good the economic will be in the future (this explains the negative sign associated with the variable reflecting changes in subsidies).

Our estimates take into account the fact that the reactions of the economy to fiscal measures can be influenced by the growth rate of government debt. Ricardian behaviors are likely to affect the magnitude of the fiscal multiplier only and this explains why we find a higher value for the multiplier of expenditure in comparison with that of fiscal. This means that the budgetary instrument used to influence the economy during crisis and non-crisis is not neutral in terms of the probability of being in either regime or the other. Should a government cut taxes, while increasing its indebtedness, that this strategy would be interpreted as signaling future tax increases, thereby implying a higher likelihood of driving the economy out of an expansion phase. In contrast, in presence of a crisis, raising the expenditure while borrowing more might be interpreted as a way of

Table 5

Effects of Budgetary Variables
(times of crisis and non-crisis)

	Non-crisis Regime		**Crisis Regime**	
	Coefficient	***T*-stat**	**Coefficient**	***T*-stat**
	Impact on Real GDP			
Δ government expenditure	**0.25**	**2.75**	**0.37**	**3.94**
Δ government expenditure – *Δ* real potential GDP	0.05	1.01	**0.296**	**2.45**
Δ public revenue	–0.044	–1.032	**–0.257**	**–2.19**
	Private Employment			
Δ unit labor cost	**–0.122**	**–8.38**	**0.033**	**4.19**
Δ public investment	**–0.028**	**–3.64**	**0.016**	**3.25**
	Business Investment			
Δ corporate taxes	**–0.08**	**–2.21**	0.022	0.76
Δ subsidies	0.048	1.27	**–0.17**	**–3.04**
Δ government spending	**–0.394**	**–2.42**	–0.357	–1.16
	Private Consumption			
Δ income taxes	–0.0068	–0.300	0.044	1.37
Δ transfers	**0.149**	**2.32**	**0.142**	**1.77**
Δ social security	**–0.113**	**–1.92**	–0.02	–0.40

Note: The data in bold figure out the effects that are significant.

increasing a Government room for manœuvre, which will stimulate the economy in escaping from a recession. Extrapolating these results, it seems that the increase in public spending corresponding to a large part of the stimulus plans in 2009 (during a recession period) was likely to give way to a rise in GDP growth. On the contrary, the use of the tax cuts would not have produced significant results on GDP growth.

Beyond the crisis, sustainability concerns will be essential for the French government. This could be achieved as follows. The French government could increase the scope for automatic stabilizers and therefore make the discretionary spending measures reversible. Regarding our results, such a strategy could allow to reduce deficits without negative effects on the economy since in times of non-crisis, the multiplier associated with changes in the differences between changes in government spending and the growth rate of potential output is not statistically significant.

Considerations could also be given to higher taxes since they do not seem to be a threat for a decrease in the real GDP in the short term (we found no significant effects associated with government revenues in non-crisis time). But, the government would need to target the tax increases. This consideration is important given the ongoing debate on the "fiscal shield". On the one hand, higher direct taxes on firms could force them to cut investment and employment, as reflected by the negative coefficients associated with corporate taxes and the unit labor costs in the non-crisis regime. On the other hand considering increase in direct taxes on consumers would probably not shift their spending.

6 Conclusion

It should be reminded that the only empirical models likely to give directly policy implications are structural, such as macro-econometric models or simulation models like DSGE type (but they are accused of ideas based on *a priori*). The models based on reduced forms (which include all VAR models) are simply intended to give a certain number of facts on which we can base the formulation of economic policy. From this point of view, our study based on TVPMS models allows to highlight several interesting points. The analysis of the role of fiscal variables on some major macroeconomic variables through a TVPMS model clearly shows asymmetry in the effects of fiscal variables depending upon whether one is in periods of crisis or good times. These nonlinearities are both frequent (as they exist on all behaviors analyzed: GDP, private consumption, business investment and private employment) and significant.

In particular, if one considers the aggregate GDP, public expenditure has a stronger impact during crisis and the expenditure multiplier is greater than the tax multiplier. The consequence is that, during a crisis, a stimulus plan expenditure-oriented might be more efficient than a recovery plan based on measures of tax relief. The effect of tax-oriented measures is significant when the endogenous variables are private investment and employment.

When households are sensitive to the unemployment situation, tax cuts do not affect increase consumption spending, while transfers are playing a significant role. In terms of economic policy, assuming for example that the government's exit strategy consists in stimulating private consumption, it has to choose between two instruments: on the one hand, an increase in transfer expenditure financed by borrowing and, on the other hand lower taxes paid by households.

On the firms side, our results show that direct taxes changes induce a (stimulus) effect in the investment rate only during non-crisis periods. A rise in subsidies has a negative influence during crises, as firms reduce their production capacity.

Increased public spending appears to have a strong multiplier effect at the aggregate level, but with crowding-out effects observed on private investment in non-crisis times. Finally, the estimates suggest that employment policies should be asymmetric: fiscal measures aiming at reducing unit labor costs could be efficient in good times, while an increase in public employment is preferable during crisis.

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FISCAL ACTIVISM IN BOOMS, BUSTS AND BEYOND

Ludger Schuknecht[*]

This paper discusses activist fiscal policies during good times, the crisis period and for the post-crisis period. The study argues, first, that fiscal policies were overly imprudent during the boom phase preceding the crisis. This was due to excessive expenditure growth and problems with measuring the output gap and fiscal stance. Second, during the crisis, too much emphasis was placed on the need for (activist) fiscal demand support despite demand excesses in the boom years in several countries. Fiscal activism focussed less (and less strongly than needed) on the balance sheet nature of the crisis and the significant misallocation of resources. Third, and given strong increases in public expenditure ratios in the crisis, timely fiscal exit strategies need to bring these down to sustainable levels so as to regain fiscal sustainability and to create an environment conducive to consolidation and growth.

> *"Even the most practical man of affairs is usually in the thrall of the ideas of some long-dead economist".* J.M. Keynes
>
> *"Today, the long-dead economist is Keynes" [...] "The policy mistake has already been made – to adopt the fiscal policy of a world war".* N. Fergusson, *Financial Times,* 30/31 May 2009

1 Introduction

The financial crisis has changed both the intellectual environment and the outlook for fiscal policies strongly. Before the financial crisis, the consensus appeared to be that discretionary fiscal policies were normally not desirable for demand management (ECB, 2002). Automatic stabilisers in Europe were seen to be large and better targeted and timely for this purpose. Discretionary policy changes would be applied to attain consolidation objectives – which were to be in line with the SGP and structural changes which aimed to boost growth.

With the intensification of the financial crisis in autumn 2008, a renaissance of Keynesian thinking gripped not only much of the economic profession but also many policy makers of all colours. The crisis was declared a demand shock which was argued to require a demand stimulating response (Freedman *et al.*, 2009). While the duration of the renaissance in Keynesian thinking is unclear the much-deteriorated outlook for fiscal sustainability associated with it is certainly a huge challenge for many years to come.

The quick succession of concerns about the economic meltdown followed by concerns about too early or too late fiscal consolidation drowned out a number of very important questions for the handling of this crisis and beyond: what role have fiscal policies played in the boom period and what can be learned? Have fiscal responses in the crisis been adequate and really addressed the key issues? And, on this basis, what should fiscal exit strategies take into account? These are the questions that this study focuses on. Activism, first, refers to active fiscal policy interventions (as opposed to automatic stabilization) that change the fiscal stance with the objective of fiscal

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expansion and consolidation.[1] Second, I will also call activism those fiscal policies that aim to preserve fiscal sustainability given uncertainty about the economic situation and outlook in real time. The study focuses mainly on euro area countries but occasionally also makes reference to and comparisons with other advanced economies.

While the study aims to provide positive analysis, the objective is distinctly normative. Moreover, technical sophistication and depth is sacrificed to allow a broad coverage of the subject within the scope of one paper. The study argues, first, that fiscal policies were overly imprudent in the boom-phase, partly due to real time measurement problems. Second, in the bust phase, analysis into the roots of the crisis should have been deeper and too much emphasis was placed on the need for (activist) fiscal demand support. Although the balance sheet nature of the crisis was little acknowledged, significant fiscal measures to support balance sheets were introduced. Little attention has so far been paid to the fiscal dimension of restructuring of sectors and downscaling of demand that had reached unsustainable dimensions in the boom. Third, fiscal exit strategies are being prepared and implemented in light of unsustainable fiscal balances. However, attention is only slowly focussing on the underlying strategy and this study argues the case for expenditure reform.

The study draws three lessons for activist fiscal policies: first, apply prudent expenditure policies during boom years and improve the measurement of the fiscal stance. Second, target fiscal policies to the true causes of a crisis: support demand via fiscal stimulus only during the deep crisis phase and only to the extent that it does not reflect a correction of excess demand in the boom; help balance sheet repair; and allow the adjustment of unsustainable boom structures. Third, do not procrastinate in correcting fiscal imbalances and focus on reverting unsustainable expenditure ratios. This would contribute to a virtuous cycle of more economic dynamism facilitating fiscal adjustment and balance sheet repair.

2 Fiscal activism in the boom period

The experience of the past economic boom suggests that the main challenge for fiscal policies in good times lies in preventing an imprudent expansionary fiscal stance. This is, first, because the measurement of the cyclically-adjusted balance and its change tend to suggest an overly favourable underlying position and an adjustment mirage. Second, this and the strong growth during the boom which can persist much longer than during normal business cycle upturns, tempts policy makers to decide on an expenditure path that looks broadly reasonable *ex ante* but proves unsustainably expansionary *ex post*.

2.1 Measurement problems in the boom

In order to decide on the appropriate degree of fiscal activism or automatism, the economic and fiscal position in the business cycle and the impact of the cycle on the fiscal balance need to be known. This, however, is a major challenge (Cimadomo, 2008). First, especially the end of a boom period tends to be characterised by significant downward revisions in the output gap as subsequent busts/downturns are never anticipated. This is illustrated in Table 1 which reports estimates of output gaps for 2007, the final boom year. In real time (Autumn 2007), the output gap was seen as broadly closed in the euro area. Several countries, such as Spain, Ireland or the UK, were seen as having a slightly negative gap even after a decade of boom. The experience of the financial crisis

[1] Recall that automatic stabilizers lead to changes in the deficit mainly as a result of "automatic" changes in revenue over the cycle rather than active or discretionary policy decisions. They leave the underlying balance unchanged.

Table 1

Output Gap and Cyclically-adjusted Balance for Different Vintages

Country	a) Output Gap		b) Cyclically-adjusted Balance	
	Autumn 2007	**Autumn 2009**	**Autumn 2007**	**Autumn 2009**
Belgium	–0.2	2.4	–0.2	–1.5
Spain	–0.5	1.5	2.0	1.2
Germany	0.3	2.7	–0.1	–1.2
Italy	–0.8	2.8	–1.9	–2.9
France	–0.3	1.9	–2.4	–3.6
Portugal	–1.7	0.6	–2.2	–2.8
Nederlands	–0.4	2.8	–0.2	–1.3
Austria	0.4	2.5	–1.0	–1.7
Ireland	–0.7	4.9	1.2	–1.7
Finland	0.4	4.6	4.4	2.9
Luxembourg	0	5.3	1.2	1.0
Greece	1.3	3.4	–3.4	–5.1
Slovenia	0.9	5.5	–1.1	–2.6
Cyprus	–1.1	1.9	–0.6	2.6
Malta	–0.6	1.3	–1.6	–2.6
Slovakia	1	7.5	–3.0	–4.0
Euro Area	**–0.2**	**2.5**	**–0.7**	**–1.8**
United Kingdom	–0.1	2.6	–2.7	–3.8
EU27	–0.1	2.7	–1.0	–2.1

Source: European Commission, *Autumn 2007* and *Autumn 2009 Forecasts*.

changed this picture dramatically and the euro area was seen to have had a positive output gap of 2.5 per cent in 2007 from the perspective of the autumn 2009 forecast. Revisions for Ireland exceeded 5 percentage points and for some others 3 percentage points of GDP. This is the result of an overestimation of trend growth during the boom years.

The revision of output gaps coincided with a revision in cyclically adjusted balances. While the euro area was seen only in slight deficit (–0.7 per cent) in 2007 for 2007, the underlying balance was seen at –1.8 per cent two years later. The change is around 1 percent for most countries and almost 3 percentage points for Ireland. If this mis-measurement had not occurred, the riskiness of the pre-crisis fiscal position would have been apparent and would have suggested action much earlier.[2]

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[2] A first glance at Commission data and a simple OLS regression for EU countries suggests a correlation between output gap revisions and macroeconomic imbalances (as reflected by the current account or the size of the construction sector). Dependent variable: output gap revisions between autumn Commission vintages for 2007 and 2009. Independent variables: a 1 percentage point higher (share in construction/percent of GDP; current account deficit) in 2007 suggests an output gap revision of (1/3 percentage points, 0.2 percentage points).

The measurement problem of the output gap has been made worse by another, by now well-known, problem that concerns the measurement of the elasticity of the cyclically sensitive revenue and expenditure items. As early as 2002, Eschenbach and Schuknecht argued that in boom periods the elasticity of revenues can be much higher than expected if stock market or real estate price gains result in extra revenue from wealth effects on consumption, valuation gains notably in corporate balance sheets or higher asset market turnover. Jaeger and Schuknecht (2004/2007) found that the budgetary elasticity to GDP changes during asset price boom and bust periods is on average twice as high as during more normal times. In the meantime, many further studies on this matter have emerged and broadly confirmed that the related revenue windfalls in booms can result in a consolidation mirage (e.g., Girouard and Price, 2004; Kremer *et al.*, 2006; Morris and Schuknecht, 2007; Martínez Mongay *et al.*, 2007; European Commission, 2009; Tagkalakis, 2009). By the same token, in a bust "unexpected" revenue shortfalls can make the deficit deteriorate much faster and the cyclically adjusted balance worsen much more than discretionary measures would have suggested.

This assessment is broadly confirmed by econometric estimates of asset price related revenue elasticities for the euro area and a number of its member countries as reported in Table 2, by Morris and Schuknecht (2007). In 2002, for example, conventional calculations of the change in the cyclically adjusted balance would have suggested a loosening while an asset price adjusted calculation suggests a tightening in several countries and for the euro area as a whole.

2.2 Expenditure trends in the boom

If trend GDP growth, the underlying fiscal balance and adjustment efforts tend to be overestimated in booms it is no surprise that governments get tempted into expenditure trends that are seen as "reasonable" and in line with "automatic stabilisation" *ex ante* while proving destabilizing *ex post*. A simple simulation can illustrate this point. Assume a "light" business cycle as in scenario 1 of Table 3 (average growth of 2 per cent with 3 per cent during the upswing and 1 per cent in the downturn). Revenue is assumed to grow in line with GDP. If automatic stabilizers are allowed to operate and, as assumed here, expenditure growth simply follows trend growth, the expenditure and balance ratio would rise and fall symmetrically over the cycle. However, if as in scenario 2, the economic upswing leads to stronger revenue growth and governments believe that revenue and trend GDP growth have increased permanently they would also argue that a higher spending growth rate can be maintained. If this assumption on growth and revenue turns out to be an error, two things happen: the expenditure ratio at the end of the upswing remains higher than warranted, revenue windfalls would reverse more strongly than anticipated during the downturn. This, in turn, would result in a worse fiscal balance and higher expenditure ratio at the end of a full cycle as reflected in the second scenario. With such a policy error in the boom, a return to the starting fiscal position at the end of the full cycle would then require pro-cyclical tightening in the downward phase.

The second simulation scenario illustrates the experience of several euro area countries over the pre-crisis boom period rather well. Real expenditure growth for the average of the area and several countries was well above trend growth for the 2000-07 period (Table 4). Just to illustrate, a 1 percent higher annual expenditure growth for an expenditure ratio around 45 per cent of GDP for a period of seven years makes a difference of about 3 per cent of GDP in the expenditure ratio at the end of this period. For the euro area average, the excess expenditure growth was perhaps half that figure.

The relatively strong expenditure growth in the boom years reflects underlying policy decisions. Public wages, for example, grew very strongly in a number of countries in the boom and notably in Ireland and Greece but also in Spain, Luxembourg and Portugal. These growth rates were much above the euro area average and above private wage growth in these countries

Table 2

Impact of Asset Prices on Structural Budget Balances
(percent of GDP)

a) Change in Cyclically-adjusted Balance

Year	Belgium	Germany	Spain	France	Ireland	Italy	Neth'nds	Finland	Euro Area
1999	–0.38	0.54	1.18	0.36	–0.79	0.83	0.47	0.05	0.51
2000	–0.19	–0.54	–0.29	–0.50	1.17	–1.27	0.46	4.74	–0.42
2001	0.98	–1.58	0.46	0.07	–3.12	–1.23	–1.00	–1.28	–0.70
2002	–0.08	–0.24	0.68	–1.06	–1.06	0.71	–0.49	0.01	–0.12
2003	0.55	0.28	0.62	–0.50	1.60	–0.08	–0.21	–0.83	0.03
2004	–0.52	0.13	0.14	0.45	1.75	0.15	1.24	–0.32	0.23
2005	–1.70	0.65	1.47	1.16	–0.15	–0.04	1.72	0.45	0.67

b) Change in Cyclically-adjusted Balance Net of Asset Price Effects

Year	Belgium	Germany	Spain	France	Ireland	Italy	Neth'nds	Finland	Euro Area (1)	Euro Area (2)
1999	–0.25	0.20	0.88	–0.09	–1.28	0.68	–0.33	–0.38	0.18	0.20
2000	–0.05	–0.70	0.00	–0.64	1.11	–1.56	–0.04	2.41	–0.62	–0.61
2001	1.69	–0.92	1.19	0.59	–2.23	–1.00	–0.25	–2.40	–0.17	–0.27
2002	0.43	0.26	1.12	–0.66	–0.65	0.71	0.19	2.25	0.21	0.26
2003	0.35	0.14	0.03	–0.73	1.29	–0.31	–0.08	–0.08	–0.12	–0.15
2004	–1.27	0.11	–0.53	0.23	1.50	–0.05	1.38	–0.30	0.07	0.08
2005	–1.91	0.40	0.70	0.98	–0.31	0.05	1.45	0.38	0.44	0.47

Sources: Morris and Schuknecht (2007).
(1) Estimated.
(2) Weighted average of country estimations.

(Table 5). Public employment was also imprudently buoyant in the boom years, notably in Spain, the Netherlands and Ireland (Table 6).

As a result of these trends, public expenditure ratios in the later boom years changed very little in the euro area, except for Germany (Table 7). A number of countries even saw their expenditure to GDP ratio rise, notably Ireland. But many countries did not experience a decline in

Table 3

Simulation of Revenue, Expenditure and Fiscal Balance Ratios to GDP

Scenario 1: Normal Cycle

Time		1	2	3	4	5	6	7	8	9
Growth Y		2%	3%	3%	3%	2%	1%	1%	1%	2%
Growth T		2%	3%	3%	3%	2%	1%	1%	1%	2%
Growth G		2%	2%	2%	2%	2%	2%	2%	2%	2%
Rev. ratio	45	45	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0
Exp. ratio	45	45	44.6	44.1	43.7	43.7	44.1	44.6	45.0	45.0
Def. ratio	0	0	0.4	0.9	1.3	1.3	0.9	0.4	0.0	0.0

Scenario 2: Revenue Cycle cum Expenditure Acceleration

Time		1	2	3	4	5	6	7	8	9
Growth Y		2%	3%	3%	3%	2%	1%	1%	1%	2%
Growth T		2%	4%	4%	4%	2%	0%	0%	0%	2%
Growth G		2%	2%	3%	3%	3%	3%	3%	3%	3%
Rev. ratio	45	45	45.4	45.9	46.3	46.3	45.9	45.4	45.0	45.0
Exp. ratio	45	45	44.6	44.6	44.6	45.0	45.9	46.8	47.7	48.2
Def. ratio	0	0	0.9	1.3	1.8	1.3	0.0	–1.4	–2.8	–3.2

Table 4

Real Expenditure Versus Trend GDP Growth

Country	2000-05	2006	2007	2008	2000-05	2006	2007
	Real Expenditure Growth				Trend GDP Growth		
Spain	4.1	4.1	3.3	2.5	3.2	2.2	1.8
Germany	0.8	0.5	1.9	1.5	1.2	0.9	0.9
Italy	2.7	1.8	2.4	2.8	1.1	0.5	0.3
France	1.9	2.4	2.5	2.5	1.9	1.5	1.3
Netherlands	3.1	1.8	1.6	2.7	2.2	1.7	1.7
Austria	1.6	1.6	2.1	2.0	2.1	1.8	1.6
Ireland	3.9	3.5	1.3	–1.2	5.9	3.0	2.1
Greece	3.3	3.1	3.0	3.5	3.7	3.0	2.6
Euro Area 12	**2.1**	**1.9**	**2.3**	**2.2**	**1.8**	**1.3**	**1.1**

Source: Ameco, Autumn 2009.

the expenditure ratio commensurate with the economic environment and the operation of automatic stabilisers.

An important reason for imprudent expenditure trends in the euro area were not *ex ante* plans but slippages in the budget execution. On average, public expenditure in the euro area increased by more than 0.5 per cent faster than planned between 1999 and 2007 for the average of the euro area (Figure 1). This may reflect two important factors: first, plans may not have been consistent with commitments arising from policy choice. Second, slippages may also reflect poor budget execution due to weak expenditure rules.

All in all, measurement problems and expenditure developments are the main reason for a relatively weak starting position of public finances in the euro area before the crisis struck. The average euro area deficit ratio still posted a deficit in 2007 and the public debt ratio in the euro area only improved by 8 percentage points since the mid-1990s peak of 74 per cent of GDP and by 3 percentage points between 2003 until 2007 when it stood at 66.4 per cent of GDP. In fact, public debt has been rising much more

Table 5

Compensation per Public and Private Employees, 1999-2008
(accumulated percent growth in nominal terms)

Country	Compensation per Government Employee	Compensation per Private Employee	Compensation per Employee, Total Economy
Euro Area 12	**35.3**	**23.7**	**25.3**
Belgium	38.2	31.5	33.0
Germany	16.6	12.2	12.4
Ireland	99.4	70.5	76.6
Greece	107.3	74.1	79.5
Spain	51.9	27.7	36.5
France	32.0	32.7	32.4
Italy	41.8	24.9	27.9
Luxembourg	53.7	37.7	38.7
Netherlands	33.2	40.8	39.5
Austria	28.4	25.7	25.0
Portugal	52.2	38.4	40.1
Finland	41.6	39.3	40.0

Source: OECD (2009), *Economic Outlook Database*, November.
Missing government employment data for Germany, Greece and Austria have been taken from the Spring 2006 (1998, 1999) and Spring 2007 (2000-06) issues.

Table 6

Public Employment in Selected OECD Countries
Public Employment Growth
(percent)

Country	1991-1999	1999-2007
Spain	16.5	36.8
Germany	–12.7	–5.4
Italy	–3.2	2.3
France	5.6	7.0
Nederlands	–0.6	13.1
Austria	–3.0	–5.9
Ireland	8.9	46.5
Euro Area 12	**–0.1**	**7.3**
United Kingdom	–10.2	14.1
United States	9.5	9.4
Japan	5.0	–1.3

Source: OECD (2009), *Economic Outlook Database*, November.

Table 7

Public Expenditure Developments in Selected Countries, 2004-07
(percent of GDP)

Country	2004	2007
Belgium	49.3	48.4
Germany	47.1	43.7
Ireland	33.5	38.4
Greece	45.5	44.1
Spain	38.9	39.2
France	53.2	52.3
Italy	47.7	47.9
Netherlands	46.1	45.5
Portugal	46.5	45.7
Finland	49.9	47.3
Euro Area 12	**47.6**	**46.1**
Sweden	55.3	52.5
United Kingdom	42.9	44.0
Japan	37.0	36.0
United States	36.0	36.7

Source: European Commission, Autumn 2009.

strongly in downturns than it has been falling in upswings for the past three decades (Figure 2).

The lesson of this experience is twofold. First, the measurement of the underlying fiscal balance and stance needs to improve. Additional indicators to check the robustness of output gap estimates such as current account imbalances, capacity utilization or real estate prices and the inclusion of further variables such as asset prices in the stance measurement may be considered. Several of the quoted studies have pointed to ways to improve the measurement of the fiscal stance.

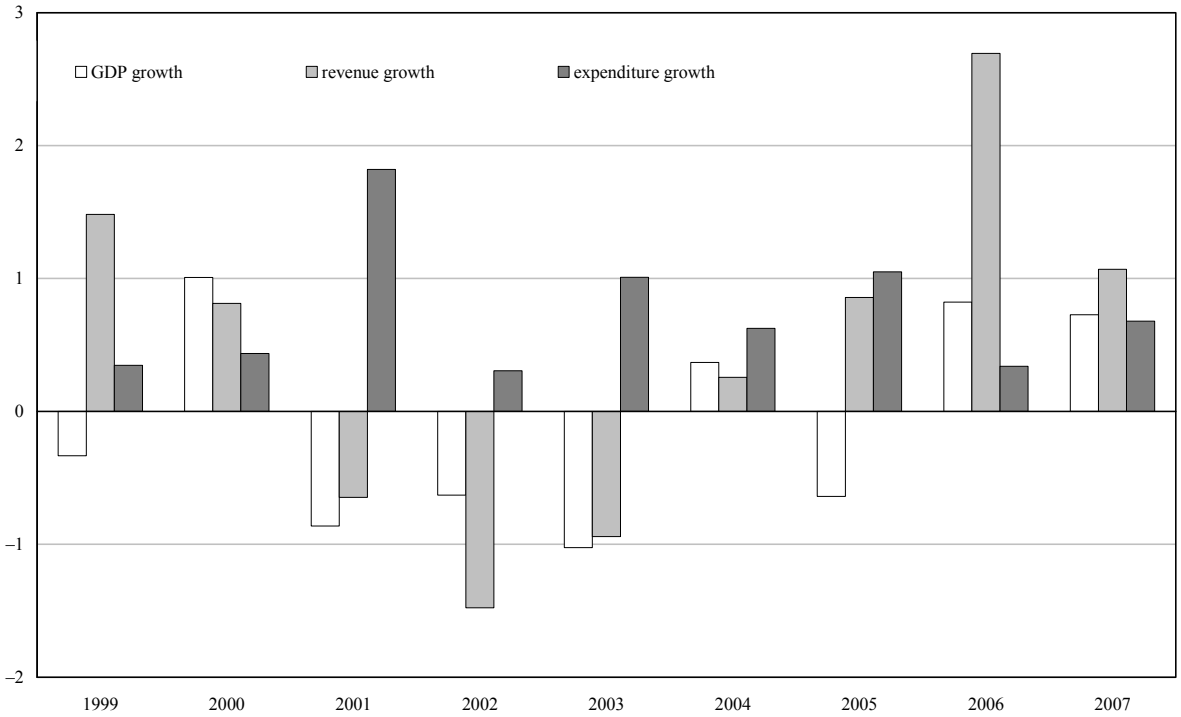
Second, and given that measurement problems can probably not be excluded in the future, it is advisable to follow what I would call "activist prudence" in good times. This should ensure that expenditure dynamics remain sustainable which, in turn, helps mitigate the risk of unsafe positions at the end of a boom. Three elements are important to consider: i) trend growth assumptions need to be prudent and the baseline expenditure scenario should be built on this (any expenditure consolidation needs should then be deducted from this scenario); ii) expenditure commitments need to be consistent with the desired expenditure growth path and policy changes should be implemented where needed (Tanzi and Schuknecht, 2000); and iii) expenditure rules may need to be improved if slippages are the result of undue leeway in budget execution (European Commission, 2007). Automatic stabilizers may then normally operate more "safely" around the resulting spending and deficit path.

3 Fiscal activism in the crisis

The experience of the financial crisis suggests two main questions which could have been examined with more care from the outset: i) what is the underlying problem of the steep decline in demand in late 2008 and how much of that should be addressed by what type of fiscal policy? And ii), how much deterioration of the fiscal balance can and should we afford from a short and long term perspective. This study will only deal with the first issue in detail. I will argue that indeed there appears to have been a Keynesian-type demand shock after the Lehmann default. However, too much attention has been focussed inappropriately on the demand-stimulating role of fiscal activism. The crisis was and is mainly a balance sheet crisis where excessive private debt accumulation (to finance excess private demand in the boom) had to be followed at some point by a phase of more subdued demand so as to allow balance sheet repair. Moreover, the boom period

Figure 1

Deviations from Stability Programme Targets
(Euro Area 12 Aggregate)
(annual percentage points)

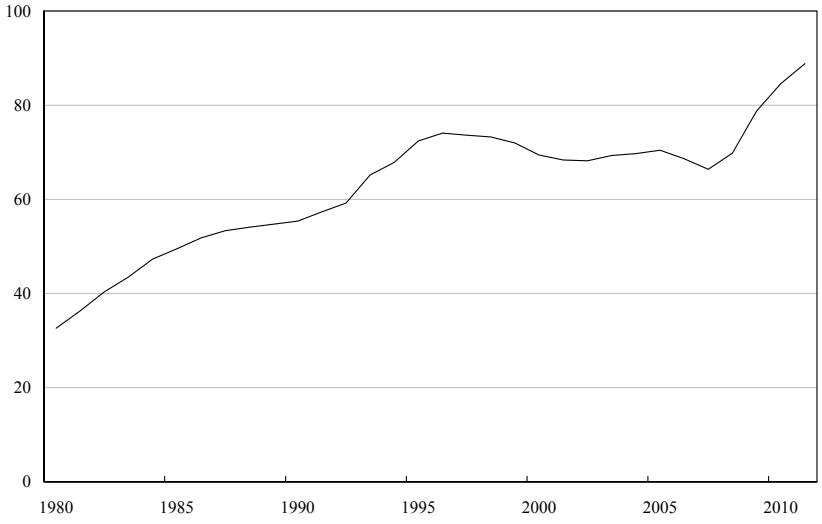


Sources: AMECO, Stability programmes and ECB calculations.

with excess demand "naturally" resulted in excess supply in the "profiting" sectors, in particular construction/real estate and finance. On this basis one could have argued for fiscal activism to support balance sheet repair and the structural rebalancing of economies. But on the demand side, the issue is complex and the Keynesian argument for more stimulus is countervailed by the structural argument of lower equilibrium output and demand.

Figure 2

Public Debt Developments in the Euro Area, 1980-2011
(percent of GDP)



Source: AMECO (based on the European Commission 2009 Autumn forecast).

Table 8

Fiscal Deficit Changes in the Financial Crisis in the EU and Euro Area

Aggregate	Total Change in the Deficit with Respect to Previous Year	*of which:*			
		Cyclical Effect	Budgetary Impact Discretionary Measures	Residual Change in the Primary Cyclically-adjusted Balance	Budgetary Impact Change in the Interest Expenditure
2009					
EA-16	–4.4	–2.4	–1.1	–0.9	0
EU-27	–4.6	–2.4	–1.3	–1.0	0
2010					
EA-16	–0.5	0.0	0.1	–0.3	–0.2
EU-27	–0.6	0.0	0.2	–0.4	–0.2
2011					
EA-16	0.4	0.2	0.4	0.0	–0.2
EU-27	0.6	0.2	0.4	0.2	–0.2

Source: European Commission, Autumn 2009 Forecast.

3.1 The Keynesian crisis (phase)

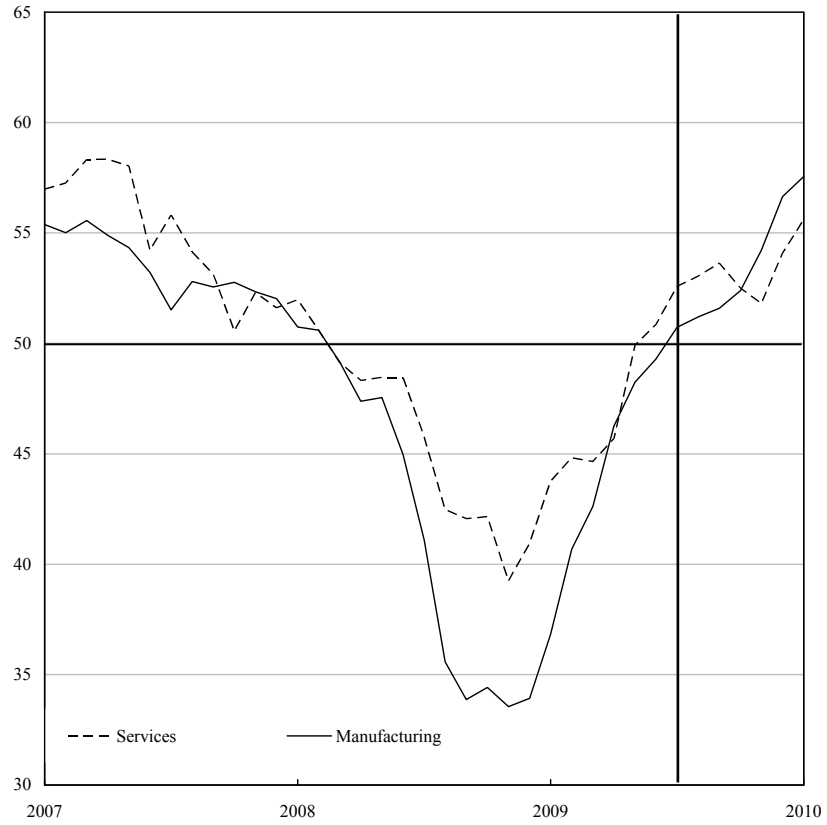
In the autumn of 2008, after the collapse of Lehman, calls for activist fiscal policies emerged very quickly. In retrospect, the concerns about the demand outlook underlying these calls appear at least partly justified. Euro area GDP fell by almost 2 per cent in the fourth quarter of 2008 and by another 2.5 per cent in the first quarter of 2009. The European Commission called for activist measures to be targeted, temporary and timely (TTT) so as to minimise the risk of repeating the mistakes of the seventies and early 1980s when fiscal activism was often late (and hence pro-cyclical), poorly targeted and non-reversible, thus leading to a permanent worsening of fiscal balances and structures. Moreover, it was pointed out that large automatic stabilisers in Europe were already contributing significant support to demand.

Table 8 shows that of the likely worsening of the fiscal balance in 2009 by about 4.5 per cent of GDP more than half came from automatic stabilizers (cyclical effect) and another quarter from the reversal of revenue windfalls discussed in the previous section (part of "residual change"). Only one quarter was due to discretionary fiscal loosening. However, this assessment hinges on the fact that there will be no major further *ex post* downward revisions of the output gap and trend growth during the crisis which would drive up the discretionary component of the budget deterioration.

With this caveat in mind and while it is too early to come to an overall judgement, the strong role of automatic stabilizers for boosting demand appears appropriate from this perspective. One could probably also argue for a discretionary fiscal demand boost during the immediate deep crisis phase from a demand management perspective.

Figure 3

Purchasing Managers' Indices (PMIs) for the Euro Area
(monthly data, seasonally adjusted)



Source: Markit.

But there are several reasons to be sceptical about the overall fiscal strategy pursued. The deep crisis phase when arguably a demand and confidence boost was warranted only lasted a short period. Already in the second quarter of 2009, survey indicators pointed to much less negative growth in real time and positive growth (as later confirmed) resumed in the third quarter in the euro area (Figure 3). Further arguments relate to political economy factors as experienced in the 1970s. First, little analysis was undertaken as to where and how much demand short-fall was emerging. Consequently, targeting was partly poor. In Germany, for example, a demand shock in the export sector was met with an investment programme directed at a construction sector that was fully employed. Stimuli were also captured by special interests that would not have stood a chance in normal times. VAT reduction for German hoteliers may be an example. Second, in many instances, timing was poor and much of the stimulus took time to take effect. In fact, in countries such as the Netherlands, Germany or Austria, the fiscal stimulus continued well into 2010 when activity has already been recovering for quite some time. Third, a number of countries also introduced measures that are hard to reverse such as public wage or benefit increases. Immediate tax rebates, VAT cuts and to a certain extent also car wrecking premia may have been the best measures from a TTT perspective.[3]

Moreover, it may turn out that part if not much of the demand fall in the crisis was not a negative demand shock but the reversal of excess demand during the boom linked to unsustainable wealth effects in many countries cum a supply shock due to mis-allocated resources. Then perhaps activist demand stimulation or even the full operation of automatic stabilisers would not have been justified and certainly not for the time after the deep crisis phase. This issue will be discussed in more detail in Section 3.3.

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[3] There are also substantial knowledge gaps as regards size and functioning of fiscal multipliers. This makes it very difficult to deliver well-targeted fiscal stimulus measures (Bouthevillain *et al*., 2009).

3.2 The balance sheet crisis

A main cause of the financial crisis was growing leverage in the private sector in the boom years. Rising asset prices and wealth allowed rapid consumption and debt growth. Figure 4 on household and corporate debt developments in a selection of industrialized countries illustrates the growing indebtedness, except in Japan and Germany. Ultimately, however, asset prices started to reverse on the back of housing over-supply and debt overhangs emerged. Part of the crisis-related slump in consumer, investment and credit demand can in fact be related to the desire by agents to deleverage and reduce their own default risk after they recognised that real estate prices were not sustainable and, thus, debt too high. However, notably after the Lehman default this risked to become a disorderly process with a financial-economic downward spiral.

Governments responded swiftly to this impending risk of a downward spiral of financial and non-financial bankruptcies and balance sheet repair-induced demand loss. After the insurance of most or all deposits, governments introduced guarantee schemes, injected capital and took a number of other measures to secure the stability of the financial system. The impact of these measures on public debt was important. It averaged 3.5 per cent GDP for the euro area and much more in some countries by mid 2009. In addition, contingent liabilities with a ceiling of about 20 per cent of GDP for the euro area were accumulated (Table 9).[4]

Further ad hoc measures were introduced in many countries to support balance sheets and reduce the risk of disorderly deleveraging in the private non-financial sectors (households and corporations): governments "organised" mortgage loan rescheduling, deferral of payments, lending programmes for the unemployed and guarantee and credit programmes for corporations. These programmes provided balance sheet support to households and corporations and prevented bankruptcies and fire-sales of assets. Tax cuts and rebates probably also reduced household balance sheet problems indirectly (even though they had a more Keynesian motivation).

The magnitude of the debt overhang at the time of writing of this study is not known. However, the huge magnitude of losses that accumulated in the financial sector as the crisis unfolded is an indication (Figure 5). Moreover, significant balance sheet problems remained at the time of writing of this study and significant further financial sector losses were seen to be in the pipeline (Table 10). At the end of 2009, the household debt to disposable income ratio only stabilised at a very high level in the euro area (Figure 6).

Abstracting from any potential "collateral damage" via more moral hazard, less competition and special interest capture of the support, the government role in mitigating balance sheet risks and preventing disorderly balance sheet adjustment can probably be called rather successful. Although no "scientific" assessment is yet available, the speedy and targeted action is likely to have prevented a much deeper financial and economic crisis.

3.3 The "crisis" of economic structures: adjusting excess supply and demand

Finally, the importance of excess demand and structural resource mis-allocation in the boom phase is relevant for evaluating the fiscal policy response to the crisis (see also Tanzi, 2009). A number of countries experienced a strong expansion of certain sectors in the boom. If such expansion turns out unsustainable, a significant physical and human capital re-allocation and a downward shift in the level of potential output would be implied. At the same time, demand levels in the boom phase may have been exaggerated and unsustainable. In fact, this is the origin of the

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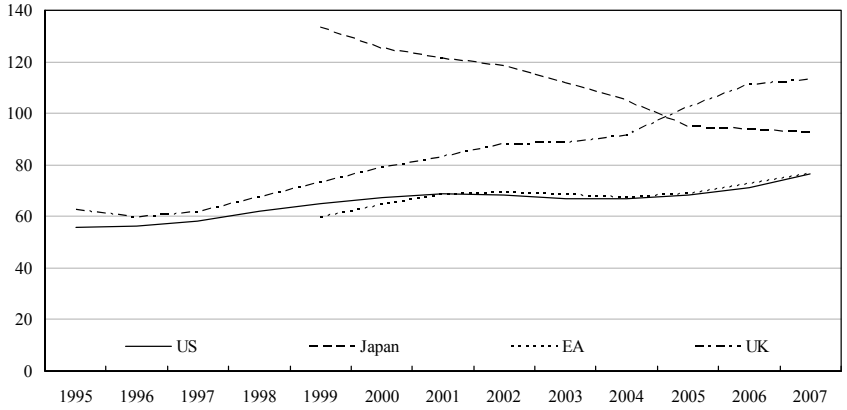
[4] These measures were complemented by liquidity enhancing measures, interest rate cuts and further enhanced credit support measures by the European Central Bank.

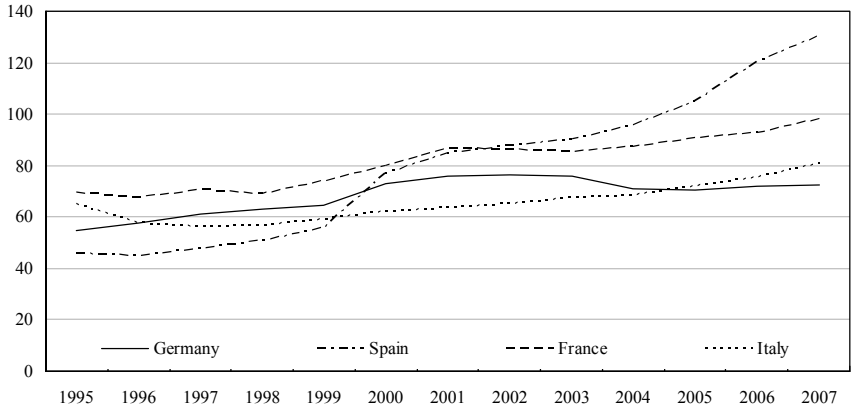
Figure 4

Household and Corporate Debt

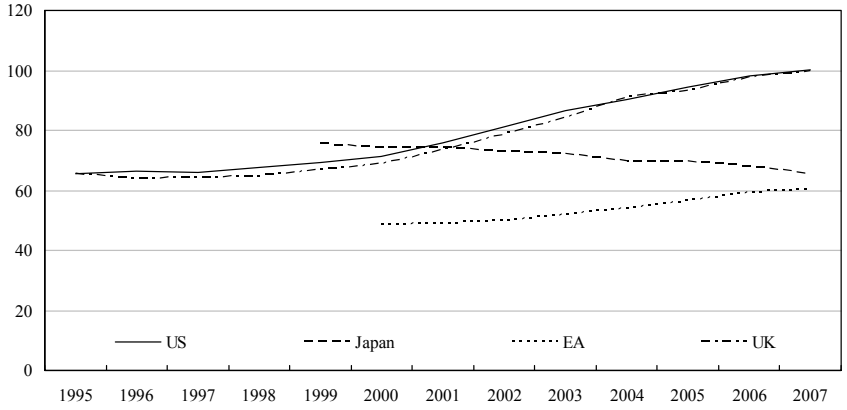
Debt of Non-financial Corporations
(percent of GDP)



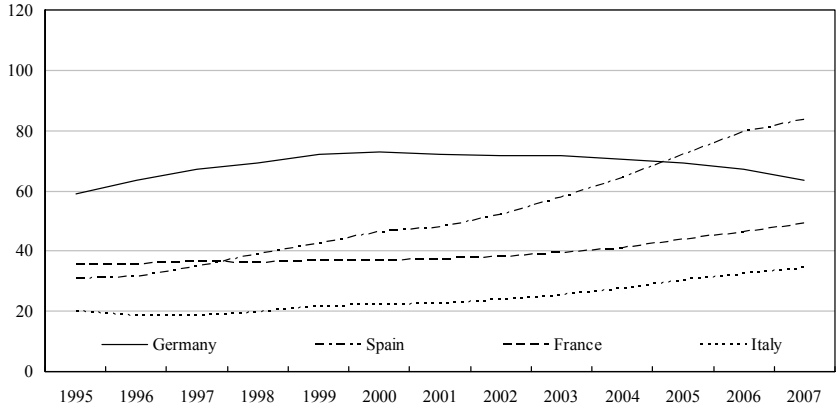
Debt of Non-financial Corporations
(percent of GDP)



Debt of Households
(percent of GDP)



Debt of Households
(percent of GDP)



Source: ECB.

Table 9

Cumulative Financial Sector Interventions and Fiscal Impact, 2008-09
(percent of 2009 GDP)

Country	Type of Intervention							Fiscal Impact		
	Guarantees	Capital Injections		Asset Purchase	Asset Swaps / Asset Lending	Debt Assumptions / Cancellations	Other Measures	Government Debt	Government Contingent Liabilities	
		Acquisition of shares	Loans						Provided	Ceiling
Belgium	21.0	4.0	2.1	0.0	0.0	0.0	0.0	7.4	21.0	34.6
Germany	6.3	1.3	0.0	1.7	0.0	0.0	0.0	2.9	6.3	18.7
Ireland	214.8	4.2	0.0	0.0	0.0	0.0	0.0	4.2	214.8	242.0
Greece	0.6	1.6	0.0	0.0	1.8	0.0	0.0	1.6	0.6	6.1
Spain	3.1	0.0	0.0	1.8	0.0	0.0	0.0	1.8	3.1	18.9
France	1.1	0.8	3.2	0.0	0.0	0.0	0.0	4.1	1.1	16.8
Italy	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cyprus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Luxembourg	12.8	8.3	0.0	0.0	0.0	0.0	0.0	8.3	12.8	0.0
Malta	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Netherlands	5.0	6.5	7.6	3.9	0.0	0.0	0.2	18.2	5.0	35.0
Austria	6.6	1.7	0.0	0.0	0.0	0.0	0.0	1.7	6.6	27.8
Portugal	3.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8	12.4
Slovenia	0.0	0.0	0.0	0.4	0.0	0.0	3.6	4.0	0.0	33.2
Slovakia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Finland	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	28.1
Euro area	**7.5**	**1.3**	**1.2**	**0.9**	**0.0**	**0.0**	**0.0**	**3.4**	**7.5**	**19.9**

Source: ECB Monthly Bulletin, July 2009.

Table 10

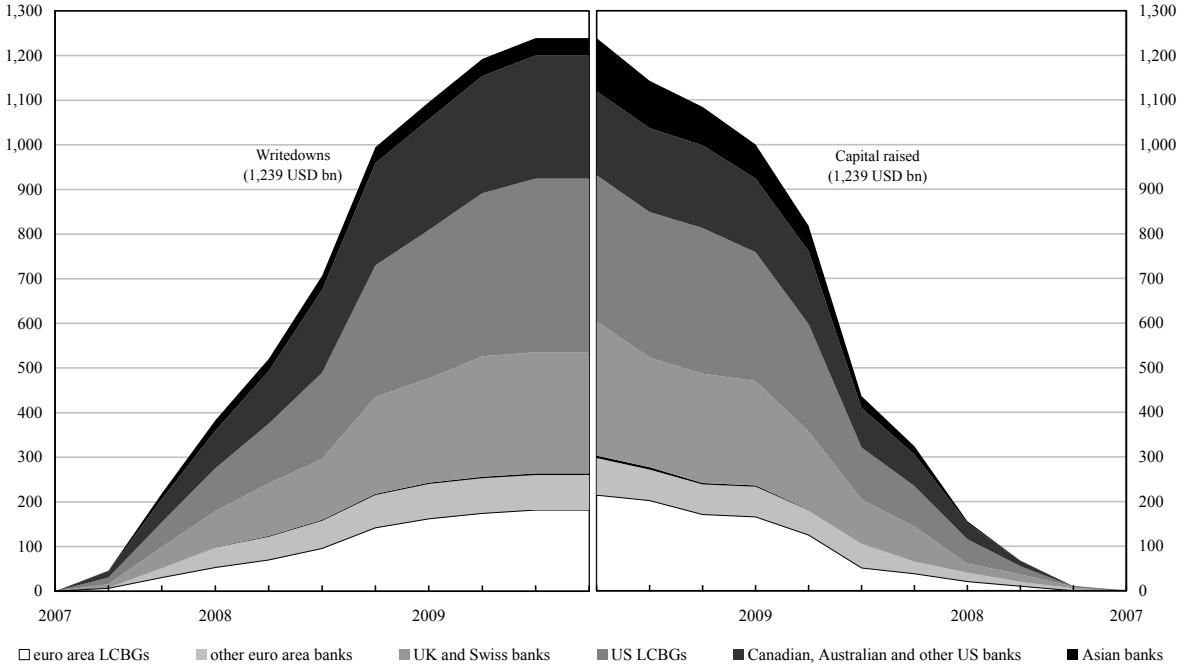
Expected Financial Sector Losses

	Estimated Exposure	Implied Write-downs 2009 December FSR	Estimated Loss Rate *(percent)*
Cash and synthetic structured credit securities	1,122	169	15.1
Other security holdings	1,717	28	1.6
Loans	11,424	355	3.1
Total	**14,263**	**553**	**3.9**

Source: ECB, Financial Stability Report, December 2009.

Figure 5

Financial Sector Writedowns

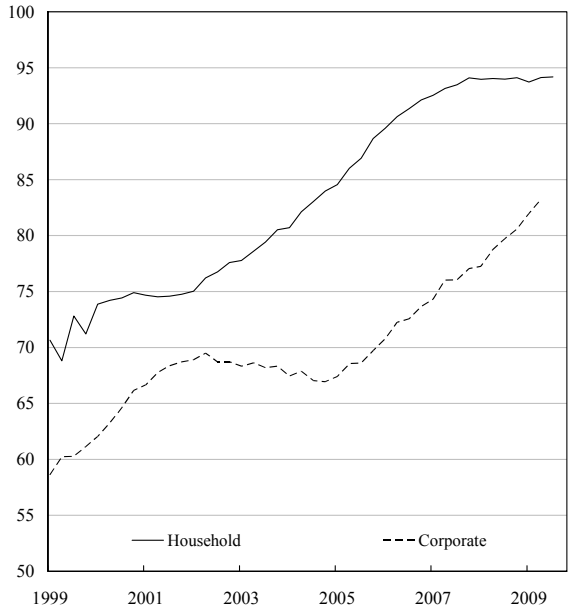


Source: ECB (2009), *Financial Stability Report*, December.

Figure 6

Household and Corporate Indebtedness

(percent of gross disposable income for households, of GDP for corporations)

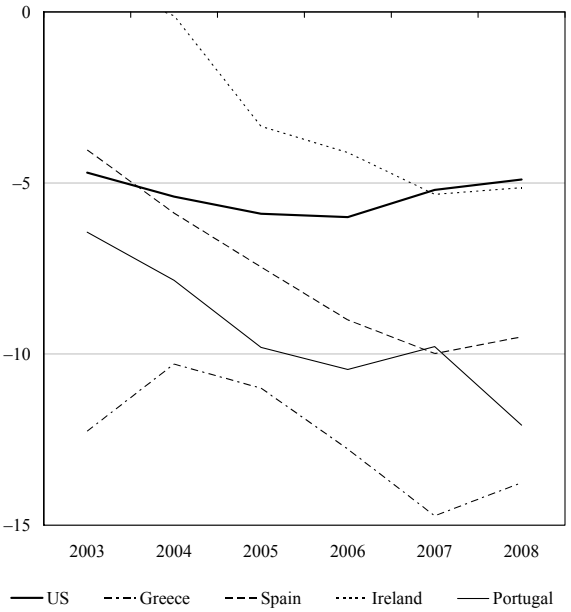


Sources: ECB and Eurostat.

Figure 7

Current Account Imbalances, Selected Countries

(percent of GDP)



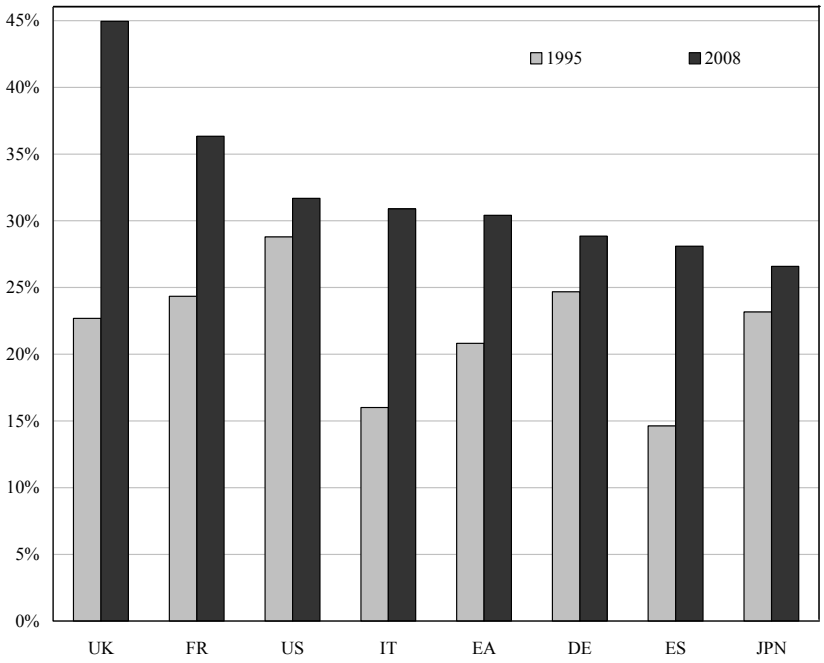
Source: European Commission, Ameco, Autumn 2009.

Figure 8

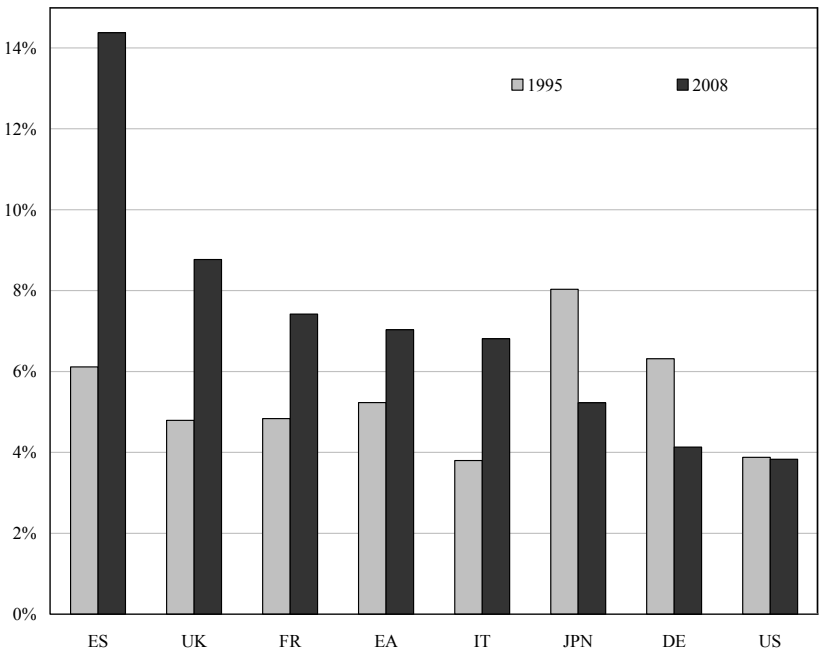
Contribution of Finance and Construction to GDP

(percent of GDP)

Financial Sector



Construction



Source: European Commission, Ameco, Autumn 2009.

private sector debt increase mentioned above. It is also reflected in the large and persistent current account deficits in a number of euro area and other advanced economies (Figure 7).

Current account balances had deteriorated significantly in a number of euro area countries plus some other advanced economies during the boom phase, suggesting excess demand in the economy. In Spain, Portugal and Greece, current account deficits were near or above 10 per cent of GDP towards the end of the upswing.

A cursory look at some structural changes over the boom phase is also worthwhile. Figure 8 reports that a number of countries had seen a major shift in the output composition towards finance (in the broadest sense, including financial services, real estate, renting and business activities) and construction. It is not clear what share of output is sustainable. But it is unlikely that a mature economy with relatively limited growth, an excess housing stock and an aging population (like Spain) can sustain a construction sector much above the average for industrialized countries. This seems to be around 5 per cent of GDP rather

than the 14 per cent reported for Spain in 2008. Similarly, there seems to have been a general relative output shift towards finance with an average around 25-30 per cent. It is not clear that the 45 per cent figure for the UK is sustainable even with London continuing to be a major global financial center.

What would be the implications of this? First, if equilibrium output and demand were lower than the actual level at the end of the boom, the crisis phase may have mainly been an (admittedly very abrupt) correction of imbalances and not a Keynesian demand shock. Second, especially wages and benefits in the private and public sector adjusted little (and as mentioned even at times significantly increased). They will need to adjust to the new demand/supply equilibrium as lower profits can most likely not fully and permanently absorb the adjustment. One could then argue that even the operation of automatic stabilizers may have unduly kept demand at an unsustainable level and delayed economic restructuring, thus, undermining also the path of future output and demand growth.[5] For example, if the fiscal response to the crisis implies continued public wage and benefit growth along the pre-crisis output path this would also push up private wage growth and reservation wages more than sustainable and desirable. This would reduce employment and growth. At the same time, one could also argue that some smoothening of demand and adjustment via fiscal stabilisation was warranted until potential output has caught up again. In particular in countries with significant structural resource re-allocation needs, this would cushion the social costs and support the human capital re-allocation via unemployment benefits, education and retraining.

When seeing the crisis from this perspective, these considerations speak against much of a fiscal stimulus. They would possibly even argue against a far-reaching shielding of much of the population against the impact of the crisis via automatic stabilisers. The risk is great that economic dynamism is reduced and demand is stabilised too much above equilibrium. It would then take a very long time for equilibrium output to catch up with a level of government commitments that can be financed. The consequence is high and persistent deficits and rapidly rising debt. This raises the risk of a public balance sheet crisis (which in fact had already gripped and risked to spill over to others at the time of writing of this study).

Second, the need for economic restructuring is too much on the back burner of the crisis debate. On the supply side, few banks and car factories have so far closed shop in Europe (in contrast to the US where this figure is much larger also due to the earlier start of the crisis). On the other hand, construction firms do not seem to be kept alive and significant bank restructuring is taking place, not least due to the European Commission.

All in all, what are the record and lessons for fiscal activism in this crisis? First, analyse the origins of the crisis properly as this points to the desirable remedies. Second, address the right problem with the right measures in a targeted and timely manner. The record of fiscal activism has been mixed: i) there has clearly been too much emphasis on Keynesian-type demand support and perhaps even for automatic stabilisers; Keynesian support should have probably ended in the summer of 2009 at the latest if warranted at all; ii) governments appropriately supported balance sheet repair even though the balance sheet nature of the crisis was not fully appreciated in many quarters; and iii) there has been little focus on facilitating economic restructuring and too little acknowledgement of the need for a downward adjustment of aggregate demand at least in some countries.

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[5] Koopman and Szekely (2009) provide an excellent overview over the factors that could be detrimental to the recovery of the output level and trend growth. These factors include the locking in of resources in unproductive activities, the disincentives and lack of opportunities to find new jobs (and the related destruction of human capital) or the adverse effect of credit constraints on investment.

4 Fiscal activism beyond the crisis

4.1 Deficit and debt dynamics

In light of the earlier considerations, it is worth taking a closer look at the fiscal fallout of the crisis from two angles: first, what activist policies are needed to return to fiscal sustainability, and second, what should be the underlying strategy, notably as regards expenditure and revenue reform? The first issue can be dealt with very briefly as it has received significant attention elsewhere: it is undoubted that fiscal trends as projected by the European Commission in its autumn forecast would be unsustainable. A deficit ratio between 6.5 and 7 per cent of GDP in 2009-11 on a no-policy-change assumption would bring the average public debt ratio to 90 per cent of GDP in 2011 and on an explosive path. Aging, potential further financial sector bail-out costs due to unrepaired private balance sheets, and lower trend growth would exacerbate this picture. This poses great risks to the long term outlook for fiscal sustainability and would not facilitate the future task of the European Central Bank.[6] Even if debt sustainability concerns can be contained, there is little fiscal leeway for another major crisis if the debt increase of this crisis is not reversed.

It is therefore undoubted that fiscal activism in the coming years means fiscal consolidation: euro area countries need to pursue an ambitious and determined fiscal adjustment strategy. The December 2009 package of Excessive Deficit Procedures under the Stability and Growth Pact for 11 euro area countries required a start of fiscal adjustment in 2010/11 and a correction of excessive deficits in most cases in 2013 (Table 11). On average, annual adjustment efforts would have to be near 1 per cent of GDP. Even if these recommendations were fully implemented, the euro area deficit would fall below 3 per cent only in 2013 and the debt ratio would stabilise near 90 per cent of GDP. A return to pre-crisis debt ratios in the euro area would take until the 2020s. These parameters suggest that the package is ambitious but it is clearly the minimum needed.[7]

Finally, there is the issue of timing. Given fickle markets which can loose confidence very quickly and which have tested a number of governments over the crisis, there is a clear reason to err on the cautious side, notably for large countries. Procrastination would not only result in further debt increases with adverse effects on confidence by the public. A small country can, if needed, be supported by the deep pockets of other governments or the IMF (as in the case of Greece). However, this is most probably not the case for major economies.

4.2 Expenditure dynamics and reform

Finally, and in light of the fiscal outlook, which consolidation strategy should be applied and, more specifically, what role should expenditure and revenue adjustment play? There are three arguments why this can only come through an emphasis on reducing unsustainable expenditure dynamics. First, expenditure reform is needed to correct the increase in relative public and private sector wages over the crisis that would otherwise result in less incentives to work (via higher reservation wages), drawing talent away from the private sector (via higher public wages) and reduce investment (via excessive wages/low profits and disincentives to adjust human and physical capital). When looking at the fiscal balance deterioration of roughly six percentage points of GDP in 2007-10, it is noteworthy that three quarters of this reflects an increase in the expenditure ratio (Table 12). Most of this increase is on government consumption (including public wages) and transfers. These two expenditure categories continued to grow broadly in line with pre-crisis trends

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[6] High public debt ratios also risk undermining automatic stabilisation as rising deficits and debt would be increasingly countervailed by Ricardian saving (Nickel and Vansteenkiste, 2009).

[7] The 2009/10 update of countries' stability programmes is broadly in line with these parameters which is a first good sign, even though in many instances the underlying strategies and measures have not been carefully designed.

while real output is about 3 per cent lower in 2010 than in 2007. This is important because it confirms the earlier conjecture that governments have fully shielded large parts of the population from the impact of the crisis. A return of spending on public wages and transfers to pre-crisis ratios seems, hence, reasonable from a structural and distributional perspective and it would eliminate most of the deficit problem.

The second argument for expenditure-based consolidation derives from the fact that the optimal size of government is much smaller than the average post-crisis spending ratio of over 50 per cent of GDP. This ratio is now near or above its historical record in many euro area and other advanced economies (Table 13). It is much higher than the pre-crisis ratio of about 45 per cent and way beyond the 30-40 per cent ratio that some literature typically sees as necessary to attain core public sector objectives or that attains an optimal degree of stabilisation (Tanzi and Schuknecht, 2000 and 2005; Buti and Van den Noord (2005).

The third argument is linked to revenue developments over the

Table 11

Excessive Deficit Procedures in Euro Area Countries

Country	Budget Balance 2010 *(percent of GDP)*	Consolidation Start	Deadline	Recommended Average Structural Adjustment *(percent of GDP, 2010-13)*
Belgium	–5.8	2010	2012	3/4
Germany	–5.0	2011	2013	≥ 0.5
Ireland	–14.7	2010	2014	2.0
Greece	–12.2	2009	tbd	tbd
Spain	–10.1	2010	2013	1.5
France	–8.2	2010	2013	1.0
Italy	–5.3	2010	2012	≥ 0.5
Malta	–3.0	2009	2010	-
Netherlands	–6.1	2011	2013	3/4
Austria	–5.5	2011	2013	3/4
Portugal	–8.0	2010	2013	1 1/4
Slovakia	–6.0	2010	2013	1.0
Slovenia	–7.0	2010	2013	3/4
Euro area	**–6.9**			

Table 12

Public Spending in the Euro Area, 2007-10

Euro Area 12	2007	2010	2007-2010
Total expenditure ratio	46.1	50.6	4.5
Transfers	15.9	17.8	2.0
Government consumption	20.1	22.0	1.9
Ad memoriam: fiscal balance	–0.6	–6.9	–6.3

Source: European Commission, Ameco.

Table 13

Public Expenditure in the Euro Area in Historical Perspective

(percent of GDP)

Country	Historical peak	Year	2007	2010
Belgium	63.8	1983	48.4	53.8
Germany	50.2	1996	43.7	48.3
Ireland	56.2	1982	38.4	49.1
Greece	46.6	2000	44.1	49.4
Spain	47.6	1993	39.2	45.6
France	55.4	1996	52.3	55.1
Italy	57.7	1993	47.9	50.8
Netherlands	58.3	1983	45.5	50.9
Portugal	47.7	2005	45.7	51.5
Finland	55.4	1996	47.3	55.0
Euro area	**52.0**	**1993**	**46.1**	**50.6**
Sweden	73.0	1993	52.5	55.6
United Kingdom	50.7	1981	44.0	52.1
Japan	41.0	1998	36.0	41.6
United States	37.2	1992	36.7	43.8

Source: European Commission, Autumn 2009, and Hauptmeier, Heipertz and Schuknecht (2007).

Table 14

Total Public Revenue in the Euro Area

(percent of GDP)

	2007	2010	2007-2010
Total revenue	45.5	43.8	–1.7
Direct taxes	12.5	11.3	–1.2
thereof: corporate	*3.3*	*2.2*	*–1.1*
Indirect taxes	13.5	12.7	–0.8
Social contributions	15.2	15.4	0.2
Other	4.4	4.4	0.1

Source: European Commission, *Autumn Forecast* (corp tax=unweighted average).

crisis and the aggregate revenue ratio in the euro area. In fact, it appears inconceivable that for the average of the euro area, the revenue ratio could be raised by 5 percentage points and reach 50 per cent of GDP to close most of the budget gaps via tax increases. As it stands, the revenue ratio did not decline much over the crisis (Table 14). Most of the fall has affected corporate income taxes due to a reversal of windfalls from previously booming asset markets, balance sheet losses and a decline in profits). Indirect tax revenue fell due to VAT cuts and possibly the downturn in the construction sector but more analysis would be needed.

Some modest adjustment is likely to come from the revenue side as temporary tax cuts are reversed, corporate income tax revenue recovers somewhat from the crisis trough and some indirect taxes are likely to be raised. However, an increase by 5 percentage point would imply that personal income taxes have to increase by half (50 per cent!) from less than 10 per cent to close to 15 per cent of GDP. Or receipts from social security contributions would have to increase

by about one third. However, marginal and average tax rates in Europe are mostly already very high (Table 15). Further significant increases would be rather detrimental to employment and growth. Moreover, the literature has shown that mainly tax-based consolidations tend to be less successful (e.g., Guichard *et al.*, 2007; Afonso *et al.*, 2005).

Table 15

Marginal Tax Rates in Industrialised Countries, 2007

Country	Single Earner, No Children, Average Income	Married, Two Children, Incomes of 100 and 67% of average income
United States	43.3	34.0
Japan	33.2	30.5
United Kingdom	40.6	46.5
Germany	66.5	63.4
France	55.8	52.0
Italy	52.7	52.7
Spain	45.5	45.5
Euro Area (EU-15)	**52.8**	**52.3**

Source: OECD (2008).

More concretely, what does this imply? Expenditure ratios are currently unsustainable and need to come down significantly. Relative public wage and benefit levels need to decline and the public sector reduce its commitments. A cut in total public expenditure by 10 per cent would yield savings of about 5 per cent of GDP; a cut in 20 per cent over time would be hardly unreasonable for a country with a deficit of 10 per cent of GDP and an expenditure ratio of 50 per cent.

Linking these claims with the findings of the second section, it should be recalled that expenditure adjustment needs to be based on the appropriate baseline. If indeed the crisis has reduced economic growth dynamics, even a real expenditure freeze may hardly generate enough adjustment and real if not nominal expenditure cuts will be needed. Assume a country with a 50 per cent expenditure ratio and 1.5 per cent trend growth. A real expenditure freeze would only yield about ¾ percentage points of adjustment per year and a 5 percentage points adjustment would take seven years. A nominal total expenditure freeze would yield about 1.5 percentage points adjustment per annum. However, care needs to be taken that underlying commitments are cut commensurately via actual policy reforms.[8]

5 Conclusion

As to the experiences with fiscal activism in boom, crisis and beyond, the following simplified conclusions can be drawn: first, fiscal policies were overly imprudent in the boom phase preceding the financial crisis, partly due to real time measurement problems. In the bust phase, analysis into the roots of the crisis should have been deeper and too much emphasis was placed on the need for (activist) fiscal demand support. Although the balance sheet nature of the crisis was little acknowledged, significant fiscal measures to support balance sheets were introduced. Little attention has so far been paid to the fiscal dimension of economic restructuring and downscaling of demand that had reached unsustainable levels in the boom. While at the time of writing, fiscal exit

[8] Assuming inflation in line with the ECB's definition of price stability. Fiscal rules that maintain sustainable expenditure trends and underpin adjustment could increase the credibility of exit strategies (European Commission, 2007; Hauptmeier *et al.*, 2010).

strategies have been prepared and, in some countries, implemented in light of unsustainable fiscal balances, little attention has been paid so far to the importance of expenditure reform.

The previous discussion suggests a number of policy lessons and recommendations for fiscal activism:[9]

- In booms, remain actively prudent. Hence, anticipate measurement problems and base expenditure plans on prudent economic growth assumptions, underpinned by appropriate rules and commitments.
- In crisis, target the underlying problems. Provide a stimulus only in the deep crisis (demand shock) phase but weigh this against the risk of maintaining demand at unsustainable levels (especially if there were excesses in the boom). In fact, this risk may argue against much of a stimulus and even against the full operation of automatic stabilisers in certain cases. Provide balance sheet support in an appropriate manner. Support rather then prevent the restructuring of sectors that had reached unsustainable dimensions in the boom (e.g., construction/real estate and finance).
- Beyond the bust, implement appropriate fiscal exit strategies. As expenditure ratios have become unsustainable, given already high taxes and adverse growth implications, secure major reductions in the expenditure ratio. Adjust relative public wages and benefits and reduce other commitments of government commensurately. Build adjustment on an appropriately prudent baseline macro scenario.

Many observers have suggested implementing the fiscal exit rather later than too earlier. This approach is risky especially for large countries as it could make the global system uninsurable. It is also likely that many observers will emphasise the political difficulties of implementing an ambitious expenditure-based exit strategy. However, many countries have already gone through even greater, drawn out adjustment periods with primary expenditure cuts by more than 5 or even 10 per cent of GDP in the 1980s and 1990s. The experience has in fact been rather positive and virtuous cycles of fiscal adjustment, higher growth and faster balance sheet repair can emerge (see Hauptmeier, Heipertz and Schuknecht, 2007).

[9] There is also an important fiscal structural dimension for preventing future boom bust cycles the discussion of which goes beyond the scope of this paper. Fiscal policies should in particular not set undue incentives to invest in construction as crisis following real estate booms have proven to be particularly costly (Agnello and Schuknecht, 2009; Alessi and Detken, 2009). Moreover, fiscal policies should not encourage undue indebtedness and leverage in the household or corporate sector (IMF, 2009; European Commission, 2010). A gradual change in incentives in this regard would reduce the risk of future crisis.

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THE REACTION OF FISCAL POLICY TO THE CRISIS IN ITALY AND GERMANY: ARE THEY REALLY POLAR CASES IN THE EUROPEAN CONTEXT?

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The deep recession which hit the world economy towards the end of 2008 induced massive, internationally-coordinated policy responses, both monetary and fiscal. In this paper we examine public finance developments in Germany and Italy in 2009. We find that the larger stimulus measures adopted in Germany mostly compensated a more favourable underlying trend in the balance; overall, the cyclically-adjusted primary balances worsened by a similar extent in the two countries. We further estimate the automatic stabilisers to have had an impact on the deficit of similar magnitude in Germany and Italy. We then assess, on the basis of counterfactual simulations, to which extent discretionary measures and automatic stabilizers were able to mitigate the downturn in the two countries. Our results show that the public sector contrasted the fall in real GDP in 2009 by more than 2 percentage points in Germany and by 1 per cent in Italy. The difference in the stabilizing effect of the two public sectors reflects not only the different size of the stimulus measures, but also the higher fiscal multipliers associated with Germany.

1 Introduction

At the end of 2008, when the worldwide recession began, public finances in Italy and in Germany were strikingly different. The level of public debt was close to 106 per cent of GDP in Italy and as much as 40 percentage points lower in Germany. Furthermore, the former country posted a deficit already close to the Maastricht threshold (2.7 per cent of GDP), while Germany's budget was exactly balanced.[1] The main public finance aggregates showed relatively minor differences, with the revenue ratio and the primary expenditure ratio in Italy being higher by almost 2 percentage points. Section 2 below examines to what extent the differences in fiscal positions in 2008 depended on the policies implemented by Germany and Italy since 1997 – the year relevant for qualification to participate in the Monetary Union.

Given their fiscal conditions in 2008, it is not surprising that the size of the discretionary measures adopted by the two countries facing the looming recession were at the extremes of the range spanned by the reactions of all European governments.[2] The gap in the debt levels took particular relevance in the context of the widening of the spreads between government bonds in the last months of 2008, which warned that sizeable expansionary fiscal action in Italy would result in higher financing costs. For Germany, on the contrary, additional public borrowing was not perceived to increase the pressure on interest rates.

The timing, magnitude and composition of the stimulus actions adopted in Germany and Italy for 2009 and 2010 are examined in Section 3. The comparative analysis for 2009 shows, inter alia, that the larger deficit-increasing impact of the measures adopted in Germany mostly compensated a more favourable underlying development in the balance in that country. Compared to Germany, the Italian fiscal actions intervened more on the composition of the budget in order to

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[1] The difference in the overall balance was due to higher interest payments in Italy, while the level of the primary balance was roughly the same in the two countries.

[2] European Commission (2009), Table I.1.1, p. 14.

stimulate the economy, while limiting the short-term effects on the deficit. The budgetary impact of automatic stabilizers is found to be largely similar. Going forward, the picture for 2010 seems more clear cut. While the deficit ratio in Italy is expected to improve marginally, for Germany it is projected to rise by ¾ percentage points, reflecting further sizeable stimulus measures which are only to a limited extend offset by a positive impact from the cycle.

In Section 4 the effects of the stimulus measures and the automatic stabilizers on the Italian and German economies in 2009 are assessed on the basis of counterfactual simulations of the econometric models used, respectively, in the Bank of Italy and in the Deutsche Bundesbank. We find that, overall, general government developments limited the fall in real GDP in 2009 by more than 2 percentage points in Germany and by 1 point in Italy. This gap reflects both the different size of the stimulus measures in the two countries and the higher fiscal multipliers estimated for Germany.

Section 5 concludes.

2 Fiscal policies before the crisis: from 1998 to 2008

Between 1997 and 2008, the general government deficit in Germany and Italy followed separate paths: while it turned from a deficit of 2.6 per cent of GDP into a marginal surplus in the former country, it remained stable in the latter, at 2.7 per cent of GDP. In the same period, the Italian public debt declined by 11.7 percentage points, to 106.3 per cent of GDP, while that of Germany rose by 6.6 percentage points, to 66.3 per cent (Figure 1).

In this period, German and Italian fiscal policies did not fully comply with the European fiscal criteria. The net borrowing in both countries exceeded for four years in a row the 3 per cent of GDP limit set by the Treaty on the Functioning of the European Union (TFEU). The excessive deficits occurred at the beginning of the decade, in the context of a recession which can be deemed at most mild – particularly from today's standpoint. As for the limit indicated in the Treaty for public debts (60 per cent of GDP), after 2002 Germany's debt consistently exceeded the threshold, with a clear upward trend. In the case of Italy, given the very high starting condition, the modest reduction in the debt ratio did not meet the Treaty provision that it be "sufficiently diminishing and approaching the reference value at a satisfactory pace". Moreover, approximately two thirds of the reduction were due to extraordinary operations (debt restructuring and sale of assets) which left the public sector net wealth unchanged (Momigliano and Rizza, 2007). Finally, precisely in view of its high debt level, Italy had vowed (at the ECOFIN Council held in York in March 1998; *Corriere della Sera*, 1998) to achieve a rapid convergence towards the Treaty benchmark debt level, by maintaining a primary surplus equal or above 5 per cent of GDP. Had this commitment been met, *ceteris paribus*, in 2008 the debt level would have been close to 80 per cent of GDP.

Developments in primary balances are reported in Figure 2 (left panel; data adjusted for cyclical effects[3, 4] and temporary government measures are shown in the right panel).

Excluding interest payments from the balance (see Figure 2, left) does not affect the analysis for Germany, as this budgetary item remains largely unchanged in the period. For Italy, instead, the examination of the primary balance unveils a rapid and almost continuous deterioration between

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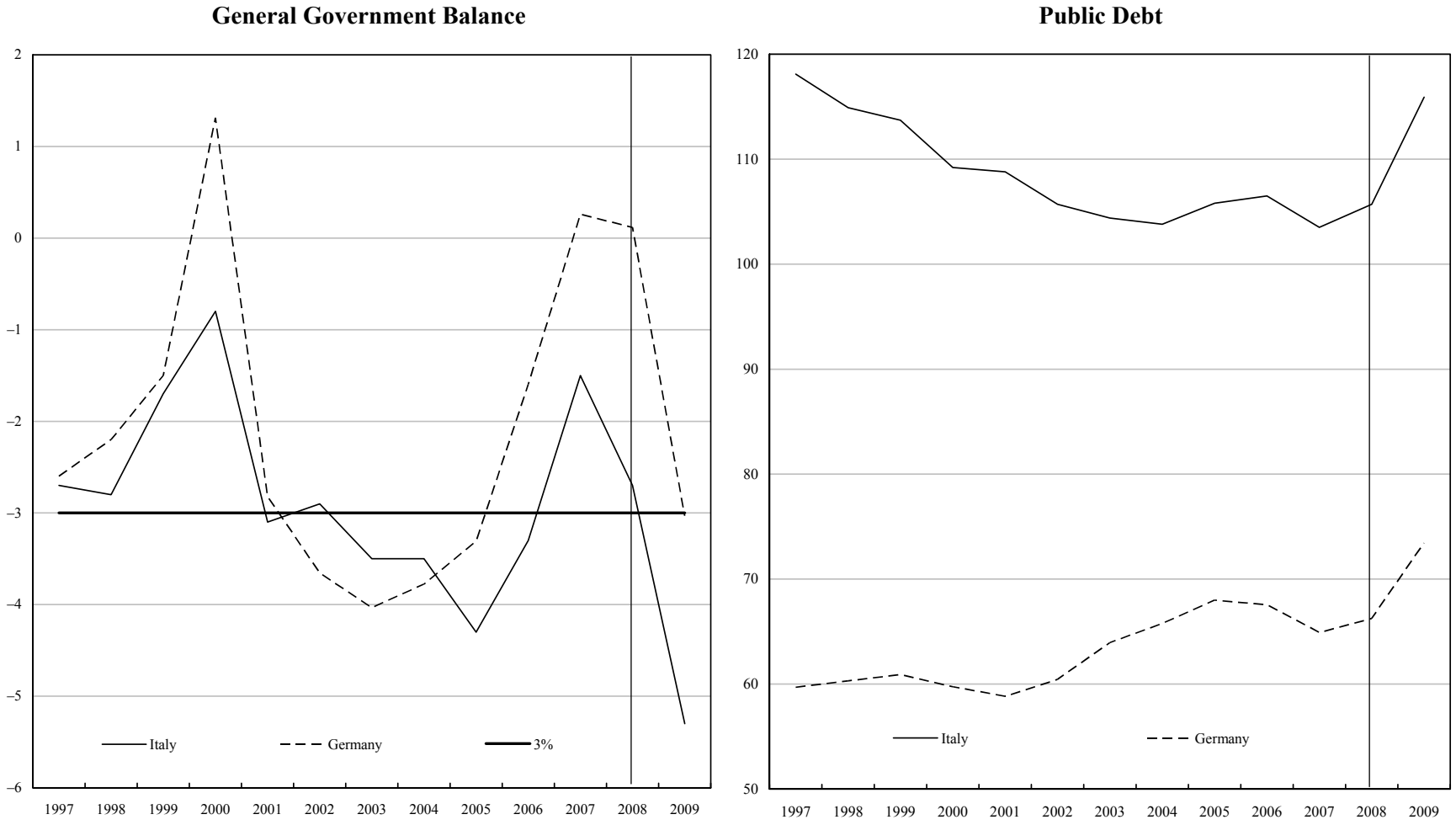
[3] Data were adjusted using the methodology developed within the European System of Central Banks (see Bouthevillain *et al.*, 2001; Kremer *et al.*, 2006a, and, for applications of the method in Germany and Italy, Kremer and Wendorff, 2004; Kremer *et al.*, 2006b; and Marino *et al*., 2008a and 2008b).

[4] These effects are usually the most important transitory factors, but we are still far from capturing the influence of all temporary factors on public finances. Other temporary factors with an impact on revenue include fluctuations in interest rates and in prices of real estate, stocks and oil.

Figure 1

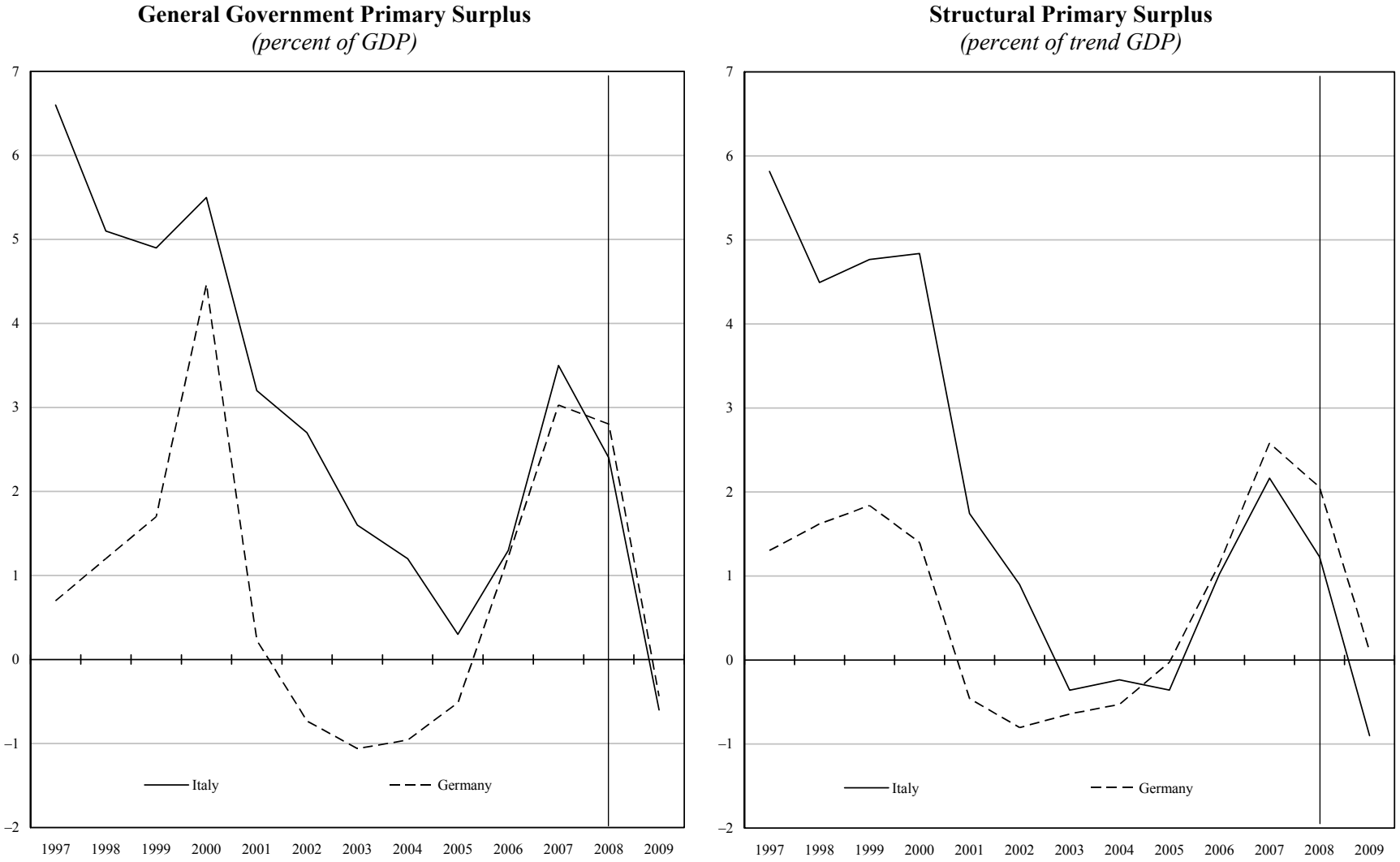
General Government Net Borrowing and Public Debt
(percent of GDP)



Note: The balances and the dynamics of the debt in 2000 were influenced by the extraordinary proceeds from the sale of UMTS licences (2.4 and 1.2 per cent of GDP, respectively, in Germany and Italy).

Figure 2

General Government Primary Surplus
(unadjusted and structural)



1997 – when it stood at 6.6 per cent of GDP – and 2005, when it was virtually nil.[5] After 1997, Italian public finances progressively benefited from the fall in rates which occurred after joining the Monetary Union. However, interest payments savings did not result in an improvement in the balance; rather, they were largely used to reverse the increases in revenue and cuts in health and capital expenditure which had taken place in the fiscal adjustment of the years 1992-97 (Degni *et al.*, 2001; Balassone *et al.*, 2002, Marino *et al.*, 2008a).

The path of the structural primary balance (*i.e.* adjusted for the effects of the cycle and temporary measures) in the two countries broadly confirms the analysis above. However, a few remarkable differences are apparent. First, the worsening trend in Italy ends two years earlier than shown by the unadjusted primary balance, approximately in 2003, when the gap in the structural primary balance between the two countries also closes. Second, Italy and Germany appear to have followed largely similar fiscal policies in the following years, as their structural primary balances move closely together. As will be seen when we turn to 2009, the fiscal stance of the two countries remained similar last year too.

In Figure 3 we show the development of revenue and primary expenditure in the two countries, adjusted for the effects of the economic cycle and temporary government measures. We find a striking difference between the two countries in the dynamics of the structural primary expenditures (as a ratio to trend GDP): in 1997 this aggregate was 3.5 percentage points higher in Germany than in Italy, while 11 years later it was lower by over 1.5 percentage points. This reversal is due for ¾ to the increase in the Italian expenditure ratio and for ¼ to the decline in that of Germany. Large differences can be found for social expenditures (which increased by 2 percentage points of trend GDP in Italy, while they declined by 0.3 in Germany) and public wages and salaries (which in Italy increased by 0.2 percentage points while in Germany they declined by 1 pp).[6] In Marino *et al.* (2008b), the increase in structural Italian expenditures between 1997 and 2007 is largely attributed to the strong dynamics of health and capital expenditures. In Germany, the decline in the ratio between social payments and trend GDP started in 2003, following comprehensive reforms of the welfare system. The dynamics of German public wages and salaries remained subdued over the whole period, reflecting the decline in the number of government employees and the moderation in wage agreements (with the agreements being systematically lower than in the private sector). As for the structural revenue ratio, it dropped by approximately 2 percentage points in both countries, with the Italian ratio remaining higher than the German one by about 1 percentage point. For both countries the increase in 2006-07 is driven by unexpected revenue windfalls, largely concentrated in profit-related taxes, and legislative measures.

Summing up, public sector developments in Germany and Italy between 1998 and 2008 show both similarities and differences.

First, both countries clearly failed to fully comply with the European fiscal criteria, for both deficit and debt. However, in the later years overall and primary balances improved more in

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[5] In this paper we consider the budget balance definition which is relevant for the excessive deficit procedure, *i.e.* the general government balance including the effects of swaps and forward rate agreements. Furthermore, for an homogeneous comparison, the general government revenue and expenditure are defined according to the criterion adopted by the EU (Regulation EC/1500/2000, relevant for the updates of the stability programme), which differs from the "traditional criterion" used in the national accounts published by the Italian National Institute of Statistics (ISTAT).

[6] In nominal terms, in the period 1998-2008 the average growth of unadjusted primary expenditure in Italy is 4.8 per cent, against 1.7 per cent in Germany. The gap shrinks only marginally in the last years: in the period 2004-08 the average growth declines in both countries to, respectively, 3.5 per cent and 0.8 per cent.

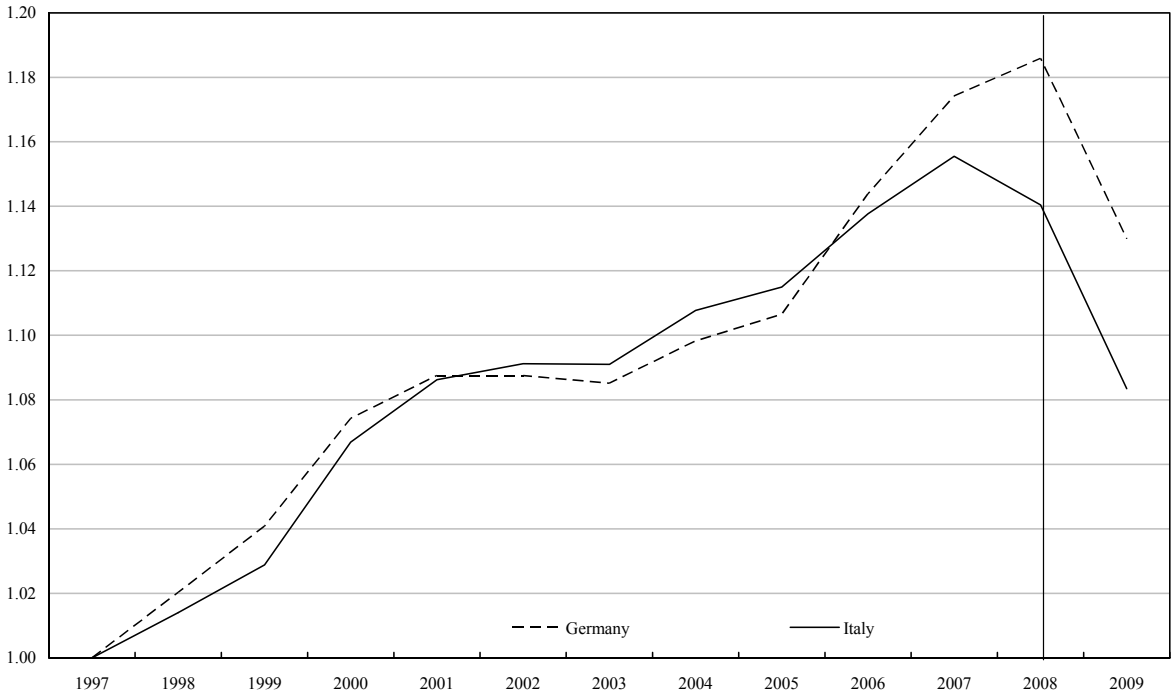
Figure 3

Structural Revenue and Primary Expenditure

(percent of trend GDP)

Figure 4

GDP
(index: 1997=1)



Germany, reflecting to a large extent the higher growth of 2007-08 (Figure 4).[7, 8] As a consequence, in 2008 Germany was in a far better position to cope with the recession. Nevertheless, even the German fiscal margin at end-2008 was not fully adequate, given the depth of the 2009 recession.

Second, in terms of primary balance and expenditure – two key indicators for assessing the soundness of public finance – the performance of the two countries was strikingly different. While Italy completely dissipated the Maastricht dividend of lower interest rates on higher primary expenditures (and, to a lesser extent, lower revenues), Germany achieved a substantial reduction in primary expenditure, which resulted in an improvement of the primary balance in spite of falling revenues.[9]

The structural deterioration of Italian primary balance essentially occurred in the years 1998-2003. In the following 5 years the levels of the structural primary balances in the two countries moved together, indicating that Italy and Germany adopted broadly similar policies.

3 The fiscal response to the crisis

The first clear fiscal reaction to the crisis took place in November 2008 in both Italy and

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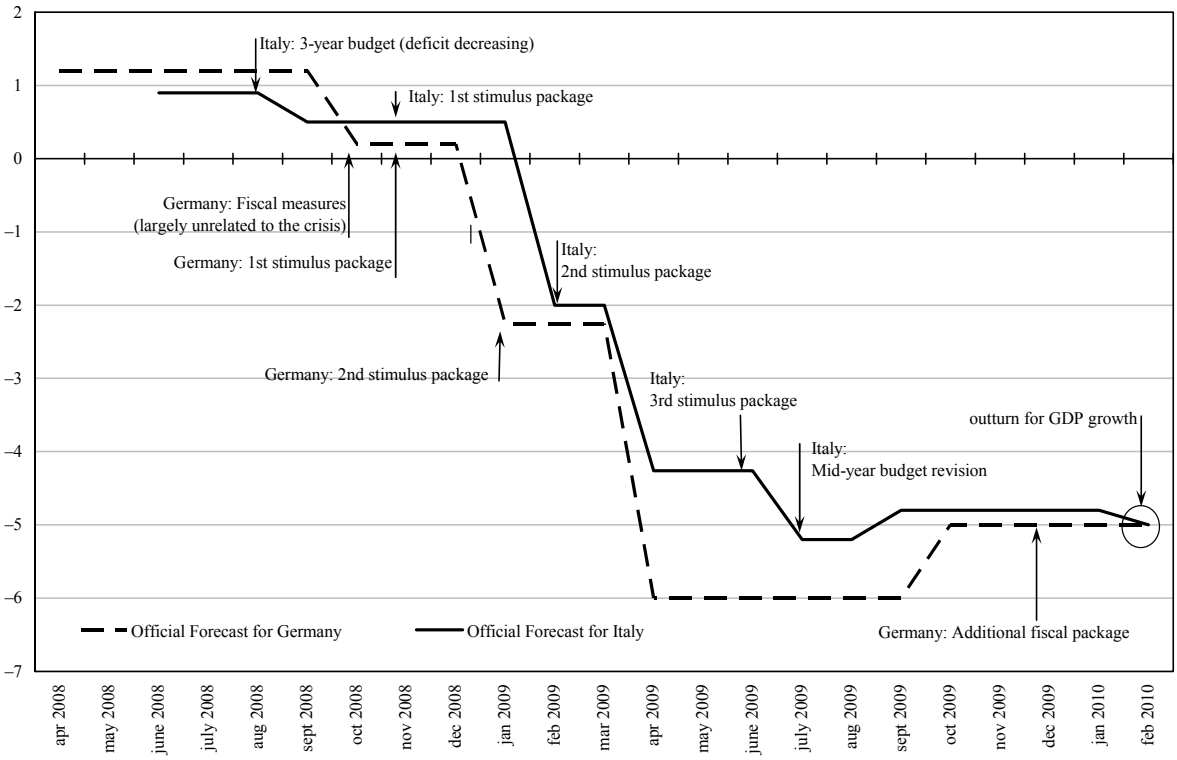
7 Between 1997 and 2006 the cumulated growth of the two countries is almost identical, while in the following two years in Italy it is a mere 0.2 per cent, while in Germany it amounts to 3.8 per cent.

8 The different fiscal position of the two countries in 2008 was also influenced by the German better structural performance in 2005.

9 The decline of the revenue ratio seems to have been largely caused by a negative decoupling of growth of important macroeconomic assessment bases from GDP growth whereas legislative changes are positive and a substantial fiscal drag has accumulated in the period.

Figure 5

Official Forecast for GDP Growth and Stimulus Packages
(change in percent)



Germany, after the sudden, dramatic escalation of the financial market turmoil, with both countries issuing an emergency stimulus package.[10] In the previous months, a number of fiscal measures had been adopted which were unrelated to the looming crisis. In August, Italy had approved a deficit-reducing three-year budget, with an impact on net borrowing estimated at 0.6 per cent of GDP in 2009 (1.0 per cent in 2010).[11] In October, Germany had introduced a number of measures with a combined deficit-increasing effect amounting to 0.3 per cent of GDP for 2009 (0.6 per cent in 2010).[12] As shown in Figure 5, when these decisions were taken, GDP growth projections, though not particularly favourable, were still positive for both countries.

The measures taken by Germany and Italy before November went into the direction of aligning the fiscal stance for 2009 in the two countries, offsetting the divergent trend of their budget balances which would have occurred in a no-policy-change scenario. Early in November, the European Commission's assessment of macroeconomic and budgetary developments for 2009 was almost identical for the two countries: in both Germany and Italy real GDP was expected to stagnate and the deficit was envisaged to worsen by 0.2 percentage points of output (European Commission, 2008). *Ex post* data for 2009 seem to show that the pre-November policies were not able to fully close the divergent trend of the budget balances in the two countries, as explained further on.

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[10] Prior to that, both governments (and particularly the German one) had taken action, together with monetary policy authorities, to contribute to avert the collapse of their respective financial systems.

[11] The three-year budget was basically confirmed in the Finance Bill for 2009, presented to the Parliament at the end of September.

[12] Indeed, the enlarged deductability of insurance contributions as of 2010, which of all these measures has the largest deficit impact, followed from an earlier ruling of the constitutional court.

The Italian stimulus package introduced in November included transfers to low-income households and, on a smaller scale, relief measures for enterprises. According to government estimates, those measures were fully financed by revenue increases, mainly by means of the introduction of a voluntary substitute tax on asset re-evaluations and, to a lesser extent, by means of expenditure cuts.[13] The German stimulus package, by contrast, was estimated to increase the deficit by 0.2 per cent of GDP in 2009 and 0.3 per cent in 2010.[14] It consisted mainly of additional public investment, a temporary reintroduction of declining-balance depreciation for machinery and equipment, and an extension of tax deductions allowed for handicraft services.

In December 2008 the European Council called on member states to coordinate the fiscal response to the crisis by implementing a European Economic Recovery Plan which recommended a budgetary stimulus of 1.5 per cent of GDP cumulatively for 2009 and 2010 (1.2 per cent of GDP by member states and 0.3 per cent at the EU level). The stimulus was required to be TTT (temporary, timely and targeted). Moreover, countries with more fiscal room for manoeuvre were asked to provide a larger fiscal stimulus than countries with a less favourable starting position. The decision of the European Council called on Germany – until then reluctant to expand its budget – to do more to sustain the economy, while giving political support to the prudent attitude adopted by the Italian Government.

Around the turn of the year it became increasingly clear that not only countries with bubbles in the housing markets and low competitiveness would be severely affected by the global downturn, but also – or even especially – open economies with a large share of investment and durable consumption products in their exports. The latter description fits perfectly Germany and, to a lesser extent, Italy as well; the strong economic ties between the two countries made it also likely that their destinies in the upcoming recession be closely linked.

The rapid deterioration of macroeconomic prospects (Figure 5) induced both countries to implement a second stimulus package shortly after the first. This time Germany reacted first, in January 2009, and with a far larger intervention, whose estimated impact on the 2009 deficit amounted to 0.7 per cent of GDP (1.1 per cent in 2010). The main measure was an increase in public infrastructure investments; the package also included income tax reductions and a reduction of the contribution rate to the statutory health insurance. Various measures to dampen the labour market effects of the crisis were put in place, most importantly additional support for short-time work. Transfer payments to households were increased, mainly through a one-off child bonus to be paid in the Spring. The provisions included a temporary car scrapping premium paid to households (extended in April). The second Italian fiscal package was passed in February 2009; it too included a similar car scrapping incentive, financed partly by closing some tax loopholes and partly by the higher tax revenue expected from the increase in car purchases induced by the measure.

The synchronization of the fiscal reaction in the two countries ends with the second stimulus package. In June, amid signs of a worldwide easing of the recession but in the presence of a steady and worrisome deterioration of the labour market, the Italian government approved an additional anti-crisis decree – designed once again to be neutral on the budget balance – which included provisions aimed at strengthening the social safety net and, most notably, introducing large tax incentives for purchases of machinery in the following 12 months. Furthermore, the mid-year budget revision in July included temporary boosts to intermediate consumption and public investment. These measures entailed a 0.3 percentage points of GDP impact on the public balance for 2009; this being the only deficit-increasing package to be approved throughout the crisis. The budget for 2010, passed by the Parliament at the end of December 2009,[15] once again included

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[13] As the revenue from the substitute tax was higher than expected, overall the package is likely to have reduced the deficit *ex post*.

[14] The figures on the fiscal impact of the various measures reflect government estimates and our own assessment.

[15] The budget was partly anticipated, as in 2008, by a decree (No. 112) in the Summer.

expenditure increases (amounting to 0.2 per cent of GDP), financed by an extraordinary tax (the so-called "tax shield"),[16] with an estimated zero effect on the balance.

As for Germany, only in December of 2009 did the newly-elected government pass an additional fiscal package with the objective of providing a further stimulus and fostering long-run growth.[17] The measures included a further increase in child benefits, reductions of enterprise and inheritance taxes and a lower VAT rate for accommodation services, which accompanied a temporary grant to the health fund. In total, the impact of the package on the budget balance in 2010 was estimated at 0.4 per cent of GDP.

Summing up, if we include all actions taken since the summer of 2008, in Italy discretionary measures improved the budget balance by 0.3 per cent of GDP in 2009 and by approximately 1.0 in 2010 (reflecting the restrictive measures taken before the crisis exploded, only partly offset by deficit-increasing measures issued in late 2009), while in Germany fiscal policies worsened the balance by respectively 1.3 and 2.5 per cent of GDP.[18]

In our analysis we focus on the crisis-motivated discretionary measures taken since November 2008.[19, 20] In our assessment these measures have led to a fiscal loosening far greater in Germany (with an impact on the deficit amounting to 1.1 per cent of GDP in 2009 and about 2 per cent in 2010) than in Italy (0.3 and basically zero, respectively, for the two years).[21, 22] While official figures for 2009 are available, for 2010 they obviously are not. Our estimates for this year should thus be treated with particular caution; this is one of the reasons why most of our empirical results in Section 4 focus on 2009.

Obvious reasons led Italy to a more prudent behaviour, among which the worse starting position for both deficit and debt. The different *ex ante* orientation of fiscal policy may also reflect differing real-time expectations concerning the size of the downturn. As shown in Figure 5, in the first months of 2009 the worsening of the outlook was more pronounced in Germany than in Italy. Finally, budgetary rules in Italy do not allow for deficit-increasing packages except in the case of the Finance Bill. Therefore, after the budget for 2009 had been passed in December 2008, the Italian government had little leeway (until the mid-year budget revision) to introduce expansionary measures in response to the deteriorating growth outlook. In contrast, in Germany two

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16 The revenue which in October 2009 was expected to be raised in December from the foreign assets disclosure scheme (0.25 per cent of GDP) was shifted from 2009 to 2010 by reducing the size of the advance personal income tax payment due at the end of 2009. *Ex post* the revenue from the scheme was slightly higher than expected (less than an additional 0.1 per cent of GDP) and the additional receipts improved the balance in 2009.

17 Minor relief measures for enterprises were adopted in July 2009, with an effect on the deficit in 2009 lower than 0.1 per cent of GDP.

18 Measures that do not have an (immediate) impact on the general government deficit like guarantees or off-budget measures (especially in the context of support for the financial sector) are not included in this analysis although they might have a significant impact on macroeconomic variables.

19 The reintroduction of the commuters allowance in Germany (which followed a ruling by the Constitutional Court in December 2008) and the actions taken following the earthquake in Abruzzo in April 2009 in Italy are also excluded, by referring to the stated intention of the governments.

20 The reasons for focusing on the measures taken since November 2008 are the following. First, the fiscal packages introduced before were publicly motivated by reasons different from the economic crisis (e.g., consolidation for Italy). Second, these actions were decided when GDP growth projections for both countries were still positive.

21 The estimated effects of the discretionary measures reflect a number of positive and negative adjustments to the original official estimates of the fiscal packages. For Italy, for 2009 and 2010 these adjustments broadly balance out. With regard to 2009, on the one hand, the revenue from the voluntary substitute tax on asset revaluations was higher than originally expected (0.4 per cent of GDP, instead of less than 0.2 per cent), likewise the proceeds of the "tax shield" exceeded the resources shifted to 2010 by 0.07 per cent of GDP. On the other hand, a number of financing instruments seem likely to have been less effective than originally expected. For Germany, the additional public investment included in the stimulus programmes is assumed to be implemented with substantial delay compared to the initial government plans.

22 Our assessment is not significantly different from that presented in European Commission (2009), p. 14. The figures provided there do not include more recent measures.

Table 1

Fiscal Policy In Italy and Germany in 2009
(change in ratio to GDP in percentage points with respect to 2008) (deficit-increasing: +)

	Italy	**Germany**
All Measures *(percent of GDP)*	–0.3	+1.3
Stimulus Measures *(percent of GDP)*	+0.3	+1.1
Automatic Stabilizers	+1.4	+1.6
Other Changes in Primary Balance	+1.4	+0.5
Overall Change in Primary Balance	+3.1	+3.2

supplementary deficit-increasing budgets were adopted in the course of 2009 at the central level; similar actions were taken at the regional level.

By focusing exclusively on discretionary fiscal measures, however, the assessment of the stabilising role of fiscal policy may well be significantly distorted, particularly in the context of cross-country comparisons.[23]

Firstly, macroeconomic fluctuations are dampened by automatic stabilizers. With regard to Italy and Germany in 2009, however, including the impact of the latter (estimated on the basis of the method presented in Bouthevillain *et al.*, 2001) does not fundamentally change the relative ranking of the two countries, as they are of almost equal size in both (Table 1).

Secondly, focusing exclusively on discretionary measures leads to neglecting the fact that differences in the existing legislations may imply divergent trajectories for the budget balance, even if the macroeconomic environment is the same for both countries. Therefore, for example, restrictive discretionary measures in one country may simply compensate for a larger – in relative terms – trend growth of expenditure under existing legislation.

One way to deal with this shortfall is to look at changes in the cyclically-adjusted primary balance (CAPB, *i.e.*, the budget balance net of cyclical effects), as this takes simultaneously into account the effects of discretionary measures and of other structural changes. This indicator, commonly used to assess the fiscal stance of one country, also shows an almost equal loosening in the two countries (a worsening of 1.6 per cent and 1.7 per cent respectively in Germany and in Italy).

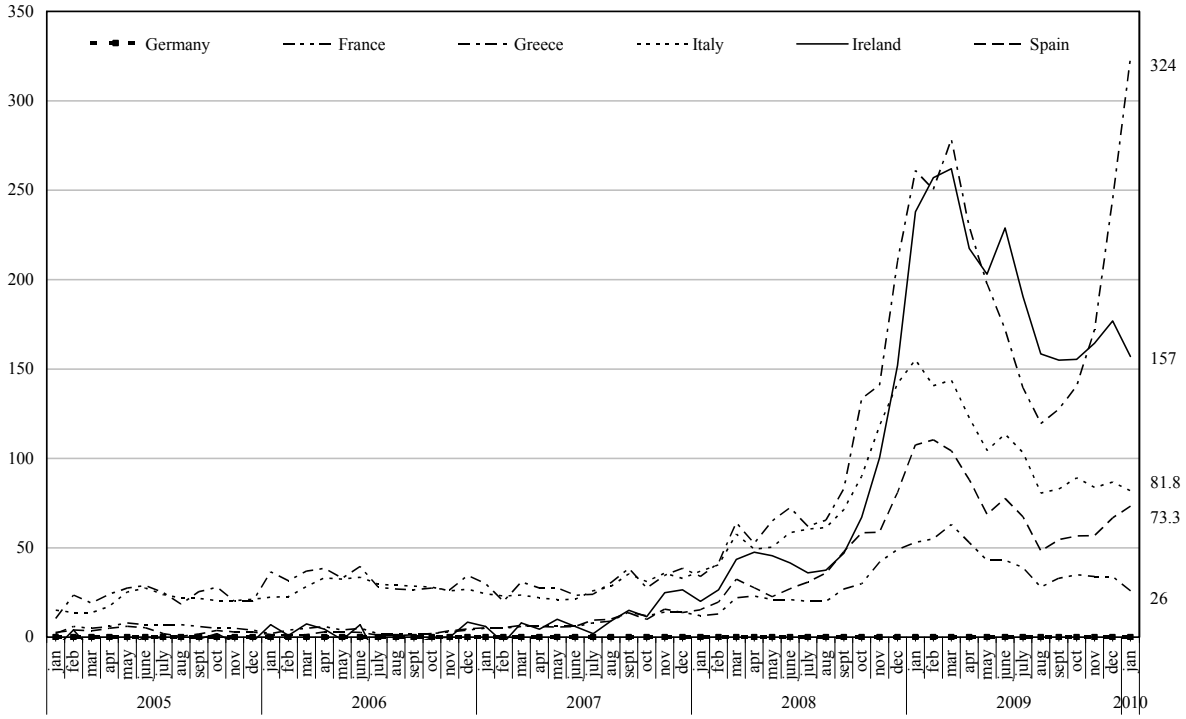
This finding – which suggests that caution should be exercised when comparing the fiscal policies of the two countries – appears to be attributable, to a large extent, to the relatively strong growth in pension expenditure and larger revenue shortfalls in Italy. It may also be related to the fact that the two governments not only had good reasons to react differently to the crisis, but also that they could reap some short-term benefits by simply pretending to do so. The Italian government had an incentive to tone down as much as possible any expansionary orientation of the

[23] See De Castro, Kremer and Warmedinger (2010).

Figure 6

Interest Rate Spread of Ten-year Government Bonds Versus Germany

(basis points)



budget in order to limit adverse financial market reactions. In fact, the spreads on ten-year Italian government bonds *vis-à-vis* German bunds increased to around 150 basis points in early 2009, before gradually falling below 100 points already in the Summer (Figure 6). On the other hand, EU countries with worse fiscal starting positions were putting pressure on Germany to act, thus providing the German government with a political incentive to put as much emphasis as possible on the expansionary measures that it issued.

Concerning the composition of the discretionary measures (Figure 7), there are important differences between the two countries. First, while German measures are essentially all deficit-increasing, those adopted in Italy include also deficit-reducing interventions. The financing side of the Italian stimulus measures is essentially based on two capital taxes, both due on a voluntary basis:[24] a substitute tax on asset revaluations and (for the part of its receipts which was not shifted to 2010) a tax on assets held abroad illegally. While the recourse to these taxes, compared to more standard revenue increases, has limited the negative impact on the consumption and investment decisions of private agents, enhancing the overall stimulus of the fiscal package (see Section 4, below), it will have large costs in 2010 and the following years. The substitute tax on asset revaluations will cumulatively reduce revenue in the decade 2010-19 by 0.9 per cent of 2009 GDP, approximately twice as much as the receipts obtained last year. Second, the role of tax reliefs is much more important in the German stimulus packages than in those of Italy. As regards expenditure, the measures taken by Germany are only slightly larger (0.7 per cent of GDP versus 0.44 for Italy).

[24] There were also numerous reductions in expenditure or increases in revenue, with a generally negligible impact.

Figure 7

Stimulus Measures in 2009
(percent of GDP)

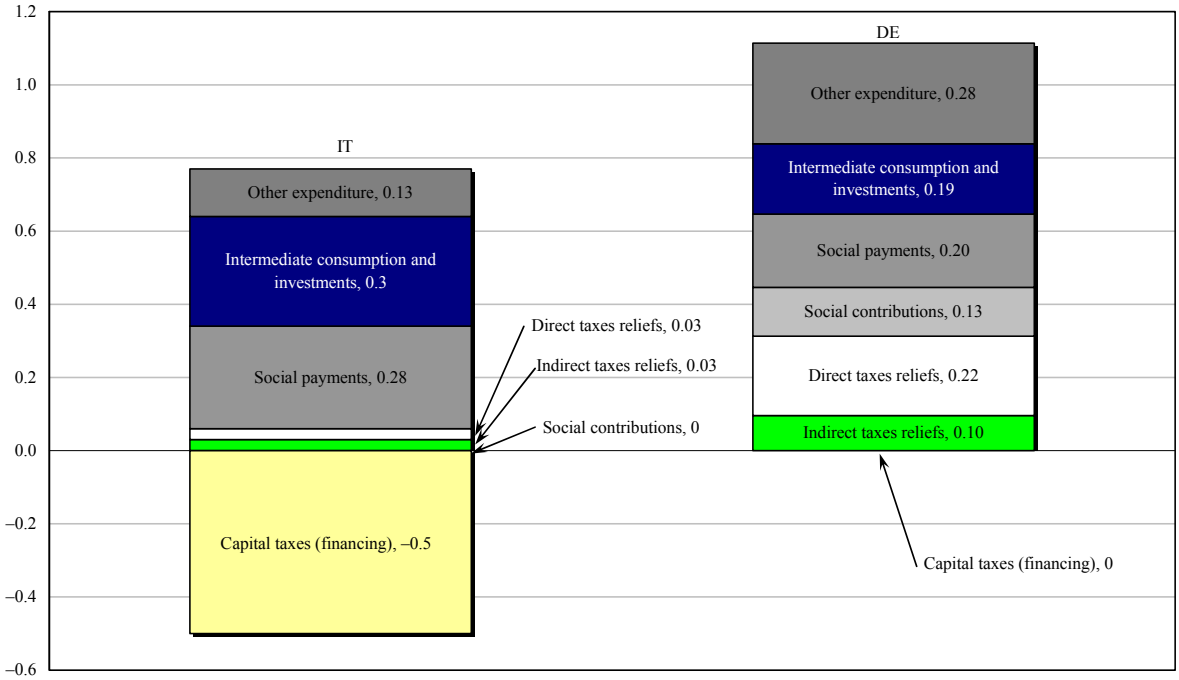
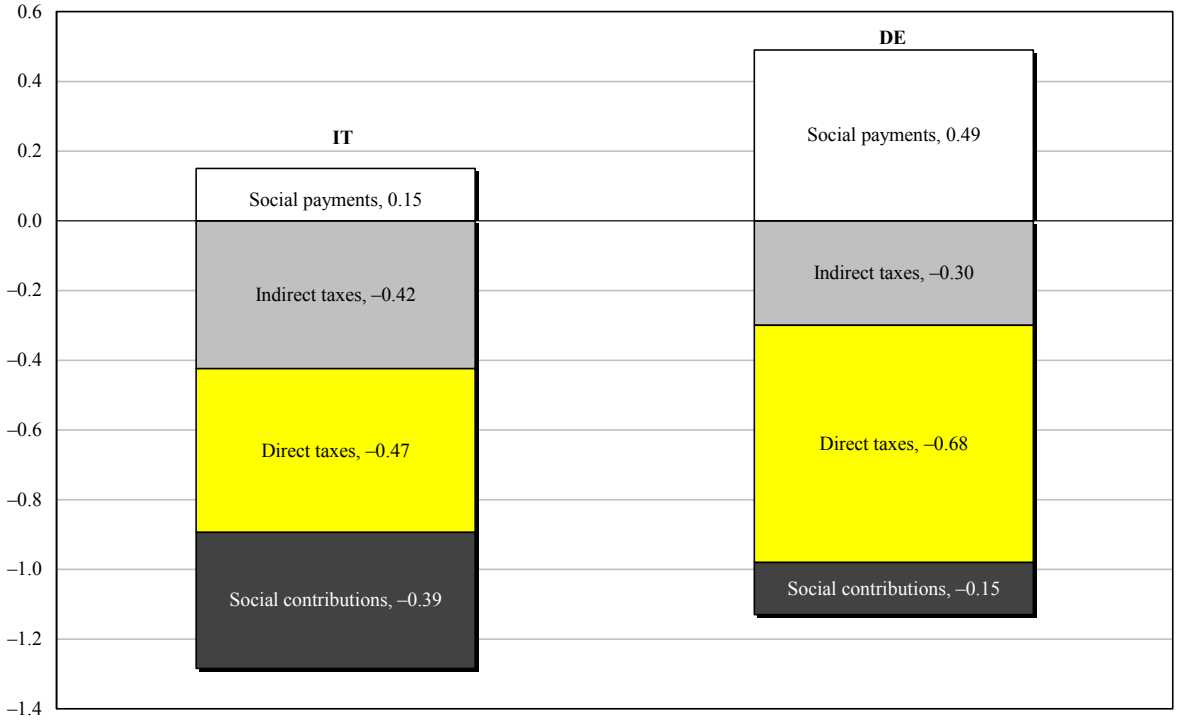


Figure 8

Automatic Stabilizers in 2009
(percent of GDP)



While the size of the automatic stabilizers is comparable in the two countries, the channels through which they operate are somewhat different. In particular, the automatic increase in unemployment-related transfers were much larger in Germany (reflecting its more generous and comprehensive social safety net), while the fall in social security contributions was greater in Italy, reflecting the stronger impact of the crisis on the labour market.

Going forward, the preliminary picture for 2010 seems more clear cut. While the European Commission in its autumn forecast expects the Italian (primary) deficit ratio to improve marginally, for Germany it is projected to rise by ¾ percentage points, reflecting further sizeable stimulus measures which are only to a limited extend offset by a positive impact from the cycle.[25] The deficit reduction projected for the coming years on a no policy change assumption is somewhat stronger for Germany than for Italy. While Germany is projected to reduce its deficit ratio by close to 2 percentage points a 1½ percentage point reduction is foreseen for Italy. This implies that Italy needs to take additional consolidation measures to comply with the Council recommendation to correct its excessive deficit by 2012 while, without further measures, Germany would reduce its deficit ratio below the 3 per cent threshold by 2011, two years ahead of the 2013 deadline.

4 Discretionary measures, automatic stabilizers, neutral budget benchmark, and their impact on economic activity

To appraise the impact of the budget on economic activity in Germany and Italy for 2009 we use the respective central bank's econometric model (BbkM for Germany and BIQM for Italy)[26] and compare historical developments against three counterfactual exercises:[27, 28]

1) a simulation in which discretionary fiscal stimulus measures are removed; compared to history, this simulation provides an estimate of the impact of discretionary interventions in response to the crisis;
2) a simulation in which, in addition to fiscal stimulus measures, cyclical effects are removed too; comparing this simulation with the previous one we get an estimate of the impact of the automatic stabilizers; moreover, it allows us to appraise the effectiveness and, in a way, the short-term cost-efficiency of the policies which were actively pursued, against those associated with the automatic stabilizers.
3) finally, a simulation in which all items of the general government budget (excluding interest payments) remain at the same level as in 2008, in relation to trend GDP. Further details on the design of this simulation are reported in Appendix 2. The results of this simulation provide a

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[25] According to the Commission forecast, the positive impact of the cycle on the budget balance/GDP ratio for Germany in 2010 amounts to more than one percentage point. According to the ESCB approach to cyclical adjustment which takes into account the composition of growth (which is unfavourable for public finances in 2010) it is much smaller.

[26] For a short presentation of the models used and references to more detailed descriptions, see Appendix 1. For the design of the simulations, see Section 3.

[27] Of course, all analyses aiming at appraising the effects of a change in policy are subject to the well-known logical flaw which affects all evaluation of policy measures conducted on the basis of relationships found to hold under a different policy set-up (Lucas, 1976). There are, however, several reasons to believe that in practice the Lucas Critique may be less disruptive than one could think: (i) the behaviour of economic agents may be backward-looking rather than forward-looking; this may be tested empirically (Hendry, 1988; Favero and Hendry, 1992); (ii) even if the agents' expectation formation process is assumed to be forward-looking, the possibility exists that, because of the indeterminacy of the equilibrium, one may still specify rational and "Lucas-proof" decisional rules (Farmer, 1991); (iii) the institutional changes or policy measures in question may not be the "regime shifts" necessary for the Lucas Critique to apply (Sims, 1982); this remark arguably applies to the case at hand; (iv) even if each individual agent were to modify her/his decisional rule as a consequence of a policy regime shift, the aggregation of heterogeneous reactions may result in an aggregate response that is much less pronounced than each of the underlying individual reactions, so that the actual, aggregate macroeconomic effects of a policy change may be better approximated by an approach that disregards the inherent non-structurality (Altissimo, Siviero and Terlizzese, 2002).

[28] As is normally the case, all residuals and add-factors underlying the baseline simulation ("history") were used in all counterfactual simulations as well. A description of the ceteris paribus assumptions underlying all simulations is given in Appendix 3.

"neutral" benchmark providing an indication of what might have happened in an economy with a fully sterilized public sector.

All possible care was exercised to guarantee that the simulation design was exactly the same for both countries. However, the possibility cannot be ruled out that the differences between the two national models reflect not only genuine differences in the respective country's characteristics – reflected in the models' different parameter values – but also, at least in part, different modeling strategies underlying the construction of those models, despite the broad similarities in their general features (see Appendix 1).

Also, while the fiscal multipliers appear to be much higher in the model for Germany (consistent with previous literature),[29] there are reasons to believe that, in the case of the specific episode we explore, the actual multipliers associated to changes in the public budget may have been different than in the (average) historical experience. On the one hand, in this exceptionally severe recession, increases in disposable income due to fiscal measures might have resulted in larger-than-usual increases in precautionary savings. Moreover, a more Ricardian reaction than in the past could be induced by higher (expected) debt ratios and fiscal risks from financial sector support (IMF, 2009) and by wealth losses suffered during the crisis. On the other hand, a less pronounced deterioration in public finances would have arguably implied lower interest risk premia (most plausibly in the case of Italy), and therefore higher multipliers, than estimated in our simulations, in which interest rate have been kept unchanged (see Appendix 3 for the treatment of interest rates in counterfactual simulations).

Finally, while we do not appraise the cross-country effects of public sector developments, they are likely to have been non-negligible, given the close trade ties between the two countries.

4.1 The results

The estimated effects of the fiscal stimuli are reported in Table 2.

Discretionary stimulus measures have resulted in an increase in the deficit to GDP ratio of 0.8 percentage points in Germany, but of only 0.2 point in Italy. This result includes the cost of discretionary measures (see the discussion in Section 3) as well as the retroaction on the budget of their effects on the economy. In terms of impact on economic activity, the gap between the two countries narrows significantly: the boost which German GDP received from fiscal stimulus measures[30] in 2009 is estimated to amount to 0.8 percentage points; in Italy it is three quarters that figure (0.6 points). This result reflects the large recourse to extraordinary taxes in Italy to finance the stimulus measures. In the BIQM, capital taxation (where these extraordinary taxes are classified) does not directly influence disposable income and has negligible effects on economic activity. It may be argued that this feature of the model is particularly justified in this case, given that the voluntary character of the payments made by the private agents should have strongly limited the negative impact of the tax on their consumption and investment decisions. As mentioned in Section 3, the more effective fiscal stimulus in Italy will have significant budgetary costs in 2010 and in the following years. Excluding capital taxes from net borrowing, the relative effectiveness of fiscal policies of the two countries (in terms of GDP gain for a given increase in deficit) reverses, becoming slightly larger for Germany, reflecting the already mentioned higher

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[29] The average multiplier for Italy (*i.e.*, the weighted average of the multipliers associated to the different budget items) is less than one third, whereas in Germany it exceeds two thirds.

[30] Table 3 reports the effects of all discretionary fiscal measures along with those stemming only for strictly crisis-related measures for Germany; it further presents the sole impact of the car-scrapping scheme.

Table 2

Impact of Public Finances on the German and Italian Macroeconomies, 2009

	Baseline[1]		Discretionary Policy[2]	Discretionary Policy and Cycle[2]	Deviations from Benchmark (Neutral Public Budget)[2]
	2008	2009			
GERMANY					
GDP	0.7	–4.7	0.8	2.1	2.1
Private consumption	0.6	–0.1	1.6	4.2	3.5
Total fixed investment	1.8	–10.1	1.7	2.6	2.1
Exports	2.0	–14.2	–0.1	–0.5	–0.3
Imports	2.9	–9.4	1.1	2.0	1.6
GDP deflator	1.0	1.4	-0.1	-0.4	–0.6
Public expenditures net of interest payments	2.7	5.7	1.2	1.9	2.3
Public receipts net of interest receipts	2.1	–2.0	–0.6	–2.8	–4.3
Public deficit / GDP (*)	0.1	–3.0	0.8	2.1	3.3
Public deficit net of interest payments and receipts / GDP (*)	2.5	–0.7	0.8	2.1	3.2
Public expenditures net of interest payments / GDP (*)	41.1	44.9	0.2	0.1	0.4
Public receipts net of interest receipts / GDP (*)	43.5	44.2	–0.6	–2.0	–2.8
Public deficit net of interest payments and receipts / Trend GDP (*)	2.5	–0.7	0.8	2.0	3.1
ITALY					
GDP	–1.3	–5.1	0.6	1.0	1.0
Private consumption	–0.8	–1.8	0.5	1.1	1.0
Total fixed investment	–4.0	–12.2	1.3	1.4	0.7
Exports	–3.9	–19.1	0.0	0.3	0.4
Imports	–4.3	–14.6	0.9	1.4	1.2
GDP deflator	2.8	2.1	0.0	–0.6	–1.6
Public expenditures net of interest payments	3.4	4.9	1.5	1.6	2.7
Public receipts net of interest receipts	1.1	–1.9	1.0	–1.5	–4.5
Public deficit / GDP (*)	2.7	5.3	0.2	1.5	3.5
Public deficit net of interest payments and receipts / GDP (*)	–2.2	0.9	0.2	1.5	3.4
Public expenditures net of interest payments / GDP (*)	44.2	47.8	0.4	0.6	1.6
Public receipts net of interest receipts / GDP (*)	46.5	47.0	0.2	–0.9	–1.8
Public deficit net of interest payments and receipts / Trend GDP (*)	–2.2	0.9	0.2	1.4	3.3

[1] Percentage rate of change, except (*): percentage points.
[2] Percentage difference with respect to the baseline in 2009, except (*): percentage points difference with respect to the baseline in 2009.

Table 3

Breakdown of the Effects of Discretionary Public Finance Measures on the German Macroeconomy, 2009

	All Measures *(cfr. Table 4)*	***of which*** **: Taken in Response to the Crisis**	***of which*** **: Reflecting Environmental Premium**
GDP	1.0	0.8	0.2
Private consumption	1.8	1.6	0.7
Total fixed investment	1.6	1.7	0.3
Exports	–0.1	–0.1	0.0
Imports	1.2	1.1	0.7
GDP deflator	0.0	–0.1	0.0
Public expenditures net of interest payments	1.9	1.2	0.3
Public receipts net of interest receipts	–0.6	–0.6	0.2
Public deficit / GDP (*)	1.1	0.8	0.1
Public deficit net of interest payments and receipts / GDP (*)	1.1	0.8	0.1
Public expenditures net of interest payments / GDP (*)	0.5	0.2	0.0
Public receipts net of interest receipts / GDP (*)	–0.7	–0.6	0.0
Public deficit net of interest payments and receipts / Trend GDP (*)	1.1	0.8	0.1

Note: Deviations from baseline in percent, except (*): percentage points.

fiscal multipliers in the German model.[31]

The estimated impact of fiscal measures on GDP includes the effects of car scrapping schemes (in both countries) and incentives to investment on machinery (in Italy only). Car scrapping schemes were introduced in February 2009 in both countries and expired in September and December, respectively. It is estimated that their contribution to GDP growth in 2009 amounted to 0.2 percentage points in both countries. Investment incentives in Italy (the so-called "Tremonti-ter") were introduced in July 2009 and are due to expire next June. We estimate that in 2009 they boosted GDP by slightly more than 0.1 percentage points.

Preliminary estimates for 2010 (based on projections for both public finance aggregates and macroeconomic variables) suggest that the gap between the two countries in terms of support to growth from fiscal stimulus measures will widen this year: the Italian fiscal impact on economic

[31] This is consistent with the evidence presented in Henry, Hernández de Cos and Momigliano (2008), where, for the first year after the shock, the fiscal multiplier systematically tends to be higher for Germany than for Italy. This is not so, however, for the following year. See also Fagan and Morgan (2005).

activity will turn broadly neutral while for Germany it will be broadly the same as in 2009. In both countries, a negative impact on GDP growth is estimated to stem from the expiration of the car scrapping incentives. In Italy, this will be broadly offset by higher current expenditure (financed, as in 2009, by extraordinary taxation) and by some (positive) lagged effects of the 2009 measures. In the case of Germany, significant expenditure-increasing and revenue-reducing measures have been implemented for 2010.

While the automatic stabilizers had a broadly comparable impact on the budget balance (1.4 per cent of output for Italy and 1.6 per cent for Germany), their estimated effects on GDP are much more pronounced in Germany than in Italy (1.3 and 0.3 percentage points, respectively). This reflects partly their composition (with much higher unemployment-related payments in the case of Germany) and, to a larger extent, the higher fiscal multipliers in the German model. In both countries, however, automatic stabilizers have been relatively less effective than discretionary measures, in terms of GDP gain for a given increase in current deficit.

Overall, discretionary and automatic fiscal responses to the downturn are assessed to have contributed to reducing the impact of the crisis in 2009 by 1.0 percentage points in Italy and by 2.1 in Germany.[32] The difference between the two countries virtually vanishes if the extreme assumption is made that the two economies react identically to fiscal shocks and hence the same set of standard fiscal multipliers is used for both countries.[33]

The impact on prices of the fiscal responses to the crisis (automatic and discretionary together) has been more pronounced in Italy than in Germany, reflecting the larger fall (due to automatic stabilizers) in social contribution and VAT in the former country (see Section 3).

The deviations which occurred in 2009 of budgetary components from the neutrality assumption (as defined above) led to a 3 percentage points increase of the deficit-to-GDP ratio in both countries (last column of Table 2). In Italy, the difference can be evenly attributed to both receipts and expenditures, in Germany, mostly to receipts. The corresponding effects on GDP are, for both countries, close to the overall estimated impact of discretionary measures and automatic stabilizers (previous column of Table 2), notwithstanding the much larger change induced on the deficit.

5 Concluding remarks

The worldwide recession that spread in the fall of 2008 was counteracted by an extraordinarily massive and prompt response of both monetary and fiscal policy authorities everywhere.

In the European context, the recourse to discretionary fiscal stimulus measures and the intensity with which automatic stabilisers operated varied across countries, largely reflecting the different room for manoeuvre set by their different starting conditions.

Germany and Italy, the countries object of this study, responded to the crisis with a relatively ample fiscal reaction by the first and with a limited stimulus by the latter.

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[32] It must be noted that our estimates do not include the impact of some measures taken by both governments whose effects cannot be easily assessed (e.g., measures taken to foster banks' capitalization, to extend guarantees on deposits, etc.). To put our estimates into perspective, it may be useful to refer, for the Italian case only, to the results in Caivano, Rodano and Siviero (2010). They estimate the effects on output of the reaction of monetary policy to the crisis to be approximately the same as the positive boost of fiscal policy as estimated here. Their estimate, however, does not include the impact of non-conventional monetary policies.

[33] We used the set of multipliers of the OECD Interlink model for the euro area presented in Dalsgaard *et al.* (2001): 1.2 for direct spending and –0.5 for taxes. We applied the multiplier for taxes also to transfers. In this analysis, for both countries, the general government reduced the fall in real GDP in 2009 by approximately 1½ percentage points.

Concerning discretionary and automatic budgetary responses, our findings – which overall suggest that differences may be less pronounced than they look – may be summarised as follows:

1) The discretionary stimulus measures in Germany have been markedly more deficit-expanding than in Italy. However, the cyclically-adjusted primary balances worsened by a similar amount in the two countries; in other terms, the difference in discretionary policies largely offset the divergence in underlying trends (which implied a larger worsening of the budget balance in Italy);
2) contrary to Germany, Italy financed its stimulus measures partly with deficit-reducing interventions characterized by a limited negative impact on the economic activity, with the aim of stimulating the economy while at the same time limiting the short-term effects on the deficit; this policy implies, however, future budgetary costs.
3) the automatic stabilisers are estimated to have had a comparable impact on the deficit of the two countries.

We also assessed the macroeconomic effects of stimulus measures and the overall stabilizing role of the two public sectors on the basis of counterfactual simulations with the econometric models of the two countries developed and maintained at the Deutsche Bundesbank and Banca d'Italia, respectively. Our main results are the following:

i) discretionary stimulus measures raised GDP by 0.8 percentage points in Germany and 0.6 points in Italy. For a given impact on the deficit, the effect on Italian GDP is larger, reflecting the differences in the composition of the two stimulus packages (which more than offset the lower fiscal multipliers implicit in Banca d'Italia's model);
ii) by contrast, automatic stabilisers are estimated to have boosted output more in Germany than in Italy;
iii) overall, the general government reduced the fall in real GDP in 2009 by more than 2 percentage points in Germany and by 1 in Italy.

As already noted, the results of our simulations are influenced by differences in the two econometric models, which (though consistent with previous findings in the literature) may or may not fully correspond to genuine differences between the two economies. Under the extreme assumption that the two economies react identically to fiscal shocks, the differences in the combined impact of discretionary fiscal measures and automatic stabilizers in 2009 almost vanish.

APPENDIX 1
THE MODELS USED FOR THE COUNTERFACTUAL SIMULATIONS

***Bundesbank's BbkM**:* The long-run properties of the quarterly macroeconometric model of the Bundesbank can be described as neoclassical; in the short-run, by contrast, the model features are basically Keynesian. Potential GDP is derived by a Cobb-Douglas production technology with constant returns to scale and long-run growth is driven by variations in population and productivity. Firms and households optimise their behaviour. Their expectation formation process is largely backward-looking (adaptive expectations). The short-run properties of the model are determined by price and wage rigidities. The rather slow adjustment of prices and wages to their equilibrium levels leads to persistent market disequilibria and cyclical fluctuations around the path of potential GDP.[34]

***Banca d'Italia's BIQM**:* The new version of the BIQM shares many of the characteristics of the previous one, released in 1986 (see Banca d'Italia, 1986). Its long-term properties are consistent with a neoclassical model postulating exogenous growth, in which full employment of factors is accompanied by a constant rate of inflation, hence constant relative prices. The levels of output and of the employment of capital and labour are consistent with the parameters of the aggregate production function and with relative factor costs. The steady-state growth path of the model, stemming from technical progress and the accumulation of real and financial wealth, interacts with the dynamics of the adjustment process to determine short-term characteristics.[35] The adjustment processes essentially reflect three factors: the stickiness of prices and wages, which prevents their instantaneous adaptation to the situation of full resource utilisation; the non-malleability of installed physical capital, which limits the short-term modifiability of the relative composition of productive factors; and the possibility that expectations and outcomes may not coincide. In the short run, therefore, given these rigidities, the characteristics of the model fit the Keynesian framework in which the level of output is determined by the trend in aggregate demand, in a situation of oversupply in both the goods and the labour market.[36]

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[34] A more comprehensive description of the model can be found in Hamburg and Tödter (2005). Since 2005 the model has been used in a version adjusted to requirements of the projection process within the ESCB. Calculations are undertaken with the model focusing on the German economy, where "external" variables (e.g., interest rates, exchange rates, international commodity prices) are exogenous.

[35] The coexistence of a neoclassical macroeconomic equilibrium framework with Keynesian short-to-medium-term adjustment processes is a feature shared by most existing macroeconometric models (see, e.g., Church, Sault, Sgherri and Wallis, 2000).

[36] For a more detailed description of the main properties of the model, see Busetti, Locarno and Monteforte (2005).

APPENDIX 2
THE DESIGN OF THE NEUTRAL BENCHMARK COUNTERFACTUAL SIMULATION

To simulate the effects of neutral public budget, we adopt the following definition: the activity of the public sector is deemed neutral if all the items of the general government budget in 2009 (excluding interest payments) remain at the same level of 2008, in relation to trend GDP.[37]

This definition of neutrality includes a small but relevant variant with respect to the definition adopted in previous studies. Specifically, instead of keeping budget items unchanged with respect to GDP, in this case we chose to keep them constant with respect to *trend* GDP. This choice is justified by the large output drop recorded in 2009 in both countries. Had we kept the ratios unchanged with respect to (headline) GDP, this would have implied slashing all budget items by a very sizeable, and implausible, amount (about 4 per cent in nominal terms). Such a dramatic cut to all budget items could hardly be deemed "neutral". Keeping items unchanged with respect to trend GDP guarantees medium-term neutrality, avoiding excessive fluctuations in budgetary items.

A different criterion was adopted for interest payments, kept endogenous as a function of interest rates and the size of public debt.[38] Consequently, the counterfactual simulation reflects, via the channel of interest payments, the indirect effects stemming from the counterfactual developments in all other budget items.

It should be emphasized that the "neutral budget" simulation cannot be directly compared with the other two (*i.e.*, with the "no discretionary measures" and "no cyclical effects" simulations), as it ignores by construction any additional information on the effectiveness of specific fiscal policy measures. For instance, the macroeconomic effects of incentives for car purchases (estimated to have boosted the GDP of both countries by 0.2 points in 2009) are included in the previous two simulations, but not in the "neutral budget" one.

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[37] For a more detailed discussion of the motivations behind this choice, including a critical appraisal of the drawbacks that alternative definitions (e.g., keeping budget items unchanged in real terms) entail, see, e.g., Momigliano and Siviero (1997), where references to the relevant literature may also be found.

[38] For the treatment of interest rates in the counterfactual benchmark simulation, see Subsection 3.4.

APPENDIX 3
TREATMENT OF *CETERIS PARIBUS* ASSUMPTIONS

This appendix describes the assumptions which were formulated for exchange rates, interest rates and the mechanisms involved in the formation of expectations in all counterfactual simulations.

As regards interest rates, the choice was made to keep the nominal short-term interest rates unchanged with respect to history. Let us remark, in this respect, that our counterfactual simulations, while resulting in a further worsening of the economic activity, do not radically change the picture: the order of magnitude of the recession, though sensibly reduced, remains very large in a historical perspective. It is thus reasonable to assume that monetary policy would not have been much different for our fiscal policy simulations. Let us also emphasize that margins for further expansionary monetary policy with traditional tools were limited, given the low levels reached by policy interest rates.[39] Long-term rates were also kept unchanged.

As regards the (nominal) exchange rate, the technically simple hypothesis of unchanged historical values was adopted; this choice is justified by the same line of reasoning as above.

Instead of the foregoing hypotheses it would have been possible, in theory, to try and take account of the effects of the public finances on the risk premia associated with the issuer and expectations concerning inflation and the exchange rate. Overall, we feel that our choices minimize the margin of discretion and are less arbitrary than alternatives, given the well-known difficulties of finding sensible and empirically robust explanations of risk premia dynamics.

As regards the treatment of economic agents' expectations, the latter are by and large assumed to be of the adaptive type in both models, with the exception of inflation expectations in the BIQM, which are generated by an equation modeling expectations data taken from the Isco-Mondo Economico survey.

It should be noted, however, that some phenomena that may have played an important role in determining the macroeconomic effects of fiscal policy in the case at hand cannot be taken into account. This is the case, for instance, of the public guarantees which were announced, at the peak of the financial crisis, to reassure economic agents (in particular depositors) and hence avoid a meltdown of the financial system.

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[39] A possible alternative, though not straightforward, would have been adopting a Taylor rule. At any rate, the changes in inflation and the output gap which result from our counterfactual simulations are overall quite limited and moreover tend to offset one another.

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FISCAL POLICY IN THE UNITED STATES: AUTOMATIC STABILIZERS, DISCRETIONARY FISCAL POLICY ACTIONS, AND THE ECONOMY

Glenn Follette[*] *and Byron Lutz*[*]

We examine the effects of the economy on the government budget as well as the effects of the budget on the economy. First, we provide measures of the effects of automatic stabilizers on budget outcomes at the federal and state and local levels. For the federal government, the deficit increases about 0.35 per cent of GDP for each 1 percentage point deviation of actual GDP relative to potential GDP. For state and local governments, the deficit increases by about 0.1 per cent of GDP. We then examine the response of the economy to the automatic stabilizers using the FRB/US model by comparing the response to aggregate demand shocks under two scenarios: with the automatic stabilizers in place and without the automatic stabilizers. Second, we provide measures of discretionary fiscal policy actions at the federal and state and local levels. We find that federal policy actions are somewhat counter-cyclical while state and local policy actions have been somewhat pro-cyclical. Finally, we evaluate the impact of the budget, from both automatic stabilizers and discretionary actions, on economic activity in 2008 and 2009.

1 Introduction

Fiscal policy has been a key policy tool in addressing the aggregate demand consequences of the financial crisis in the United States. This paper examines fiscal policy at both the federal and state and local level and looks at the effects of both automatic stabilizers and discretionary fiscal actions. Our analysis involves three steps. First, we provide measures of the effects of the automatic stabilizers on budget outcomes at the federal and state and local levels. For the federal government, the deficit increases about 0.35 per cent of GDP for each 1 percentage point deviation of actual GDP relative to potential GDP. For state and local governments, the deficit increases by about 0.1 per cent of GDP. We then examine the response of the economy to these automatic stabilizers using the FRB/US model by comparing the response to aggregate demand shocks under two scenarios: with the automatic stabilizers in place and without the automatic stabilizers. Second, we provide measures of discretionary fiscal policy actions at the federal and state and local levels. We find that federal policy actions are somewhat counter-cyclical: expenditures and tax actions are typically more stimulative after a business cycle peak than before the peak. In contrast, we find that state and local policy actions have been somewhat pro-cyclical, probably reflecting constitutional restrictions on general fund budget balances. We also consider the multiplier impacts of these actions. Third, armed with the information from our two estimation steps, we evaluate the impact of the budget, from both automatic stabilizers and discretionary actions, on economic activity over the past two years.

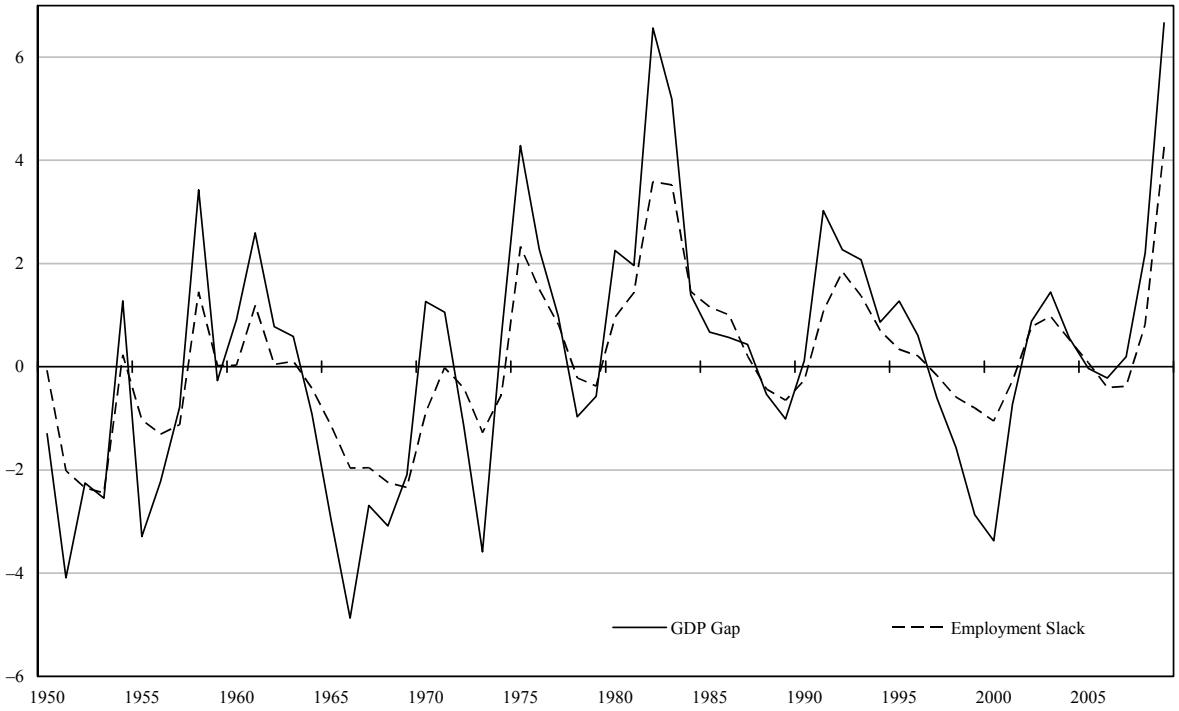
2 Automatic stabilizers

To assess the effect of the business cycle on government budgets, we use a high-employment budget framework that allows us to separate National Income and Product Accounts (NIPA) revenues and expenditures into their cyclical and non-cyclical components; our measures are based on the methodology developed for the federal budget by Frank de Leeuw *et al.* (1980), refined by

[*] Federal Reserve Board.

Figure 1

Estimates of GDP Gap and Employment Slack
(calendar years, percent)



Note: GDPGAP = (Potential GDP – GDP) / Potential GDP *100. Employment slack is unemployment rate minus NAIRU.

Cohen and Follette (2000), and subsequently applied to the state and local sector by Knight, Kusko and Rubin (2003), and Follette, Kusko and Lutz (2008), The high-employment budget methodology allows us to strip out the effects of cyclical macroeconomic developments on actual budget outcomes and thus provides an indication of the path the budget would have followed had the economy continually operated at its potential level. By design, it is unaffected by the actions governments take to offset the automatic changes in revenue or expenditures, such as tax rate increases in response to falling receipts.

To construct our high-employment budget, we use the NIPA budget data at the federal and state and local levels and the Congressional Budget Office's (CBO's) estimates of potential GDP. Figure 1 shows the estimates of the GDP gap and the difference between the actual unemployment rate and the NAIRU (which we term "employment slack"). Then we follow the procedure detailed in Cohen and Follette (2000) to adjust receipts and current expenditures to the levels they would attain if the economy were operating at its potential level.

The cyclical adjustment to receipts, which accounts for the bulk of the total cyclical adjustment, depends upon three factors: the composition of receipts, the estimated cyclicality of the base for each major tax, and the elasticity of the tax to the base.[1] For summary statistics we will

[1] The tax bases for the major taxes are NIPA taxable personal income for personal taxes, NIPA corporate profits for corporate taxes, aggregate wages and salaries for social insurance contributions, NIPA personal consumption expenditures on goods for sales taxes. NIPA taxable personal income is defined as NIPA personal income less transfers plus employee contributions for social insurance. We adjust NIPA corporate profits to remove the *earnings* of the Federal Reserve System, which are included in the NIPA measure.

report two measures, the elasticity of the overall tax system with respect to cyclical GDP, $\varepsilon_{\frac{T}{GDP}}$ (Table 2), and the change in taxes associated with a 1 percent change in the cyclical GDP (Table 5). The overall elasticity of the tax system is:

$$\varepsilon_{\frac{T}{GDP}} = \sum \varepsilon_{B_i} * \varepsilon_{\tau_i} * \frac{T_i}{T} = \sum \varepsilon_{\frac{i}{GDP}} * \frac{T_i}{T} \tag{1}$$

where T is total tax collections, T_i is the collection from tax i, B_i is the tax base of tax i, ε_{B_i} is the elasticity of B_i with respect to cyclical changes in GDP, ε_{τ_i} is the elasticity of tax i with respect to B_i and $\varepsilon_{\frac{i}{GDP}}$ is the elasticity of tax i with respect to cyclical GDP. Although we estimate time varying elasticities, the time subscripts are suppressed here for notational simplicity. The second summary measure, the change in revenues as a percent of GDP, simply equals the product of the overall elasticity, $\varepsilon_{\frac{T}{GDP}}$, and the tax share of GDP. Accordingly, we require estimates of the elasticity of tax bases to cyclical changes in GDP, ε_{B_i}, and elasticities of the taxes to the tax bases, ε_{τ_i}. The first is accomplished through regressions of components of the tax base with respect to the GDP gap. The tax elasticities, ε_{τ_i}, are built up from detailed information about the tax code and its changes over time and a variety of auxiliary regressions.[2]

2.1 Elasticity of the tax bases

Our estimates of the elasticity of the tax bases, ε_{B_i}, are implemented through several steps and are based on a few assumptions. First, we assume that each component of the tax base is potentially differentially affected by cyclical changes in GDP. Second, we assume that the bases are buffeted by other factors than cyclical changes in GDP, and therefore we do not use detrending methods, such as an HP filter, to separate trend from cycle because these other factors would be conflated with the cyclical changes. Third, we assume that the cyclical affects may appear with some lag. Equation (2) captures these assumptions and equation (3) is the resulting high-employment tax base.

$$SHAREK_{i,t} = SHARE_{i,t} - \sum_{v=0}^{v=lag_i} \beta_{i,v} * \left(GDPGAP_{t-v}\right) \tag{2}$$

$$BASEK_{i,t} = SHAREK_{i,t} * GDPK_t \tag{3}$$

For each variable, the K denotes the high-employment variable (potential GDP is therefore denoted as $GDPK_t$), $SHARE_i$ is the ratio of the base for tax i to GDP, $GDPGAP$ is the difference between potential GDP and actual GDP divided by potential, $BASE_i$ is the relevant tax base for tax i, and lag_i quantifies the lag structure for tax i.

We operationalize equation (2) by estimating the first difference of equation 2:

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[2] We do not attempt to estimate the tax elasticities from the aggregate time series data because movements in taxes in these data also include frequent and sometimes substantial changes in policy.

Table 1

Share Equations

Item	*GDP gap* $_t$	*GDP gap* $_{t-1}$	*GDP gap* $_{t-2}$	*GDP gap* $_{t-3}$	*GDP gap* $_{t-4}$	∑*(GDP gap)*
	(1)	(2)	(3)	(4)	(5)	(6)
Δ Wages	0.189	–0.121	–0.040	–0.073	0.000	–0.044
t -value	10.072	–6.185	–2.022	–3.736	0.020	n.a.
Δ Supplements (inc. employer's)	0.033	–0.004	0.002	–0.012	0.005	0.024
t -value	5.050	–0.621	0.248	–1.743	0.832	n.a.
Δ Profits	–0.286	0.028	0.069	–0.013	0.107	–0.095
t -value	–11.536	1.094	2.678	–0.491	4.278	n.a.
Δ Proprietor's income	0.011	–0.003	–0.023	0.001	0.007	–0.007
t -value	0.654	–0.164	–1.344	0.033	0.423	n.a.
Δ Rental income	0.021	–0.001	0.008	0.003	–0.005	0.025
t -value	4.019	–0.186	1.441	0.644	–1.016	n.a.
Δ Net interest	0.034	0.004	–0.014	–0.017	0.005	0.012
t -value	3.112	–0.186	–1.269	–1.508	0.506	n.a.
Δ Rent & net interest	0.054	0.003	–0.007	–0.013	0.000	0.038
t -value	4.536	0.261	–0.529	–1.087	0.021	n.a.
Δ HEB property	–0.005	–0.002	–0.002	–0.003	0.000	–0.010
t -value	–3.209	–1.030	–1.006	–1.669	0.112	n.a.
Δ Property	0.466	–0.155	–0.152	–0.245	0.020	–0.065
t -value	3.202	–1.020	–1.007	–1.615	0.137	n.a.
Δ Personal consumption, goods	0.066	–0.016	–0.030	0.102	–0.036	0.087
t -value	2.420	–0.550	–1.052	3.568	–1.306	n.a.

Note: Dependent variable is the income variable as a share of GDP and then differenced.
GDP Gap = (Potential GDP – GDP) / Potential GDP *100.

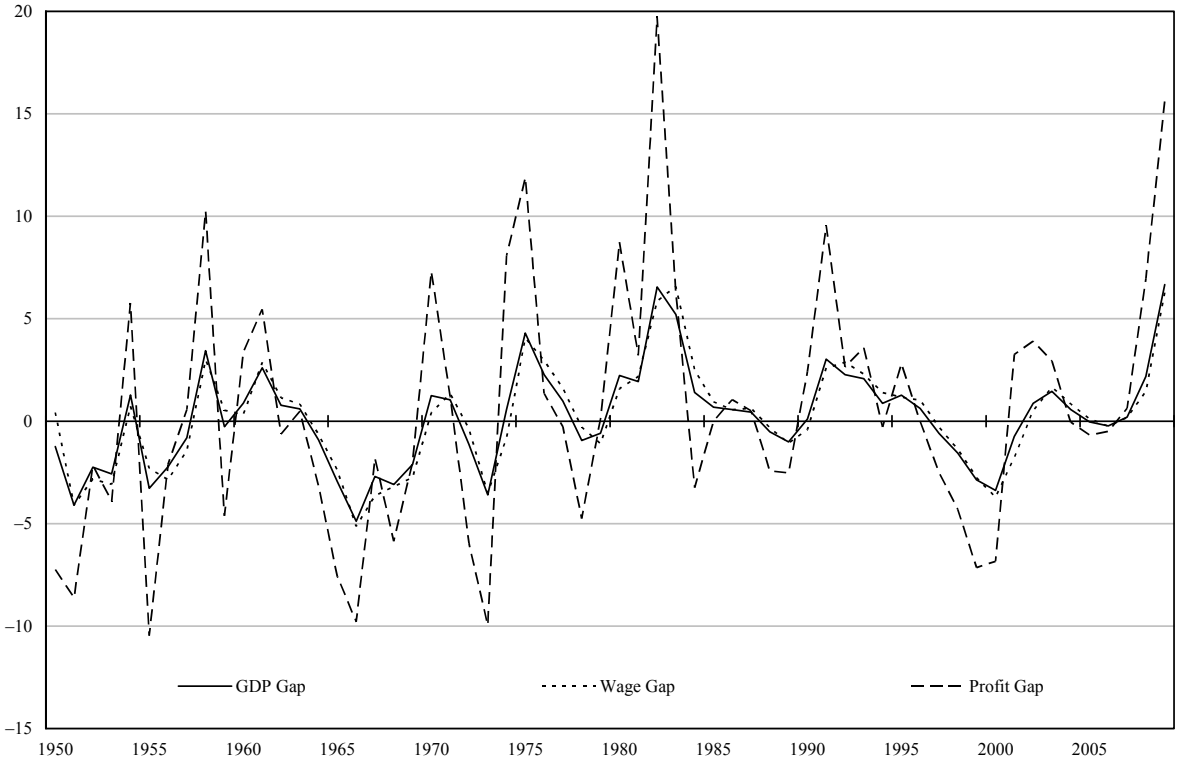
$$\Delta SHARE_{i,t} = \sum_{v=0}^{v=lag_i} \beta_{i,v}\, i * \left(\Delta GDPGAP_{t-v}\right) + u_{i,t} \tag{4}$$

and then using the $\hat{\beta}_i$ s to calculate the $SHAREK_{i,t}$ values. We use quarterly data from 1950 through 2008 to estimate the *i* relationships and the regression results are found in Table 1.[3] As expected, the profit share initially falls as the economy moves into recession while the wage share rises (see column 1). Figure 2 provides a graphical representation for wages and profits by plotting the "profits gap" (cyclical profits divided by potential profits) and the "wage gap" against the GDP gap. As is clearly visible, wages are nearly perfectly unit elastic, whereas profits have an elasticity significantly in excess of 1. Finally, in order to display summary statistics for ε_{B_i}, we calculate the mean elasticity for each of the major tax bases by regressing the wage, personal income, and profits gaps on the GDP gap and its lags. These elasticities are presented in column 2 of Table 2.

[3] Note, we do not require that the deviations in the shares sum to zero. The deviations in GDI and GDP have a cyclical pattern. Thus, the income gaps do not have to sum to the GDP gap.

Figure 2

Estimates of GDP, Wage and Profit Gaps
(calendar years, percent of potential GDP)



Note: A positive GDP gap implies actual GDP is less than potential GDP.

2.2 Federal government tax elasticities

We now turn to our procedures for estimating the elasticity of taxes to the base, ε_{τ_i}, for the federal side. These procedures are based on the methodology in Cohen and Follette (2000). Federal personal income taxes are roughly 45 per cent of federal NIPA-based total tax receipts. Our personal income tax elasticity measure, ε_{τ_p}, reflects two factors: the elasticity of taxes with respect to the administrative definition of income (called adjusted gross income or AGI) and the elasticity of AGI with respect to the national accounts measure of income. Furthermore, the elasticity of income taxes with respect to aggregate AGI is a weighted sum of the number of returns and average income per return where the weights are the relative contributions of changes in returns and average income to the cyclical change in income. More formally:

$$\varepsilon_{\tau_p} = \varepsilon_{tagi}\ \varepsilon_{pinc} = \left[\alpha * \varepsilon_{preturns} + (1-\alpha) * \varepsilon_{ptax}\right] \varepsilon_{pinc} \tag{5}$$

where ε_{tagi} is the elasticity of taxes with respect to *AGI*, ε_{pinc} is the elasticity of AGI with respect to NIPA adjusted personal income, $\varepsilon_{preturns}$ is the elasticity of taxes with respect to changes in the

number of returns, and ε_{ptax} which is the elasticity of the income tax schedule with respect to AGI per return. Finally, α measures the relative importance of the numbers of returns and income per return in cyclical income.

As detailed in Cohen and Follette (2000) we calculate ε_{τ_p} by taking a weighted average of separate calculations for single and non-single filers. We assume that $\varepsilon_{preturns}$ equals 1 and construct the weight α for single and non-single returns separately by regressing the number of returns filed and AGI per return to obtain estimates of their relative cyclical sensitivities. We find that for non-singles α is zero as filing is not cyclically sensitive, but for single filers alpha is about 0.5. We estimate ε_{ptax} for each year based on that year's tax schedule and actual distribution of income. Turning to ε_{pinc}, personal income as defined by the tax authorities, AGI, is more cyclical than personal income in the national accounts (NIPA), perhaps because capital gains realizations (which are not included in national accounts' definition of income) appear to be cyclical. We estimate ε_{pinc} by regressing average AGI per return on NIPA income per employee, with allowance for a change in the elasticity after the 1986 Tax Reform Act, and find that the current elasticity is about 1.5, compared to 1.1 before. The resulting estimates for ε_{τ_p} are shown in Table 2 (columns 3 and 5) (these are mean elasticities, with the mean taken over time).

The next largest source of revenues for the federal government is social insurance contributions. These are somewhat inelastic because, while the tax rate is constant the wage base is capped, and because some sources of social insurance contributions are not based on wages. The cap, as a fraction of average wages, has fluctuated over time with changes in law and the distribution of wages. We estimate the elasticity of social insurance contributions, $\varepsilon_{\tau_{si}}$ using a similar methodology used to produce ε_{τ_p}. The resulting estimates are shown in Table 2 (columns 3 and 5), with the elasticity rising from about 0.3 in 1965-85 to 0.7 in 1986-2008 largely as a result of the wage caps being raised.

The corporate tax system itself is essentially unit elastic as the rate structure is very flat. As a result, ε_{ctax} is equal to approximately 1.04 and we assume α equals zero. The cyclical movements in corporate income subject to tax are smaller than those of economic profits because some adjustments such as loss carry backs are counter-cyclical. We estimate that the elasticity of corporate income subject to tax with respect to economic profits, ε_{cinc}, is about 0.8. The overall elasticity of corporate taxes to economic profits, ε_{τ_c}, is therefore about 0.8.

Other taxes – chiefly excise taxes and customs duties – are a small and declining share of receipts at the federal level. We set the elasticity of customs duties at 2.0, the cyclical elasticity of imports found in the FRB/US model and the elasticity of excise taxes is built up from demand elasticities of the various components – many of which, such as tobacco and alcohol – are rather inelastic. As shown in Table 2 the resulting elasticity for these other taxes is around 1.

2.3 Federal government total tax elasticity and cyclical revenues

Combining the estimates in columns (2) and (3)/(5) of Table 2 allows us to display the elasticity of the tax receipts with respect to cyclical GDP, $\varepsilon_{\frac{i}{GDP}}$, for the major taxes (see columns 4

Table 2

Tax Elasticities

Item	Share of Taxes, 2007	Elasticity of Base	Tax Elasticity			
			1960-1985		1986-2008	
			NIPA Base	GDP	NIPA Base	GDP
	(1)	(2)	(3)	(4)	(5)	(6)
		E_B	E_τ	$E_{i/GDP}$	E_τ	$E_{i/GDP}$
Federal						
Total ($E_{T/GDP}$)		n.a	n.a.	1.2	n.a.	1.6
Personal	45%	1.0	1.4	1.4	2.0	2.0
Social insurance	37%	1.0	0.3	0.3	0.7	0.7
Corporate	14%	4.0	0.7	2.7	0.8	3.7
Other taxes	4%	1.0	0.9	0.9	1.0	1.0
State and Local						
Total ($E_{T/GDP}$)		n.a	n.a.	0.6	n.a.	0.6
Own revenues	100%	n.a	n.a.	0.7	n.a.	0.8
Personal	24%	1.0	1.1	1.1	1.5	1.5
Corporate	4%	4.0	0.7	2.8	0.8	3.6
Other taxes	72%	1.0	0.5	0.5	0.5	0.5

Note: Estimated elasticities vary from year to year. The table reports multi-year averages.

and 6).[4] Focusing on the 1986-2008 period (column 6), corporate receipts are by far the most elastic, largely because profits are very elastic (e.g., ε_{B_c} is large). Equation (1) allows us to pull these estimates together to produce the Federal total tax elasticity, $\varepsilon_{\frac{T\,Fed}{GDP}}$. For the earlier period the total elasticity is 1.2 and for the later period it is 1.6. Total federal receipts are thus currently quite elastic with respect to the business cycle. The elasticity has increased over time as a result of both the increase in wages subject to social insurance taxes and the 1986 tax reform's effect on personal and corporate receipts.

In addition to the revenue elasticities, we also produce analogous estimates of cyclical revenues: $TAX_{i,t} - TAXK_{i,t}$ (see Table 3 and Figure 3A). These are calculated as:

$$TAXK_{i,t} = TAX_{i,t} + TAX_{i,t} * ((BASEK_{i,t}/BASE_{i,t}) - 1) * \varepsilon_{\tau_{i,t}} \quad (6)$$

where TAX_i is tax revenue from tax i, $TAXK_j$ is the high-employment, or non-cyclical, portion of tax revenue and $BASEK_j$ comes from equation (3). Note that the cyclical revenues are produced using the time-varying estimates of $\varepsilon_{\tau_{i,t}}$ and $BASEK_{i,t}$.

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[4] We estimate the multiyear elasticities by regressing the log differences of cyclical taxes on the log differences of the cyclical bases (or GDP) which provides the average response over the period with the observed dynamics of the cycle.

Table 3

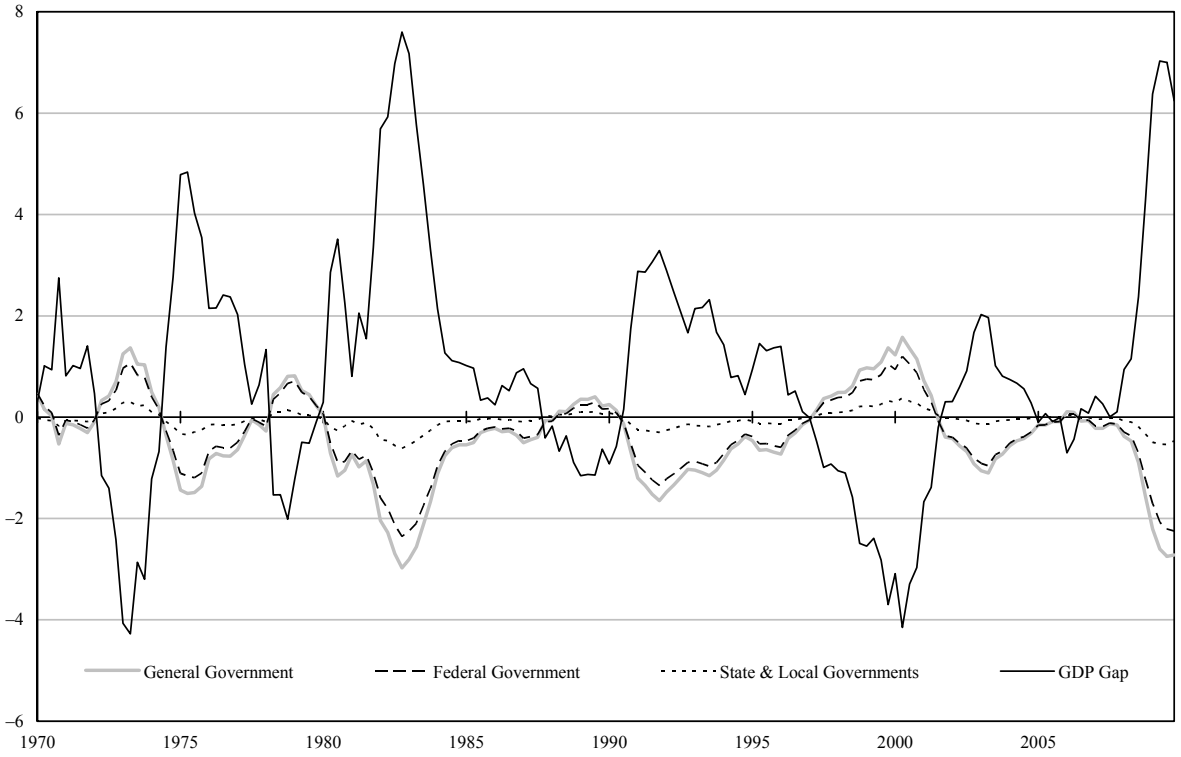
Cyclical Receipts
(percent of potential GDP)

Year	Federal	State and Local	General Government	GDP Gap
	(1)	(2)	(3)	(4)
1970	0.10	–0.08	0.02	1.27
1971	–0.13	–0.07	–0.20	1.05
1972	0.27	0.08	0.35	–1.14
1973	0.91	0.26	1.17	–3.59
1974	–0.12	–0.04	–0.15	0.63
1975	–1.14	–0.31	–1.45	4.28
1976	–0.61	–0.15	–0.77	2.27
1977	–0.22	–0.07	–0.29	0.97
1978	0.34	0.07	0.40	–0.97
1979	0.45	0.04	0.50	–0.57
1980	–0.56	–0.17	–0.73	2.25
1981	–0.84	–0.14	–0.98	1.96
1982	–1.98	–0.52	–2.50	6.57
1983	–1.87	–0.41	–2.28	5.18
1984	–0.65	–0.10	–0.75	1.39
1985	–0.34	–0.06	–0.40	0.67
1986	–0.23	–0.05	–0.28	0.57
1987	–0.31	–0.05	–0.35	0.44
1988	0.06	0.05	0.11	–0.53
1989	0.24	0.09	0.33	–1.01
1990	–0.11	–0.01	–0.11	0.12
1991	–1.16	–0.27	–1.43	3.03
1992	–1.06	–0.20	–1.26	2.27
1993	–0.92	–0.17	–1.09	2.07
1994	–0.51	–0.08	–0.59	0.87
1995	–0.50	–0.11	–0.61	1.27
1996	–0.33	–0.07	–0.40	0.61
1997	0.17	0.05	0.22	–0.61
1998	0.50	0.14	0.63	–1.56
1999	0.84	0.25	1.10	–2.87
2000	1.01	0.31	1.33	–3.37
2001	0.09	0.08	0.17	–0.73
2002	–0.59	–0.06	–0.65	0.88
2003	–0.82	–0.11	–0.93	1.45
2004	–0.40	–0.04	–0.44	0.56
2005	–0.12	0.00	–0.12	–0.03
2006	–0.00	0.01	0.01	–0.22
2007	–0.15	–0.03	–0.18	0.19
2008	–0.66	–0.18	–0.83	2.21
2009	–2.06	–0.51	–2.57	6.66

Note: GDP Gap = (Potential GDP – GDP) / Potential GDP *100.

Figure 3A

Estimates of Cyclical Receipts by Government
(percent of potential GDP)



Note: A positive GDP gap implies actual GDP is less than potential GDP.

2.4 State and local government elasticities and receipts

State and local governments have a less elastic tax system than the federal government general because they rely more heavily on property taxes and sales taxes which are less cyclically sensitive and their income tax structures are less elastic. For personal income taxes, we use the same methodology as at the federal level. However, instead of estimating the effective elasticity of the tax schedule to IRS-based income, ε_{ptax}, for all of the states, we assume that it is 1.1. As state income tax systems generally use the same income concept as the federal government, we use the same estimates made for the federal government for the sensitivity of IRS income to changes in NIPA personal income, ε_{pinc}. Accordingly, we arrive at an overall elasticity of state and local personal income taxes with respect to cyclical personal income, ε_{τ_p}, of 1.1 before 1986 tax reform, rising to 1.5 afterwards. For corporate income taxes we use the federal measure of the elasticity of corporate income taxes to NIPA corporate profits of 0.8. For other taxes, primarily sales and property taxes, we estimate that the cyclical elasticity is 0.5 as sales taxes are unit elastic and property taxes are inelastic.

In addition to its "own" revenue, state and local governments receive a substantial amount of federal grants, equal to about 20 per cent of their total revenues which are a somewhat countercyclical revenue source. We cyclically adjust Medicaid and AFDC grants using the

procedure described below for Medicaid expenditures. For other grants from the federal government, there is no cyclical sensitivity because their levels are set through discretionary appropriations.

We estimate that the elasticity of total receipts to cyclical GDP, $\varepsilon_{TS\,\&\,\frac{L}{GDP}}$, has moved in the range of ½ to ¾ and have averaged 0.6 over the 1986 to 2008 period (see column 6 of Table 2). The elasticity is well below 1 because property taxes and most federal grants have no or little cyclical response. The damping effect of grants is substantial as the elasticity of own receipts is currently about 0.8. The variation over time reflects the changing composition of receipts. Table 3 and Figure 3A show our resulting estimates for the cyclical component of state and local revenues.

2.5 Federal expenditures

Among expenditures, only those transfers and grants that are oriented toward income support respond automatically to changes in economic activity. Fluctuations in unemployment benefits account for the vast majority of the cyclical swing in expenditures; also contributing to the swings are changes in the number of beneficiaries of low-income and disability programs such as food stamps, earned income credit, welfare (prior to the 1996 reform), and disability insurance. We use both aggregate macro data and micro studies to create estimates for the cyclical sensitivity of expenditures.

Unemployment benefits are typically available for up to 26 weeks. Since 1970 the time period is automatically extended in states with high unemployment. However, the automatic trigger appears to be set at "too high" a level and temporary programs have been enacted during every recession. Our estimates of the cyclical component of the budget exclude expenditures by the temporary programs because they are not automatic. Based on these observations we estimate:

$$\Delta \frac{UIBEN_t}{WS_t} = \alpha + \beta_c\, \Delta RU_t + \beta_{-1}\, \Delta RU_{t-1} + \beta_{-2}\, \Delta RU_{t-2} + \in_t \qquad (7)$$

where UIBEN is regular unemployment benefits excluding the temporary benefit expansions, WS is NIPA wages and salaries and RU is the total civilian unemployment rate (RU).

These regression results indicate that a 1 percentage point increase in the unemployment rate would boost benefits by 0.25 per cent of wages and salaries over the first two quarters, or 0.10 per cent of potential GDP, dropping back a bit in the third quarter as benefit eligibility is exhausted (see Table 4).

Other changes in expenditures are smaller individually, but sum to about the same total as unemployment benefits.

Table 4

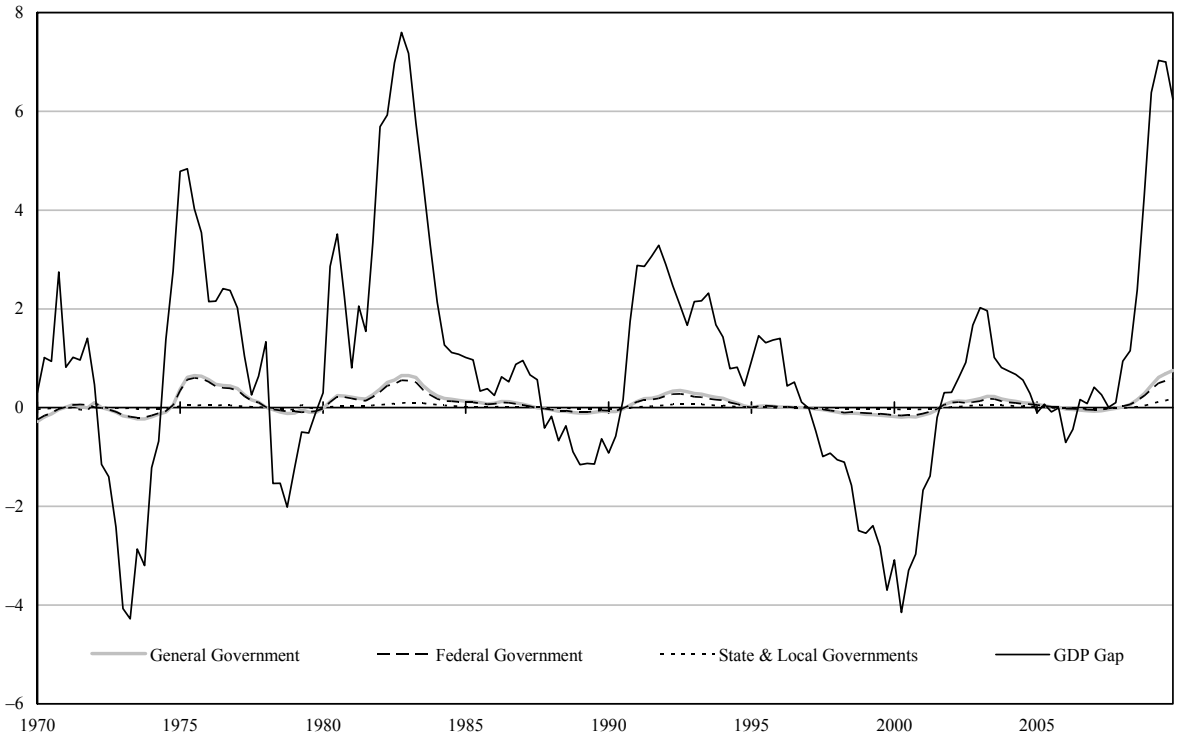
Cyclical Sensitivity of Unemployment and Food Stamp Benefits

Dependent variable	Independent variables		
	RU	***RU*** **(*T*– 1)**	***RU*** **(*T*–2)**
	(1)	(2)	(3)
UI benefits / Wages*100	0.20	0.06	–0.02
t-value	(10.40)	(2.60)	(1.20)
Food Stamps / GDP*100	0.037		
t-value	(4.73)		

Note: Data are in first differences.

Figure 3B

Estimates of Cyclical Expenditures by Government
(percent of potential GDP)



Note: A positive GDP gap implies actual GDP is less than potential GDP.

The food stamp program is the next largest program. Time series regressions on the aggregate caseload data, similar to equation (7), indicate that a percentage point increase in the unemployment rate boosts food stamp expenditures by about 0.04 per cent of GDP. For welfare and Medicaid we draw upon on Blank (2001) and model the cyclical portion of these programs as a function of past changes in the unemployment rate and infer that Medicaid grants rise by 0.02 per cent of GDP per percentage change in the unemployment rate. In 1996 federal welfare payments were changed to block grants and are no longer sensitive to economic conditions, previously it would have raised these expenditures by 0.015 per cent of GDP. Finally, studies using micro data have concluded that both the old age (OASI) and disability (DI) programs are cyclically sensitive – see Kalman, Rupp and Stapleton (2005) and Autor and Duggan (2006) – but that the movements are economically negligible in size.

Adding up all of the above programs, for every percentage point increase in the unemployment rate cyclical expenditures rise about 0.15 per cent of GDP. Using an Okun's law relation of a 0.4 percentage point change in the unemployment rate for each 1 percentage point change in real GDP implies a 0.06 percentage point increase in federal expenditures for each percent change in real GDP (Table 5 and Figure 3B).

2.6 State and local expenditures

State and local government expenditures are equal to about 15 per cent of GDP, but only

about 3 per cent of GDP are in the cyclically sensitive transfers category. For Medicaid expenditures and welfare caseloads we again draw upon on Blank (2001) to estimate the cyclical sensitivity. For other transfers, we use the time series NIPA data and regressions similar to equation (7) to estimate cyclical sensitivities, but the estimated elasticities are small. All in all, the overall sensitivity of gross state and local expenditures is quite small and lags the business cycle by about a year and reaches only about 0.04 per cent of GDP per percentage point change in the unemployment rate. With much of that accompanied automatically by federal grants, the change in expenditures less grants is only 0.02 per cent of GDP per 1 percentage point change in the unemployment rate and 0.01 per cent of GDP per one percent change in cyclical GDP.

2.7 Cyclical deficits

Table 5A brings these pieces of the analysis together to provide estimates of the cyclical budget sensitivities at the federal, state and local and general government levels. Specifically, we evaluate our revenue and expenditure elasticities using the current values of revenues and expenditures as a percent of GDP. (For instance, the Federal total tax elasticity with respect to cyclical GDP on Table 2 is 1.6 and Federal revenues comprise about 19 per cent of GDP. Thus, the change in Federal revenues as a percent of GDP produced by a 1 percent change in cyclical GDP is 0.30 – see column 1.) We then subtract the expenditure estimates from the revenue estimates to produce an estimate of cyclical deficits, or net lending (column 3). State and local cyclical deficits are much smaller than Federal deficits, likely reflecting balanced budget requirements at the state and local level.

At the general government level (column 3), the deficit is increased about 0.5 per cent of GDP for every 1 percent decline in GDP.[5] In the current environment, the deficit is about 3.3 per cent of GDP, or $500 billion, larger than it would if the economy had been at full employment (Table 5B, column 2, and Figure 3C). Total general government net lending was around $1,600 billion in 2009 (Table 5B, column 1), or 11 per cent of actual GDP, thus about 30 per cent of the 2009 deficit was generated by the automatic stabilizers.

2.8 Effect of automatic stabilizers on the economy

We use simulations of the FRB/US model to examine the degree to which the automatic fiscal stabilizers considered above help or hinder the performance of the broader economy.[6] We simulate the impact of a negative demand shock under two scenarios. In the first simulation the automatic stabilizers are left on and the economy is subjected to a series of negative aggregate demand shocks that by construction lower the level of GDP by 1 percent lower for eight quarters. The federal funds rate is maintained at its baseline value. In the second simulation we turn off the federal automatic stabilizers by using a counterfactual tax structure in which taxes are independent of income and transfers are independent of the unemployment rate and we subject the economy to the same demand shocks used in the first simulation. A comparison of GDP growth in the first and second simulations provides an estimate of the extent to which the stabilizers mute negative demand shocks.

As constructed, in the first simulation, real GDP falls 1 percent for eight quarters. In the second simulation real GDP falls 1.1 per cent after four quarters and 1.2 per cent after eight

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[5] This is a considerably larger response than estimated by Van den Noord (2000), largely reflecting different assessments of the elasticity of taxable personal income to cyclical GDP.

[6] FRB/US is a large-scale quarterly econometric model of the U.S. economy developed by the staff of the Federal Reserve. See Brayton and Tinsley (1996) for a detailed introduction to the model.

Table 5A

Cyclical Response of Budget

Item	Own Revenues (1)	Expenditures less Grants Received (2)	Net Lending (3)
(percent of GDP, per one percent change in cyclical GDP)			
General government	–0.37	0.09	–0.46
Federal government	–0.31	0.08	–0.39
State and local governments	–0.06	0.01	–0.07
(percent of potential GDP using CBO's estimate of potential GDP in 2009)			
General government	–2.63	0.47	–3.11
Federal government	–2.09	0.41	–2.50
State and local governments	–0.54	0.07	–0.61
(billions of dollars using CBO's estimate of potential GDP in 2009)			
General government	–402	72	–474
Federal government	–320	62	–381
State and local governments	–82	10	–93

Note: The CBO estimated potential GDP in 2009 to be 15,275 billion dollars and the GDP gap to be 6.75 per cent.

Table 5B

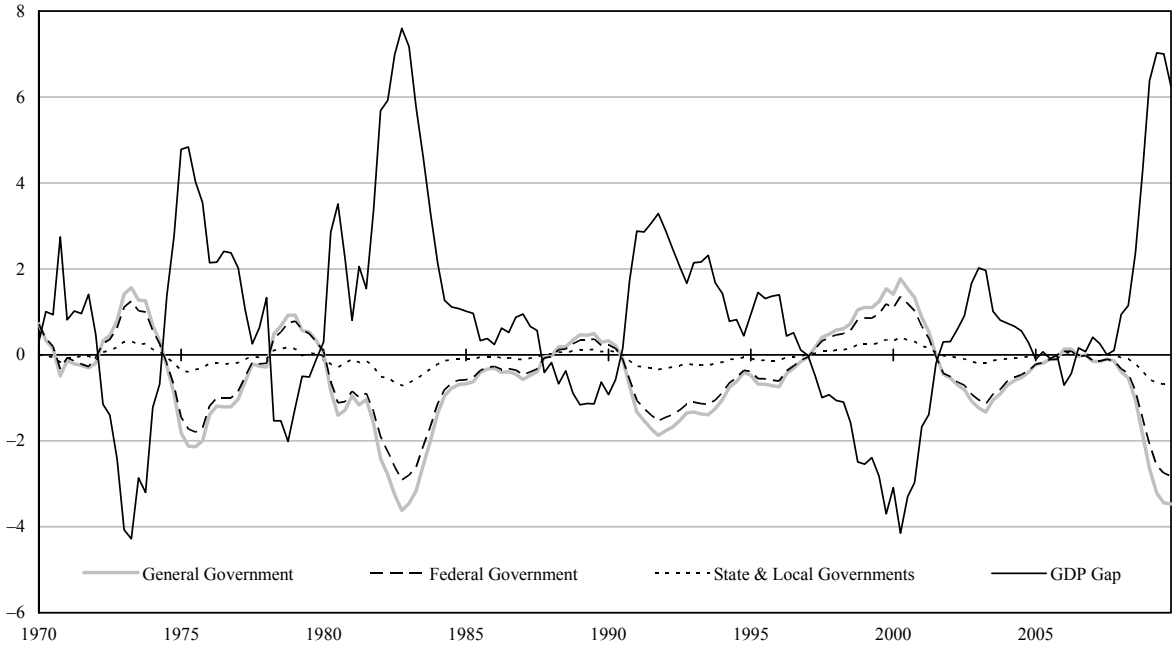
Cyclical Response of Budget

Item	Actual (1)	Cyclical (2)	High-employment (3)
Net lending, 2009 *(billions of dollars)*			
General government	–1,579	–474	–1,105
Federal government	–1,451	–381	–1,070
State and local governments	–128	–93	–35
Net lending, 2009 *(percent of actual GDP)*			
General government	–11.1	–3.3	–7.7
Federal government	–10.2	–2.7	–7.5
State and local governments	–0.9	–0.7	–0.2

Note: The CBO estimated potential GDP in 2009 to be 15,275 billion dollars and the GDP gap to be 6.75 per cent.

Figure 3C

Estimates of Cyclical Deficits by Government
(percent of potential GDP)



Note: A positive GDP gap implies actual GDP is less than potential GDP.

quarters. Thus, after eight quarters the GDP response to a shock is mitigated by about 20 per cent. The implicit multiplier – that is the change in GDP divided by the change in the deficit – grows to about ½ after eight quarters. There are two reasons for the gradual increase in the buffering. First, in FRB/US the consumption response to lower taxes (and higher unemployment benefits) is phased in over time – this is a common feature of many estimated consumption equations. Second, the multiplier effects gradually increase, particularly because the federal funds rate is fixed in the two simulations. In the current recession, with the downward adjustment of the federal funds rate limited by the zero bound, monetary policy would not be able to offset the additional weakness if the automatic stabilizers were not available, but in most cases in history the absence of automatic stabilizers could have been offset by more aggressive monetary policy.

3 Discretionary policy actions

This section outlines fiscal impetus (FI), our measure of discretionary policy actions. Fiscal impetus is a bottom-up approach that involves developing a measure of each major type of budget action – for example, a cut in personal taxes or an increase in real government consumption – and aggregating them into a single fiscal indicator that quantifies the impulse to growth in real GDP coming from budget decisions. The weights used for the aggregation are based on estimates of the direct effects of budgetary actions on the growth of real GDP. For example, the weight applied to a reduction in personal taxes is based on an estimate of the increase in aggregate consumer spending induced by the tax cut – that is, the MPC. Thus, fiscal impetus is model dependent. Our measure is designed to quantify the first-round effects of policy changes on GDP growth. It does not take

account of subsequent multiplier effects. It also explicitly excludes the effects of cyclical movements in taxes and transfers (*i.e.*, FI captures only discretionary policy actions). Two key uncertainties in constructing FI are the timing of the response and the size of the MPCs. In general we time the impetus with the implementation of the policy, rather than with the enactment. For example, the effect of defense spending occurs when the purchases are recorded in the NIPA and consumers are assumed to react to tax cuts when they observe the lower payments. Some studies, such as Auerbach (2003), instead base the timing on when the policy is enacted. It is our judgment that the empirical literature finds very little support for quantitatively important announcement effects on aggregate demand.[7] Our MPC estimates are consistent with the coefficients in the macroeconomic models used by the Federal Reserve Board staff.

3.1 Federal

Starting with discretionary tax changes, we assume that such changes are permanent unless they are explicitly designed to be temporary. Our measures of the real demand effects are based on estimates of the budget effects of the tax law changes deflated by the appropriate deflator (consumption or investment).[8] For personal or social insurance tax cuts we utilize an MPC of 0.7 and phase it in over two years following the date of implementation. For temporary tax changes we assume an MPC of 0.25 in the current quarter and 0.05 in the following quarter, consistent with studies of recent one-time rebates.[9] For corporate tax law changes there can be two effects: the normal income channel as well as the incentive channel. For general corporate tax cuts we assume an MPC of 0.5. For changes in investment incentives, such as the two recent partial expensing provisions, we are guided by the results from House and Shapiro (2008) and Cohen and Cummins (2006) and assume a small effect on investment demand.

Turning to expenditures, all changes in real purchases of goods and services (which excludes transfers) are considered discretionary because they are controlled by annual appropriations. These receive a weight of one. We assume an MPC of 1.0 for legislated changes in transfer payments (except for one-time payments which are treated like temporary tax cuts) and we exclude the endogenous changes in transfers owing to demographic factors, automatic cost-of-living adjustments and other economic factors. The higher MPC for transfers than for taxes reflects the fact that most transfers go to lower-income households, which are more likely to be liquidity constrained or follow rule-of-thumb behavior than the taxpaying population as a whole.

Grants to state and local governments, which are considered to be part of *Federal* FI at the time they are spent by the state and localities, are problematic because the degree and timing of the state and local response is not well understood. We assume that the states and localities spend the funds over the following two years. This is consistent with the flypaper effect, but overstates the response if states and localities react to increased grants by cutting taxes.[10] Our assumptions about the state and local reaction to grants is important only in assigning stimulus actions to the federal or

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[7] For example, the consumption literature, in general, finds rule of thumb behavior by many consumers but little support for Ricardian behavior. Survey evidence shows little awareness of tax law changes. By contrast, there is some support for anticipatory changes in taxable income to tax law changes: During the early 1990s, year-end bonus payments were shifted to lower tax burdens in response to a series of tax increases. Actual labor supply probably did not change much.

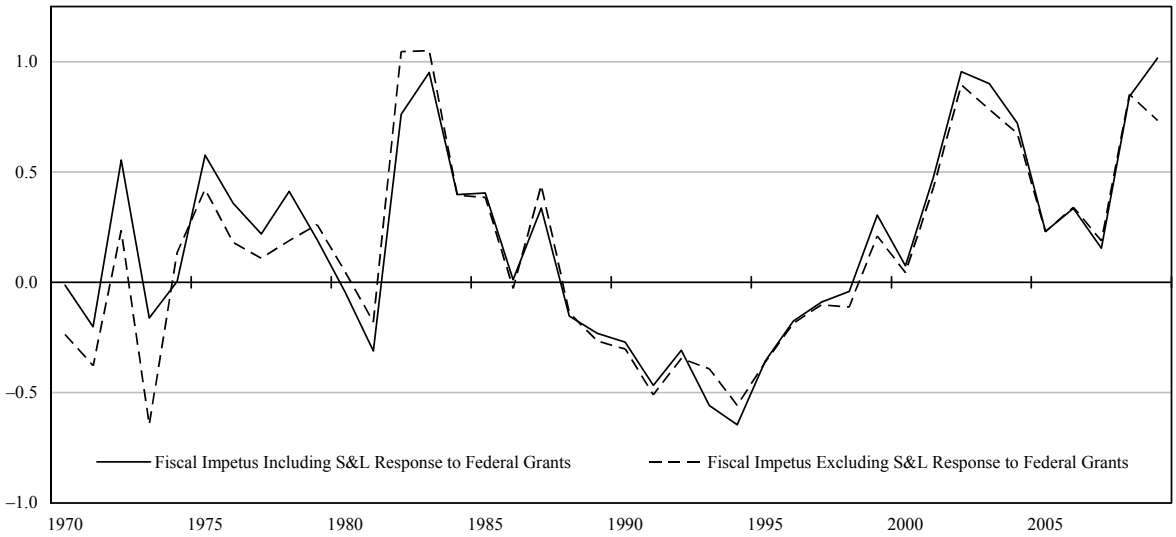
[8] Our estimates for legislated changes to taxes or transfers come from a variety of sources, including the Congressional Budget Office and the Administration's budget. We then translate these estimates into the accounting framework of the national income and product account.

[9] See, Sahm, Shapiro and Slemrod (2009), Coronado, Lupton and Sheiner (2005) and Johnson, Parker and Souleles (2004).

[10] See Knight (2002) and Lutz (2010) for recent studies of the response of state and local governments to changes in grants which find that state and local governments respond to increased grants by cutting taxes. In this case the MPC would be closer to 0.7, the MPC of a tax cut.

Figure 4A

Estimates of Fiscal Impetus, Federal Government
(percent of real GDP)



state and local level. At the general government level, FI does not depend much on the grant assumptions.[11]

Figure 4A shows our estimates for federal fiscal stimulus. Several observations jump out. Federal fiscal policy does appear to be countercyclical. Second, the amount of stimulus in any given year has been limited, with a boost to aggregate demand of about 1 percent of GDP being near the top. Third, note that the amount of stimulus in 2009 as a result of last year's budget actions is not much different than earlier in the decade when demand was boosted by tax cuts and defense spending increases. The portion of federal fiscal stimulus that owes to increased grants to the state and local sector is indicated by the distance between the dashed and solid lines and this amount will be subtracted from state and local actions to determine their contribution. Table 6 shows federal fiscal impetus around business cycle peaks; it shows the impulse to growth in real GDP from the Federal sector during the two years up to and including the peak and during the three years after the peak. In general, federal fiscal policy has been more stimulative after the peak than before it, thus moderating the economic downturns. The exception was following the 1990 peak when policy was focused on long-term deficit reduction.

Our measure of fiscal stimulus registers a positive value when fiscal policy is boosting aggregate demand. Alternatively FI could be measured relative to whether policy is inducing growth above or below that of potential GDP. In that context, a neutral fiscal stance corresponds to the impetus to GDP growth that would emanate if each component of taxes and expenditures were to grow at the rate of potential GDP. In such a case, the impetus from taxes and transfers would be zero and the impetus from purchases would equal the rate of growth of real potential GDP times the share of Federal purchases in GDP. Under a neutral fiscal stance, the Federal government share of GDP would remain constant. For the federal sector neutral FI would be approximately 0.2 (CBO's estimate of potential GDP growth is about 2.5 and Federal purchases are about 8 per cent of GDP).

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[11] The impetus we attribute to an increase in federal grants is deducted from our measure of state and local impetus. For instance, if we overestimate the state and local grant spendout rate, we will mechanically underestimate spending from state and local own source revenue. Thus, general government FI is largely unaffected even if states use the grants to fund tax cuts.

Table 6

Fiscal Impetus Around Business Cycles
(percent of GDP)

Peak Year	1969 (1)	1973 (2)	1980 (3)	1990 (4)	2000 (5)	2007 (6)	Average (7)
Federal Government							
Year before peak	0.02	0.55	0.19	–0.23	0.30	0.33	0.20
Peak	–0.77	–0.16	–0.04	–0.27	0.07	0.16	–0.17
1 year after	–0.01	0.00	–0.31	–0.47	0.48	0.84	0.09
2 years after	–0.20	0.58	0.76	–0.31	0.95	1.02	0.47
3 years after	0.55	0.36	0.95	–0.56	0.90	n.a.	0.44
Before	–0.38	0.20	0.07	–0.25	0.19	0.24	0.01
After	0.11	0.31	0.47	–0.44	0.78	0.93	0.36
State and Local Government							
Year before peak	0.89	–0.04	0.31	0.47	0.53	0.06	0.37
Peak	0.50	–0.04	0.17	0.52	0.38	0.27	0.30
1 year after	0.21	0.55	–0.21	0.24	0.55	0.04	0.23
2 years after	0.34	0.48	0.16	0.17	0.35	–0.39	0.18
3 years after	–0.04	–0.05	0.22	0.34	–0.19	n.a.	0.06
Before	0.69	–0.04	0.24	0.50	0.46	0.16	0.33
After	0.17	0.33	0.06	0.25	0.24	–0.17	0.15
General Government							
Before	0.31	0.16	0.31	0.25	0.65	0.41	0.35
After	0.29	0.64	0.52	–0.19	1.01	0.76	0.50

3.2 State and local

Whenever possible, we use direct information to construct our estimates of state and local "policy" actions – for example, we use figures from the National Association of State Budget Officers (NASBO) on enacted state revenue changes to estimate changes in state tax policy. However, we have no such sources for either local taxes or for state or local expenditures; thus, we have developed NIPA-based measures of policy change that we believe are satisfactory alternatives. With regard to property taxes, our policy indicator is the ratio of NIPA property tax receipts to nominal potential GDP, which we dub the effective property tax rate. When this effective tax rate is constant from one year to the next, policy is defined as being constant. Movements in the effective tax rate are interpreted as changes in policy; in general, they occur either because localities make adjustments to their *statutory* tax rates or because the rate of increase in average property assessments differs from the rate of overall inflation (as measured by the GDP price index). Thus, when property values rise rapidly and local governments do not offset the increases with decreases in the statutory tax rate, we score the change in revenue as a policy induced tax increase.[12]

[12] See Lutz (2009) for a discussion of the response of local governments to changes in real estate prices.

On the expenditure side, we define constant policy for Medicaid as a constant ratio of outlays (net of federal grants) to potential GDP, and we interpret deviations in this ratio as changes in policy.[13] We use a similar algorithm for other transfers. For purchases of goods and services, we include both consumption and investment expenditures and define constant policy as a constant real (i.e. inflation-adjusted) level of purchases. To measure the demand effect of discretionary changes taxes and transfers, we use the same MPCs as on the Federal side.

As with the federal sector we present two measures of fiscal impetus: with and without grants. In order to obtain an estimate for general government impetus, the solid line of federal impetus which includes the impact of grants to the states and localities (Figure 4A) should be added to the solid state and local line which excludes from impetus the impact of grants from the Federal government (Figure 4B). This avoids double counting the effect of grants. As Figure 4B indicates, state and local fiscal impetus varies a good deal from year to year, but is smaller than federal actions.

In terms of policy reactions, the middle panel of Table 6 focuses on the behavior of our state and local fiscal impetus measure around past business cycle peaks. In all six episodes, policy was expansionary leading up to the peak. During the period following the peak, the amount of stimulus usually diminished and was only about half as large, on average, as it had been in period leading up to the peak; the drop-off in fiscal impetus between the two periods amounted to about 0.2 per cent of GDP. This pro-cyclical response probably is the result of state and local balanced-budget requirements, which while not binding on a year to year basis, do enforce a significant level of budget discipline.

3.3 Discretionary actions

Fiscal impetus is our measure of the direct impact and does not incorporate any crowding out or crowding in. The total effect on the economy of discretionary actions reflects both the initial MPC as captured by FI as well as the multiplier (FI does not include multiplier effects and they therefore must be added to FI in order to obtain the full effect of discretionary actions), The multiplier depends upon the state of the economy both because of endogenous crowding out and due to monetary policy responses. The multiplier effects in FRB/US can range from under 1 to about 2. The multiplier is less than one when both monetary policy is assumed to try to offset the impetus (such as assuming that it follows a Taylor rule or other such reaction function) and the fiscal policy is a permanent increase in the deficit, (such as a permanent 1 percent increase purchases). In this case interest rates rise and the exchange rate appreciates dampening the demand effect. By contrast, when monetary policy is constrained by the zero bound and if policy actions are seen as temporary then the multiplier may be as large as 2. As a rule of thumb, a multiplier of about 1¼ would be generally appropriate if monetary policy is not offsetting fiscal policy and if the actions are temporary. This multiplier would be applied to FI, not to the original budget effect. In most discussions of fiscal policy the "multiplier" is a combination of the MPC and the follow-on effects. Here we address each piece separately.

4 The budget and economic activity in 2008-09

Since the current recession began at the end of 2007 both automatic stabilizers and discretionary fiscal policy have been at work to buffer the downturn in aggregate demand. In 2008, our measures indicate that policy actions raised real aggregate demand by about 1¼ per cent and

[13] We first adjust Medicaid outlays to their high-employment level to remove the cyclical changes from this program.

Figure 4B

Estimates of Fiscal Impetus, State and Local Governments
(percent of real GDP)

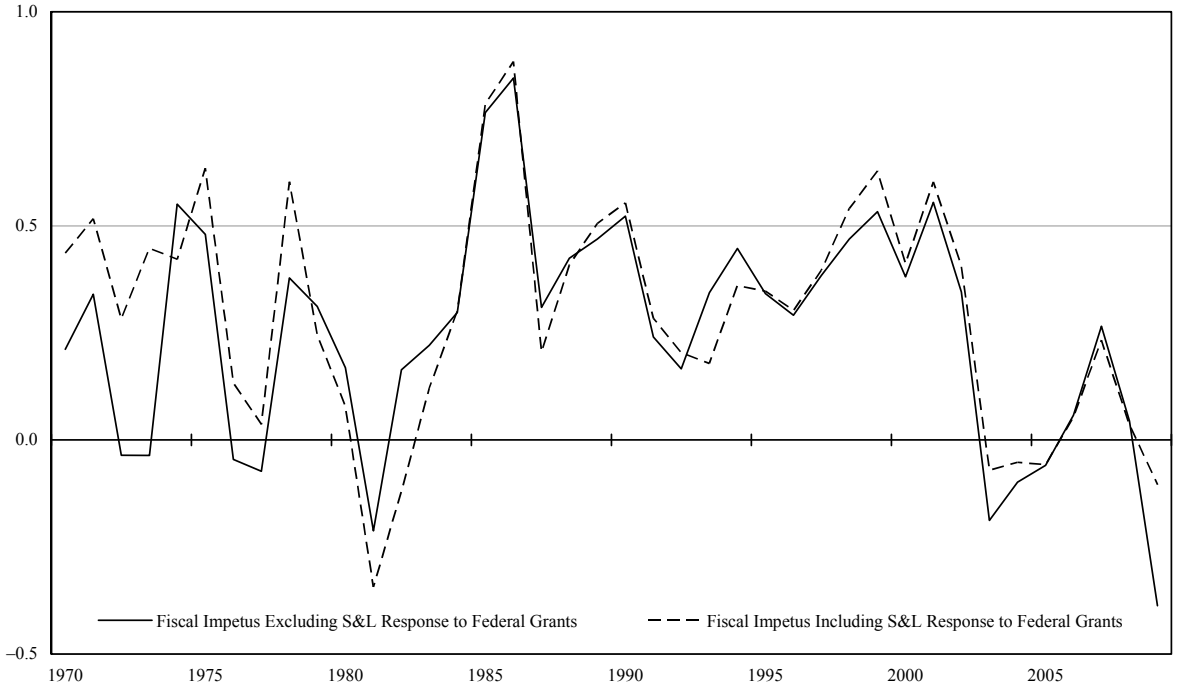


Figure 4C

Estimates of Fiscal Impetus, General Government
(percent of real GDP)

the automatic stabilizers boosted demand by ¼ per cent, on a year-over-year basis. The increase from discretionary policies in 2008 reflects continued increases in defense spending, stimulus spending, and other policies. In 2009 discretionary policy actions may have raised real GDP growth by ¾ per cent, including the multiplier effects, and the automatic stabilizers may have contributed another ½ percentage point. All told, over the two years fiscal factors (discretionary and automatic) may have lifted the level of GDP by 2¾ per cent in 2009.

First, consider the automatic stabilizers. They widened the 2009 deficit by about 3 per cent of GDP. FRB/US model simulations indicate that without the stabilizers, output would have been ¾ percentage point lower on average in 2009. With the deficit 3 per cent of GDP larger and output ¾ per cent higher the implicit multiplier is ¼. This is smaller than the figure derived from the simulation with a constant 1 percent shock. This is because the GDP gap widened in 2008 and 2009 whereas in the prior experiment it was held constant. Given that the effects on demand from lower taxes and higher transfers builds over time the implicit multiplier derived by dividing *current* quarter change in GDP by the *current* quarter change in the deficit will be lower than the value obtained when the shock is constant.

Second, discretionary fiscal policy actions by the federal government boosted aggregate demand directly by 1 percent in 2008 and another 1 percent in 2009. State and local actions, excluding those induced by federal grants (which are included in federal FI) had negligible impact on aggregate demand in 2008, and were contractionary by about –0.4 per cent of GDP in 2009. The retrenchment by state and local government largely reflects the pro-cyclical response induced by balanced budget requirements alluded to above. Combining federal and state and local discretionary actions together yields 1 percent boost to GDP in 2008 and ½ per cent in 2009 leaving real GDP 1½ per cent higher in 2009. Applying a multiplier of 1.3 would yield about 2 per cent extra GDP in 2009.

Considerable attention has been given to the role of the portion of federal discretionary policies that were explicitly designed to stimulate the economy. During 2008 and 2009 numerous policies were enacted for stimulus reasons, the most prominent being the American Recovery and Reinvestment Act (ARRA) which passed in February 2009. Other policies include the 2008 temporary tax cut, the expansion and extension of unemployment benefits that have occurred several times, aid to first-time home buyers, the 2009 "Cash for Clunkers" program, and additional corporate tax relief. The Administration has proposed additional policies for 2010 and 2011, including extending several provisions that are slated to expire this year. Table 7 reports the significant elements of the enacted measures (including an assumed further extension of unemployment benefits). Personal tax cuts include a one-time rebate in 2008 and the "Make Work Pay" reduction in income taxes that began in April 2009 and which we assume will be treated by consumers as a permanent reduction in taxes, although it is slated to expire after 2010.[14] Transfers include increased unemployment benefits that have been part of five separate bills and which we assume will be extended again through the end of 2010. The third major piece of stimulus is increased grants to state and local governments for construction, education and general funds. Minor elements include temporary reductions in corporate taxes for partial expensing, and provisions to delay payment of taxes for several years through loss-carry-back and temporary indebtedness relief.

Figure 5 puts these on a national accounts quarterly basis and provides an estimate of fiscal impetus from stimulus legislation. In our judgment the aggregate demand effects of these provisions is more muted and drawn out than the budget effects. This reflects several factors. It is more muted because we assume temporary tax and transfers are mostly saved, particularly the

[14] We have excluded the temporary extension of AMT relief as is has been provided every years since 2003 and thus it has been previously incorporated in FI.

Table 7

Recent Federal Fiscal Stimulus Actions
(billions of dollars)

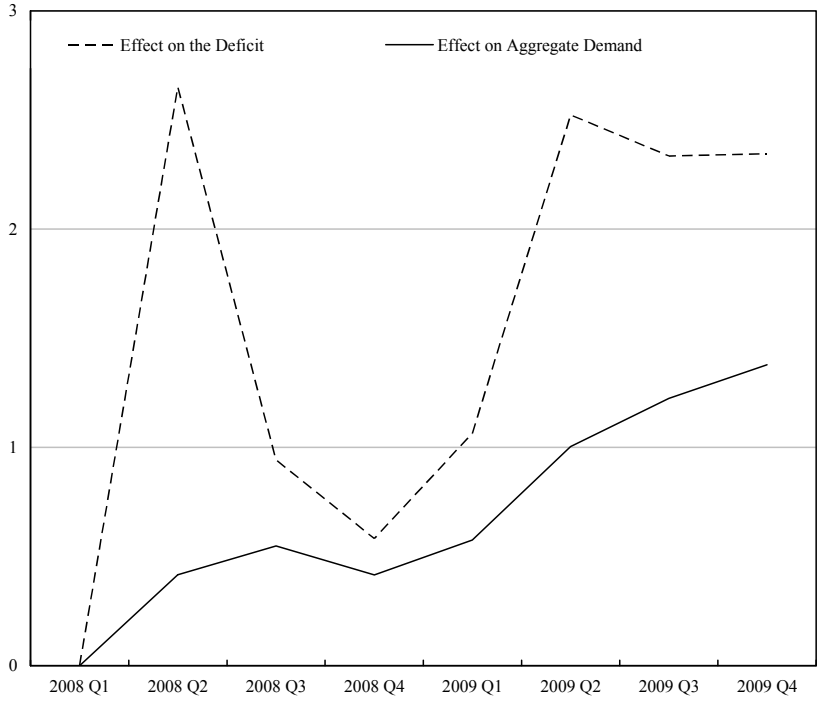
	4-year Total	Calendar Year			
		2008	2009	2010	2011
	(1)	(2)	(3)	(4)	(5)
Enacted	**845**	**146**	**298**	**324**	**76**
Individual tax cuts*	298	96	81	104	16
Expanded UI and other transfers	144	8	80	50	6
Aid to state and local governments	202	0	71	97	34
Corporate and other tax cuts	117	42	49	32	-6
Other spending	85	0	18	41	26
Proposed	**271**	**0**	**0**	**133**	**138**
Total	1116	146	298	457	214

* Excludes AMT relief, includes refundable credits.

corporate provisions, but also those for individuals. It is more drawn out because consumers phase in their response to the permanent tax cuts over several years. Moreover, we assume that state and local governments are expected to smooth out their spending response to the temporary boost in grants so that they will not have to make significant adjustments when the grants end at the end of 2010. Thus, the spending response is spread over the 2009-12 period rather than just 2009 and 2010. As a result of these assumptions, the aggregate "MPC" from

Figure 5

Effects of Fiscal Stimulus Actions
(percent of GDP)



the stimulus is well below one in 2009, but eventually cumulates to about 0.7. As shown in Figure 5, the direct effects of the stimulus actions raise GDP by 1¼ per cent by the end of 2009; with a multiplier of 1.3 the total effect is about 1½ per cent.[15]

5 Conclusions

This paper provides quantitative estimates of the effects of the automatic stabilizers on the government budget and on the economy. We find that at the general government level each 1 percent increase in the GDP gap increases the deficit by 0.45 per cent of GDP with 0.35 per cent of GDP occurring at the federal level. According to simulations with FRB/US, the automatic stabilizers provide a moderate amount of buffering of aggregate demand shocks. The stabilizers attenuate the effects on aggregate demand by about 10 per cent after four quarters and 20 per cent after eight quarters. Turning to active fiscal policy, the federal government has engaged in countercyclical policies following most business cycle peaks. This has been offset to some degree by tightening at the state and local level. During 2008-09, the combined effects of federal and state and local budgets on aggregate demand (from both discretionary actions and automatic stabilizers) may have lifted the level of GDP by 2½ per cent in 2009.

[15] There are a wide range of projections of the effect of the ARRA portion of the stimulus. For example, the Council of Economic Advisors estimates that the year-over-year effect is about 1 percent in 2009 and report that the forecasts from major Wall Street forecasters range from 0.7 to 1.3 per cent, with the fourth quarter level ranging from 1.5 to 2.5 per cent.

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FISCAL POLICY IN LATIN AMERICA: COUNTERCYCLICAL AND SUSTAINABLE AT LAST?

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This paper analyses fiscal policy for several economies in Latin America, from the early-Nineties to the 2009 crisis. We present original estimates of cyclically-adjusted public revenues for Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico, Peru and Uruguay implementing the standardised OECD methodology and extending it to include commodity cycles, which have a direct and significant effect on the fiscal balance of several Latin American countries. Based on these estimates, we evaluate the size of automatic tax stabilisers and the cyclicality of discretionary fiscal policy. Additionally, we highlight the uncertainty stemming from the estimation of the output gap, due to large and simultaneous cyclical, temporary and permanent shocks in several Latin American economies.

1 Introduction

In reaction to the 2009 global financial crisis, most industrialised and several emerging economies enacted Keynesian-type fiscal packages (from personal income tax cuts and indirect taxes reductions, to higher infrastructure spending and transfers to local governments, families, and firms) to mitigate the collapse of domestic demand.

Several Latin American economies faced the international crisis on relatively solid domestic macroeconomic grounds, both monetary and fiscal. Monetary policy had gain credibility during the decade, as several independent Central Banks moved towards inflation targeting regimes. On the fiscal front, most countries in the region displayed higher budget surpluses and lower debt-to-GDP levels, giving them apparently unprecedented fiscal margins to pursue sustainable counter-cyclical fiscal policies, of a similar size of those in OECD countries (see Figure 1 and OECD, 2009b).[1]

But, is Latin America's resilience in 2009 a permanent change in paradigm? The success of these counter-cyclical fiscal policy responses in Latin American economies is still unclear, and will largely depend on both the size of the programmes actually implemented (generally smaller and with greater lags than announced) and their effective impact (opening, once again, the debate on multipliers). Besides, at the wake of the international financial crisis there was no consensus on the cyclical or structural nature of still recent fiscal improvements.[2]

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[1] This strength was in stark contrast with previous episodes. See Gavin and Perotti (1997) and Gavin and Hausmann (1008) for Latin America, and Talvi and Vegh (2005), Kaminsky *et al.* (2006), and Ilzetzki and Vegh (2008) for emerging markets in general.

[2] Izquierdo and Talvi (2008), from the Inter-American Development Bank, argued that if revenues from the seven largest economies in Latin America countries were adjusted using the implicit Hodrick-Prescott filter parameter for Chile (*i.e.*, the smoothing coefficient on revenues that would render a structural surplus of one per cent of GDP since 2001), structural fiscal balances in the region, with the exception of Chile, did not differ significantly from their situation at the onset of the 1998 Russian crisis. Using a

(continues)

Our paper joins the latter debate. In Section 2 we present updated original estimates of cyclically-adjusted fiscal balances for a number of Latin American countries: Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico, Peru and Uruguay. We track these balances since the early-Nineties to 2009, implementing the standardised OECD methodology (Girouard and André, 2005, and Van den Noord, 2000), but adding the fiscal impact of commodity prices (following basically the IMF approach in Vladkova and Zettelmeyer, 2008). With these estimates, we can then measure the size of automatic stabilisation tax policies and the size and cyclicality of discretional fiscal policy. These measures are compared with those in OECD countries and used to discuss the cyclicality of discretionary fiscal policy in the region, differentiating countries and periods. Additionally, based on these numbers we perform standard debt sustainability exercises. The third section explains the methodology used to estimate the output gap. We opt for an unobserved components model to decompose shocks into permanent, cyclical and transitory. Section 4 concludes, underlining the importance of output gap estimates, the inclusion of commodity prices and the consideration of automatic fiscal responses in the design of sustainable fiscal policies over the business cycle in the region.

2 Cyclically-adjusted budget balances in Latin America

2.1 OECD approach to estimation of cyclically-adjusted fiscal revenues

As a starting point, we apply the OECD approach to account for the automatic impact of the business cycle on public accounts, as presented in detail by Girouard and André (2005) for OECD countries, and De Mello and Moccero (2006) for Brazil. This method computes separately the cyclical component of unemployment-related transfers and of public receipts from four types of taxes: personal income tax (PIT), social security contributions (SSC), and corporate income tax (CIT), and indirect taxes (IT), and of unemployment-related transfers.

Focusing on public revenues, the cyclical response of tax i to the business cycle (labelled $\varepsilon_{ti,y}$) is calculated as the product of two elasticities: the elasticity of tax receipts to the tax base (labelled $\varepsilon_{ti,tbi}$) and the elasticity of the tax base to the economic cycle (labelled $\varepsilon_{tbi,y}$):

$$\varepsilon_{ti,y} = \varepsilon_{ti,tbi} \times \varepsilon_{tbi,y} \quad (1)$$

where i covers the four taxes mentioned above (PIT, SSC, CIT or IT) or their respective tax bases (wage bill for the first two, corporate profits and consumption).

On the expenditure side, the adjustment is usually made at the level of total primary spending as time-series data on unemployment-related expenditure are not available across countries. Girouard and André (2005) use several OECD instruments, publications and databases, especially the *Annual National Accounts*, the *Economic Outlook* database, national *Labour Force Surveys*, the *Taxing Wages* model, and *Revenue Statistics*. Next, we describe the methodology more in depth while explaining the approach we follow for Latin American economies.

2.1.1 Personal income tax and social security contributions

To calculate the elasticity of income tax and social security contributions with respect to the tax base, the marginal and the average tax rates of a representative household are calculated for several points in the earnings distribution: from 0.5 to 3.0 times the average production worker in

different methodological approach, Vladkova-Hollar and Zettelmeyer (2008), from the International Monetary Fund, observed an improvement in structural balances in most countries, although they point out that commodity prices added a significant layer of uncertainty.

each OECD country. A representative household is defined as a full-time, two-earner married couple with two children, with the secondary earner receiving 50 per cent of the wage of the principal earner. Effective tax rates are computed using the OECD *Taxing Wages* simulator, while the distribution of tax payers across income levels in each country are based on labour market statistics (based on median, first and ninth deciles incomes taken from *Labour Force Surveys*). The overall elasticities of both PIT and SSC with respect to the tax base ($\varepsilon_{ti,tbi}$) are calculated as the weighted ratios of marginal and average tax rates:

$$\varepsilon_{t_i tb_i} = \left(\sum_{i=1}^{n} \gamma_i MA_i \right) \Big/ \left(\sum_{i=1}^{n} \gamma_i AV_i \right) \tag{2}$$

where γ_i is the share of earners i in the income distribution, MA_i is the marginal income tax rate or social security contribution rate at earning level i, and AVi stands for the corresponding average rate.

Due to the lack of comparable databases and instruments, this procedure poses significant challenges when applying them to Latin America. We proxy the distribution of potential tax payers using the latest available National Household Surveys[3] in Argentina (referred to 2006), Brazil (2006),[4] Chile (2006), Colombia (2008), Costa Rica (2006), Mexico (2006), Peru (2006), and Uruguay (2005). In particular, we calculate the "adjusted first earner income" distribution taking into account household composition (if two earners exist, the first earner is assigned two thirds of household income while second earner is assigned the rest). We restrict our analysis to labour income (dependent and self-employed workers),[5] and limit the sample to households with at least some labour income.[6] Given the high levels of informality and income inequality in the region, we analyze an extended income interval, covering from 0.05 times average income (*i.e.*, almost from the first peso/sol/real of labour income) to more than six times average income.

Figure 1 represents the average adjusted income level and those corresponding to the first and ninth deciles, corrected by purchasing power parities. Average annual labour income level ranges from 7,700 $ PPP in Peru, to nearly 14,600 $ PPP in Chile. Workers in the ninth decile earn more than twice the average in all countries, while low earners vary significantly (in Peru, those in the first decile earn 20 times less than the average income, while only five times less in Costa Rica).

Focusing on the distribution of labour income earners, the analysis shows a high concentration of workers below the average labour income: between 60 and 70 per cent of labour income earners earn less than the national average (Figure 3). The Peruvian income distribution represents an outlier, given the concentration of income earners at lower levels. This fact has a very significant impact on the number of effective tax payers and fiscal revenues.

These national labour income distributions provide the weighs (γ_i) to compute the overall average and marginal personal income and social security tax rates. We calculate the effective tax burden for representative households, assuming they only differ in their income level (from 0.05 to

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[3] *Encuesta Permanente de Hogares* in Argentina, *Pesquisa Nacional por Amostra de Domicilios* in Brazil, *Encuesta de Caracterización Socioeconómica Nacional* in Chile, *Gran Encuesta Integrada de Hogares* in Colombia, *Encuesta de Hogares y Propósitos Múltiples* in Costa Rica, *Encuesta Nacional de Ocupación y Empleo* in Mexico, *Encuesta Nacional de Hogares* in Peru and *Encuesta Contínua de Hogares* in Uruguay. We are aware of the potential limitations from using survey data, in contrast to administrative records, but, on the other hand, household surveys are more generally available. As a future extension of this research, we will test the robustness of the results using alternative income distribution sources.

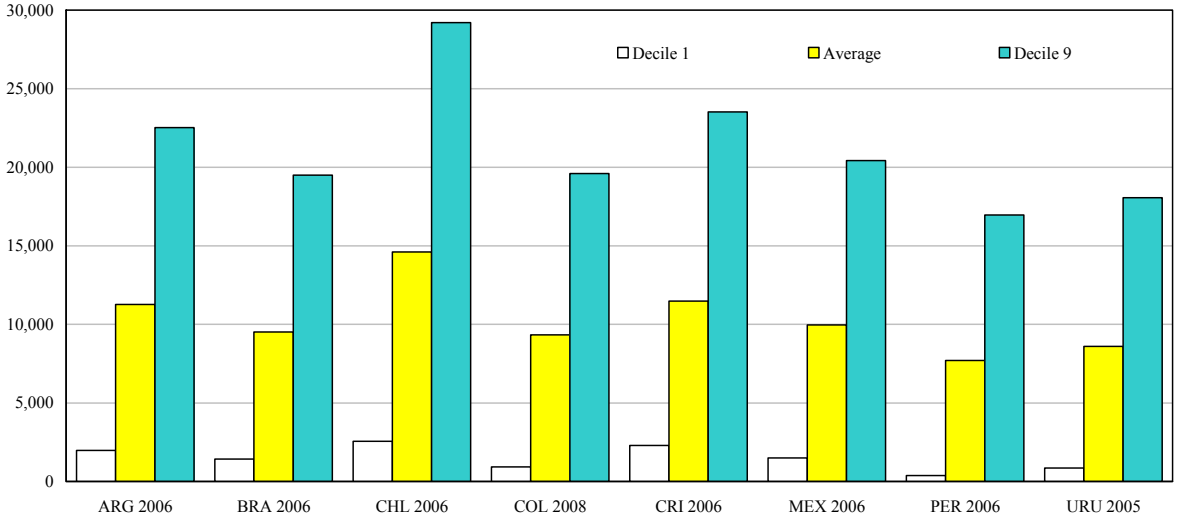
[4] Brazil is included to establish a link between previous OECD research and our regional analysis. In the following sections we will report analysis based on elasticities calculated by De Mello and Moccero (2006).

[5] As already established in the OECD method, this does not represent a significant bias for Latin America, since capital income is usually not taxed by the personal income tax.

[6] According to our calculations based on the National Household Surveys, between 8 and 26 per cent of households in the selected Latin American countries do report no labour income (26.1 in Argentina, 15.6 in Brazil, 11.4 in Chile, 11.5 in Colombia, 15.0 in Costa Rica, 7.7 in Mexico, 9.2 in Peru, and 22.0 in Uruguay).

Figure 1

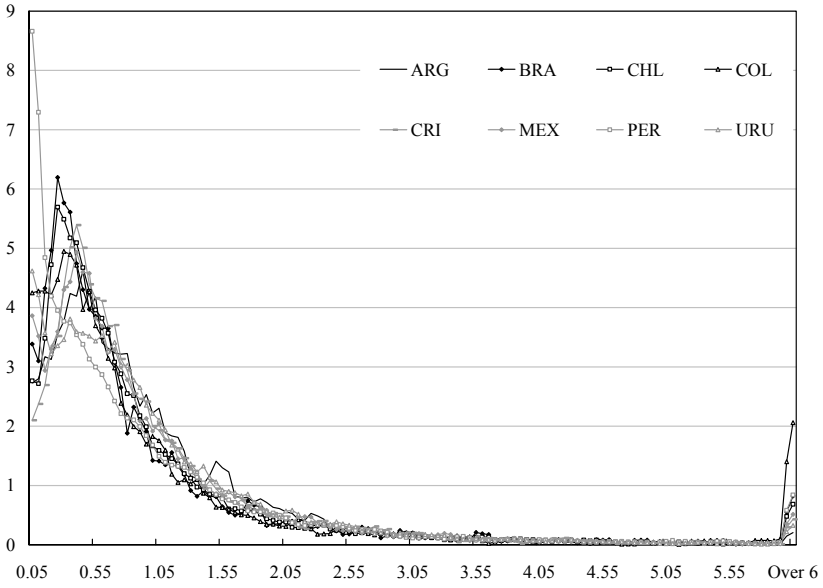
Adjusted First Earner Annual Labour Income
(PPP dollars)



Source: Authors' calculations based on National Household Surveys.

Figure 2

Labour Income Distribution in Latin American Countries
(percent)



Note: Percentage of people by household labour income level.
1 represents the national average.
Source: Authors' calculations based on National Household Surveys.

more than 6 times the national average).[7] Chilean and Uruguayan figures were provided by the respective Ministries of Finance, while Mexican rates were calculating using the OECD *Taxing Wages* simulator. For other countries, we calculated the fiscal figures based on the legislation in place during the corresponding fiscal year.

Calculations are referred to 2006, because several of the household surveys available are from that year, and as it corresponds to a rela tively neutral year in cyclical terms (in the case of Colombia, we

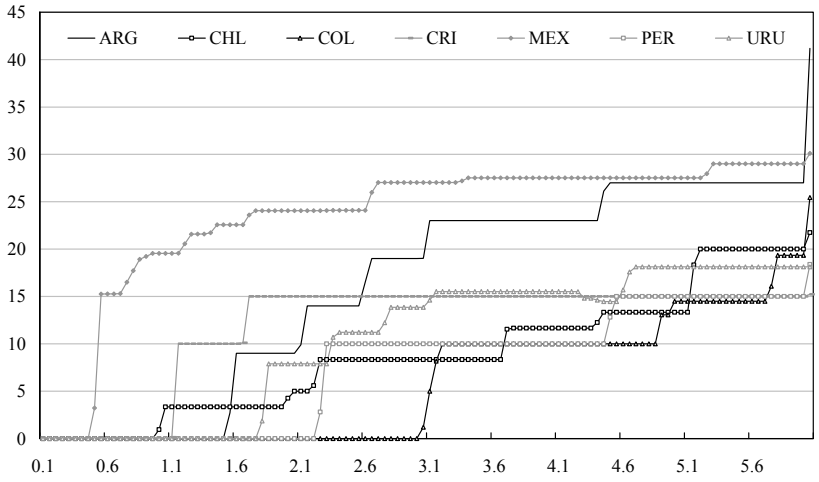
[7] To be precise, we liquidate these two taxes for 121 levels of income (so i=1…121). We grouped all households that earn more than six times the national average (this last bracket earns between eight times the average in Uruguay, to 11 times in Chile).

deflated the data referred to 2008 with the national CPI). The only exception is Uruguay, in which we updated survey figures with observed CPI up to 2009 to incorporate the new personal income tax established in 2008. In those cases where fiscal legislation allows individual and household declaration, we chose the one more beneficial to tax payers, including allowances for both spouse and children, if existing.[8] Figures 3 and 4 show the effective marginal and average personal income tax rates by income levels.

As shown in Figure 4, the personal income tax in all these Latin American countries is formally progressive, since average tax rates increase with income levels. Second, with the exception of Mexico (due to the interaction of exempted income, individual declarations and tax credits), labour income earners are net payers of the PIT starting at levels ranging from the average income in Chile to three times the average income in Colombia. Together with informality, these high levels imply that only a small share of households with labour income is a net PIT payer.

Figure 3

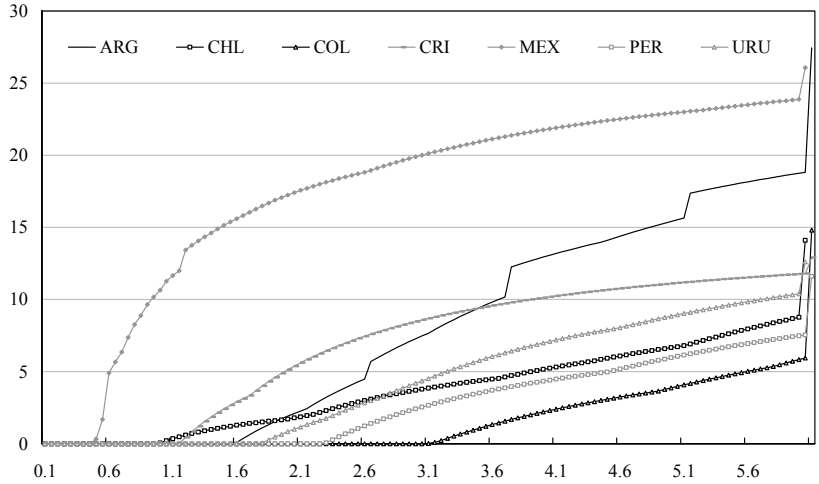
Marginal Personal Income Tax by Income Levels
(percent)



Note: Marginal tax rate by household labour income level.
1 represents the national average.
Source: Authors' calculations based on OECD's *Taxing Wages* (Mexico), Ministries of Finance (Chile and Uruguay) and own elaboration (Argentina, Colombia, Costa Rica and Peru).

Figure 4

Average Personal Income Tax by Income Levels
(percent)

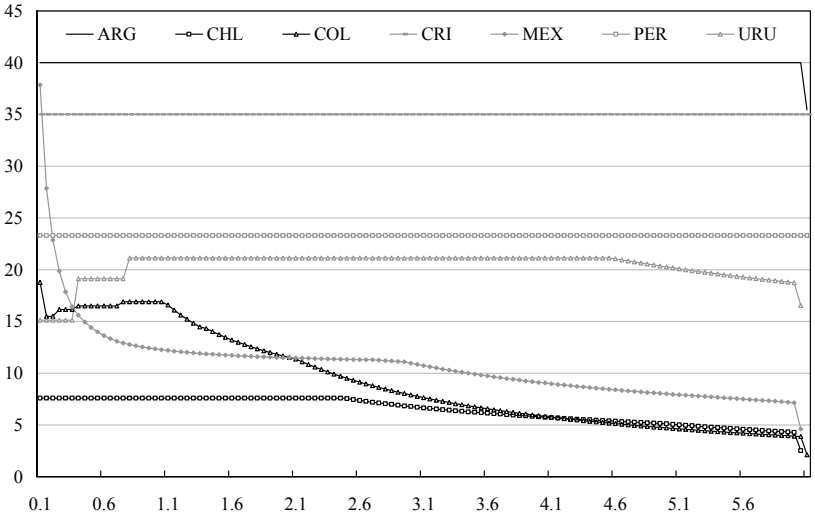


Note: Average tax rate by household labour income level.
1 represents the national average.
Source: Authors' calculations based on OECD's *Taxing Wages* (Mexico), Ministries of Finance (Chile and Uruguay) and own elaboration (Argentina, Colombia, Costa Rica and Peru).

[8] Tax declarations are at the individual level in Chile, Colombia, Peru and Uruguay, and by households in Argentina, Costa Rica and Mexico. Argentina and Mexico figures incorporate spouse and children allowances. Brazilian figures, taken from De Mello and Moccero (2006), are on an individual basis. Therefore, we fix both income distribution and tax legislation, as stated in the OECD methodology. As a future extension, we plan to test the effects on tax elasticities of changes in the tax code, and of variations of income distribution.

Figure 5

Average Social Security Contributions by Income Levels
(percent)



Note: Average tax rate by household labour income level.
1 represents the national average.
Source: Authors' calculations based on OECD Taxing Wages (Mexico), Ministries of Finance (Chile and Uruguay) and own elaboration (Argentina, Colombia, Costa Rica and Peru).

By contrast, as shown in Figure 5, social security contributions tend to be flat taxes, or even slightly regressive given the existence of minimum contributions in Mexico. Chile and Mexico are the only two countries with a fully privatized pension system, where social contributions mainly finance health benefits.[9]

As defined in equation (2), the wage elasticity of PIT and SSC is calculated as the ratio between the weighted marginal tax rate, and the weighted average tax rate (included in fifth and sixth columns in Table 1). With the exception of Mexico, PIT elasticities are between 2.5 and 3.3. These levels are higher than those observed in OECD countries, and slightly lower than the 3.4 found for Brazil in De Mello and Moccero (2006). In other words, formal progressivity of the PIT is higher in Latin America. On the other hand, SSC elasticities are very much in line with OECD estimates, except Mexico and Colombia, where they are significantly lower.

To calculate the overall elasticities, the second step involves the econometric estimation of the sensitivity of the relevant tax bases with respect to the output gap ($\varepsilon_{tbi,y}$). As in Girouard and André (2005), the cyclical sensitivity of the wage base (PIT and SSC tax base) has been estimated using an equation that links directly the cyclical component of the wage bill to the output gap. We regress the share of the real wage bill in potential GDP (constructed with active population from the *Penn World* tables, and unemployment and urban workers wages from ECLAC) on the output gap (estimated using unobserved components model on real chained GDP series from *Penn World* tables as described in Section 3) and a constant, in logs with annual data from 1981 to 2007 (see details in Annex 1).

$$\Delta \ln(W_t L_t / Y_t^*) = \alpha + \varepsilon_{twl_t, y_t} \times \Delta \ln(Y_t / Y_t^*) + \mu_t \tag{3}$$

The estimated responsiveness of the wage bill for Uruguay, Colombia (taken from Lozano and Toro, 2007) and Argentina (around 1.0) are slightly above the OECD average (0.7 according to Girouard and André, 2005), and Brazil (0.8 reported by De Mello and Moccero, 2006), while elasticities for the rest are significantly above previous estimates (up to 2.0 in Peru). Details on the estimations are also included in Annex 2.

[9] Mexican contributions cover sickness, disability and nursery, while Chilean rates cover health and unemployment. In the other cases contributions finance both health and pensions. In the case of parallel public-private compulsory pension systems (Argentina, Colombia, Peru and Uruguay), we assumed that the worker is affiliated to the public scheme.

Table 1

Marginal and Average Tax Rates

Country	Marginal Tax Rate		Average Tax Rate		Real Wage Elasticity of	
	PIT	SSC	PIT	SSC	PIT	SSC
	X		*Y*		*Z = X / Y*	
Argentina	**2.9**	**39.3**	**0.9**	**40.0**	**3.3**	**1.0**
Brazil	**-**	**-**	**-**	**-**	**3.4**	**1.8**
Chile	**1.7**	**6.9**	**0.7**	**7.5**	**2.5**	**0.9**
Colombia	**0.9**	**5.7**	**0.3**	**10.9**	**2.5**	**0.5**
Costa Rica	**3.4**	**34.3**	**1.3**	**35.0**	**2.6**	**1.0**
Mexico	**13.7**	**8.8**	**7.0**	**17.5**	**2.0**	**0.5**
Peru	**1.1**	**22.6**	**0.4**	**23.3**	**2.7**	**1.0**
Uruguay	**1.6**	**20.0**	**0.5**	**19.0**	**3.2**	**1.1**
Canada	28.6	7.8	18.3	9.7	1.6	0.8
France	13.9	34.9	8.2	30.7	1.7	1.1
Germany	26.2	23.9	11.4	31.1	2.3	0.8
Italy	26.3	26.5	13.2	27.6	2.0	1.0
Japan	9.6	18.7	4.9	20.5	1.9	0.9
Korea	8.5	11.2	3.6	13.1	2.3	0.9
Spain	20.2	18.3	9.5	24.1	2.1	0.8
United Kingdom	22.8	13.6	13.5	10.4	1.7	1.3
United States	19.1	11.6	10.3	12.8	1.9	0.9
OECD	21.8	19.0	12.7	18.8	1.7	1.0

Notes: Marginal and average rates are weighted by the distribution of tax payers across income levels. OECD unweighted average, excluding Chile and Mexico.
Source: Authors' calculations for Argentina, Chile, Colombia, Costa Rica, Mexico, Peru and Uruguay, De Mello and Moccero (2006) for Brazil, and Girouard and André (2005) for the rest.

Finally, we multiply both elasticities to obtain the overall tax elasticities. Table 2 collects the output elasticity of PIT and SSC in our selected Latin American countries, compared to those in selected OECD economies and Brazil. Given the higher elasticities of the wage bill to output gap, output elasticities of PIT are much larger in Latin America than those observed in OECD countries (3.5 on average vs. 1.2), and less in the case of SSC elasticities (1.2 on average vs. 0.7).

2.1.2 Corporate income tax

Concerning corporate taxes, we strictly apply the OECD methodology. Therefore, the cyclical sensitivity of the corporate tax base (proxied by corporate profits) is also a function of the elasticity of the wage bill relative to the output.

$$\varepsilon_{CIT,y} = (1-(1-PS)\,\varepsilon_{wl,y})PS \tag{4}$$

where *PS* is the profit share in output proxied by the ratio of the gross operating surplus over GDP, and $\varepsilon_{wl,y}$ is the elasticity of the wage bill to the output gap. Profit shares over GDP are taken from OECD *Annual National Accounts* in the case of Chile, from the national central banks in Costa

Table 2

Elasticities of Personal Income Tax and Social Security Contributions

Country	Real Wage Elasticity of		Output Elasticity of Wages	Output Elasticity of	
	PIT	SSC		PIT	SSC
	A		*B*	*C = A × B*	
Argentina	**3.3**	**1.0**	**1.1**	**3.6**	**1.1**
Brazil	**3.4**	**1.8**	**0.8**	**2.7**	**1.4**
Chile	**2.5**	**0.9**	**1.4**	**3.5**	**1.3**
Colombia	**2.5**	**0.5**	**1.1**	**2.6**	**0.6**
Costa Rica	**2.6**	**1.0**	**1.7**	**4.5**	**1.7**
Mexico	**2.0**	**0.5**	**1.5**	**3.0**	**0.8**
Peru	**2.7**	**1.0**	**2.0**	**5.3**	**1.9**
Uruguay	**3.2**	**1.1**	**0.9**	**2.8**	**0.9**
Canada	1.6	0.8	0.7	1.1	0.6
France	1.7	1.1	0.7	1.2	0.8
Germany	2.3	0.8	0.7	1.6	0.6
Italy	2.0	1.0	0.9	1.8	0.9
Japan	1.9	0.9	0.6	1.2	0.5
Korea	2.3	0.9	0.6	1.4	0.5
Spain	2.1	0.8	0.9	1.9	0.7
United Kingdom	1.7	1.3	0.7	1.2	0.9
United States	1.9	0.9	0.7	1.3	0.6
OECD	1.7	1.0	0.7	1.2	0.7

Notes: Change in tax revenues as a per cent of GDP for a 1 percentage-point change in the output gap. Based on weights for 2003 for OECD, and 2005-06 in Latin America. OECD unweighted average, excluding Chile and Mexico.
Source: Authors' calculations for Argentina, Chile, Costa Rica, Mexico, Peru and Uruguay, De Mello and Moccero (2006) for Brazil, and Girouard and André (2005) for the rest. Output elasticity of wages in Colombia is taken from Lozano and Toro (2007).

Rica and Uruguay, and from national statistics institutes in Argentina (INDEC), Colombia (DANE), Mexico (INEGI) and Peru (INEI). As shown in Table 3, output elasticities of CIT vary from 0.3 in Costa Rica to 1.2 in Uruguay, therefore lower than in OECD countries.

2.1.3 Other revenues, expenditures and overall balance

The output elasticity of the indirect tax base with respect to the economic cycle is set to unity for all countries, as in Girouard and André (2005). Finally, due to the lack of data and given the absence of unemployment benefits in many countries in the region, we suppose that current expenditures do not respond automatically to the cycle at all.

The cyclical budget response, as a share of GDP, can be expressed as the weighted sum of the four different tax revenues elasticities (based on the tax structure in 2006; see Table 8 in Annex 2). According to our calculations, the sensitivity (semi elasticity in GDP percentage points) of government budget balances to a 1 percentage point change in the output gap is 0.21

Table 3

Elasticities of Corporate Income Tax

Country	Profits Elasticity of CIT	Profit Share in GDP	Output Elasticity of Wages	Output Elasticity of Profits	Output Elasticity of of CIT
	A	*B*	*C*	*E = (1 – (1 – B) C) / B*	*F = A x E*
Argentina	**1.0**	**0.38**	**1.1**	**0.8**	**0.8**
Brazil	**1.0**	**0.54**	**0.8**	**1.2**	**1.2**
Chile	**1.0**	**0.54**	**1.4**	**0.7**	**0.7**
Colombia	**1.0**	**0.59**	**1.1**	**1.0**	**1.0**
Costa Rica	**1.0**	**0.49**	**1.7**	**0.3**	**0.3**
Mexico	**1.0**	**0.62**	**1.5**	**0.7**	**0.7**
Peru	**1.0**	**0.62**	**2.0**	**0.4**	**0.4**
Uruguay	**1.0**	**0.36**	**0.9**	**1.2**	**1.2**
Canada	1.0	0.35	0.7	1.5	1.5
France	1.0	0.34	0.7	1.6	1.6
Germany	1.0	0.36	0.7	1.5	1.5
Italy	1.0	0.45	0.9	1.1	1.1
Japan	1.0	0.38	0.6	1.6	1.6
Korea	1.0	0.43	0.6	1.5	1.5
Spain	1.0	0.40	0.9	1.2	1.2
United Kingdom	1.0	0.31	0.7	1.7	1.7
United States	1.0	0.36	0.7	1.5	1.5
OECD	1.0	0.39	0.7	1.5	1.5

Notes: Change in tax revenues as a per cent of GDP for a 1 percentage-point change in the output gap. Based on weights for 2003 for OECD, and 2005-06 in Latin America. OECD unweighted average, excluding Chile and Mexico.
Source: Authors' calculations for Argentina, Chile, Costa Rica, Mexico, Peru and Uruguay, De Mello and Moccero (2006) for Brazil, and Girouard and André (2005) for the rest. Output elasticity of wages in Colombia is taken from Lozano and Toro (2007).

(unweighted average of the six Latin American economies), ranging from 0.12 in Mexico and 0.14 in Colombia, to 0.24 in Argentina and Uruguay, 0.25 in Brazil (De Mello and Moccero, 2006), and 0.26 in Costa Rica. This regional average is almost half the OECD average, and is explained by significantly lower automatic stabilization from PIT (Figure 6).

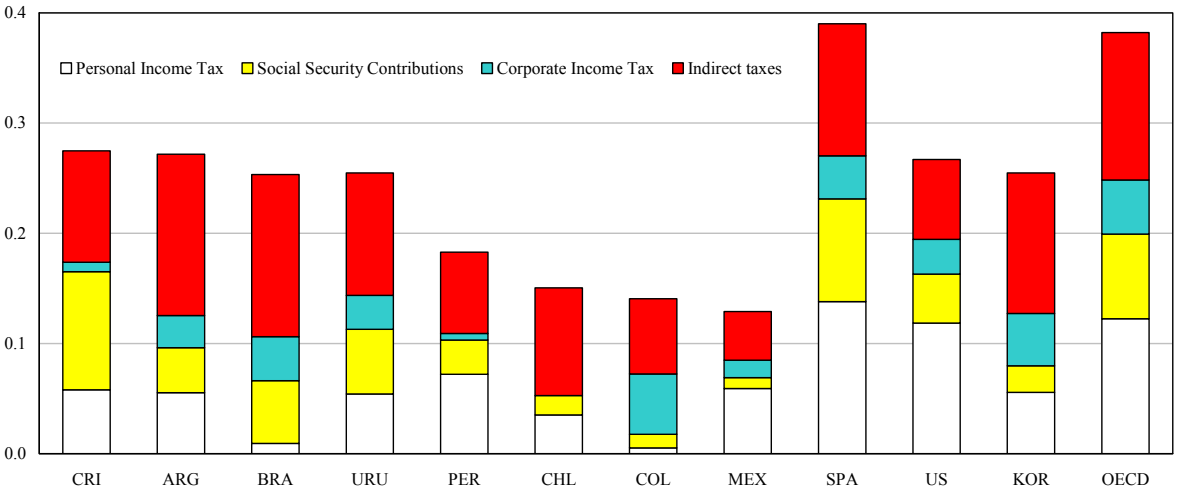
These estimates of the cyclical response of budget balance are positively correlated with the size of the government, as stated in the literature on fiscal macroeconomic stability in industrialized economies (see for instance Galí, 1994 and Fatás and Mihov, 2001). Nonetheless, as shown in Figure 7, some of the biggest economies in Latin America (notably Brazil, Colombia and Mexico) deviate significantly from their "expected" trends as automatic stabilisers are significantly lower than the government size (in part due to the high non-tax revenues).

2.2 Adjustment of tax and non-tax revenues for commodity prices

A special feature of several Latin American countries is the importance of commodity prices

Figure 6

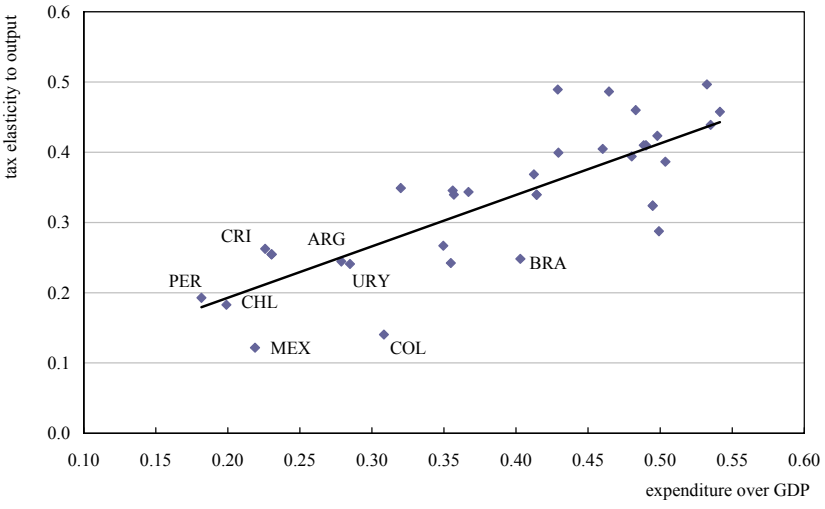
Tax Semi-elasticities to Output
(percent of GDP)



Note: OECD unweighted average, excluding Chile and Mexico.
Source: Authors' calculations for Argentina, Chile, Colombia, Costa Rica, Mexico, Peru and Uruguay, De Mello and Moccero (2006) for Brazil, and Girouard and André (2005) for the rest.

Figure 7

Government Size and Tax Automatic Stabilisers in OECD and Latin America
(percent of GDP)



Source: Authors' calculations for Argentina, Chile, Colombia, Costa Rica, Mexico, Peru and Uruguay, De Mello and Moccero (2006) for Brazil, and Girouard and André (2005) for the rest.

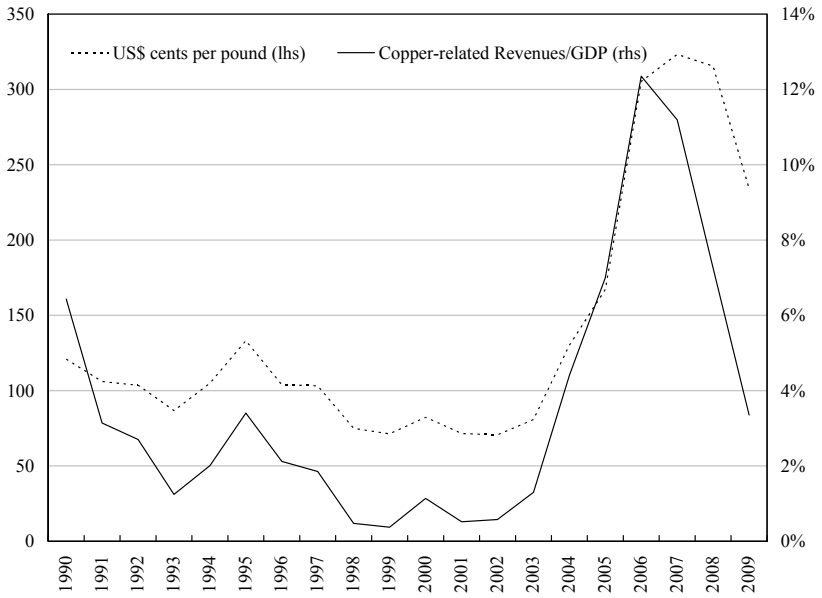
for its fiscal accounts, whether it is due to a significant share of taxation linked to rents in natural resource extraction, or the utilities of state-owned enterprises in these sectors. Not only are commodity-linked revenues important as a source of revenue, but they also tend to be very volatile, primarily due to large fluctuations in prices. Therefore, they are also relevant for fiscal sustainability and macroeconomic stability (Avendaño *et al.*, 2008).[10]

[10] These authors show that the macroeconomic response to the latest Asian-driven commodity boom of exporting countries in Africa and Latin America has been fairly positive. In contrast to the Nineties, during 2000-05 African commodity-exporters have shown a more counter-cyclical fiscal stance, displaying various positive macroeconomic developments (notably, reserves accumulation, exports diversification, and improved credit profile). Results are more modest in Latin America.

Figure 8 shows copper revenues as a share of GDP in Chile from 1990 to 2009. Copper revenues during this period have risen from less than 0.5 per cent of GDP in 1999 up to more than 12 per cent of GDP in 2006. Compared with total revenues, these revenues are more than five times more volatile (copper revenues have a coefficient of variation of 1.01 versus 0.18 for total revenues). Thus, it is necessary to separate this source of income in countries where commodities are important for fiscal revenues and perform a special adjustment for commodity price fluctuations.

Figure 8

Copper Revenues as Share of GDP and the Price of Copper
(US dollars cents/pound)



Source: Authors' calculations based on DIPRES and COCHILCO data.

Unfortunately, the OECD methodology is silent regarding this issue.[11] Therefore, we follow a similar methodology to the Chilean fiscal rule (see Marcel *et al.*, 2001 and Rodríguez *et al.*, 2007) and recent IMF work on this topic in Latin America and the Caribbean (e.g., Vladkova-Hollar and Zettelmeyer, 2008). The adjustment is made for Argentina, Chile, Mexico and Peru.[12] In Argentina, we consider export taxes on agricultural goods introduced in 2002. For Chile, we consider revenues transferred to the central government from the public copper company (CODELCO) and revenues from specific taxes on private mining firms.[13] In the case of Mexico, we use international oil price data to adjust the value of transfers from the public oil firm (PEMEX) to the federal government, royalties and revenues of specific taxes on oil and petrol derivatives. It is important to point out that there are differences – due to data availability restrictions – between how we treat public enterprises in the commodity sector for Chile and Mexico. While for Chile we consider the general government, which implies that we do consider only the transfers and income taxes paid by CODELCO, for Mexico we used the non-financial public sector. Finally, in the case of Peru, we consider royalties and income taxes of the mining and fishing industries, adjusted by a weighted average (according to their share in revenues) of international copper, gold and fishmeal prices. In Annex 3 we present more details on the series and data sources.

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[11] For Norway, OECD exercises are carried out using Norway-mainland fiscal and national accounts that exclude the oil and natural gas sector in a consistent way. There is no such information available for Mexico or Chile.

[12] Commodity prices are also important in the other countries studied here, but their impact on the fiscal accounts is mainly through the business cycle rather than an autonomous effect for these economies. For the case of Colombia, it is important to point out that energy and mining related revenues represent close to 1 per cent of GDP, but are expected to play an important role in the near future (see Comité Técnico Interinstitucional, 2010).

[13] Although other metals like molybdenum, gold and silver are also produced in Chile, copper remains by far the most important source of revenues.

In terms of the adjustment, we first separate revenues (tax and non-tax) into revenues related to commodities and non-commodity revenues. The latter are adjusted as indicated in the Section 2.1 by the business cycle. For commodity-related revenues, we proceed as follows. Considering a spot price of p and a long-run price of the relevant commodity price p^*, structural commodity-linked revenues at time t are given by:

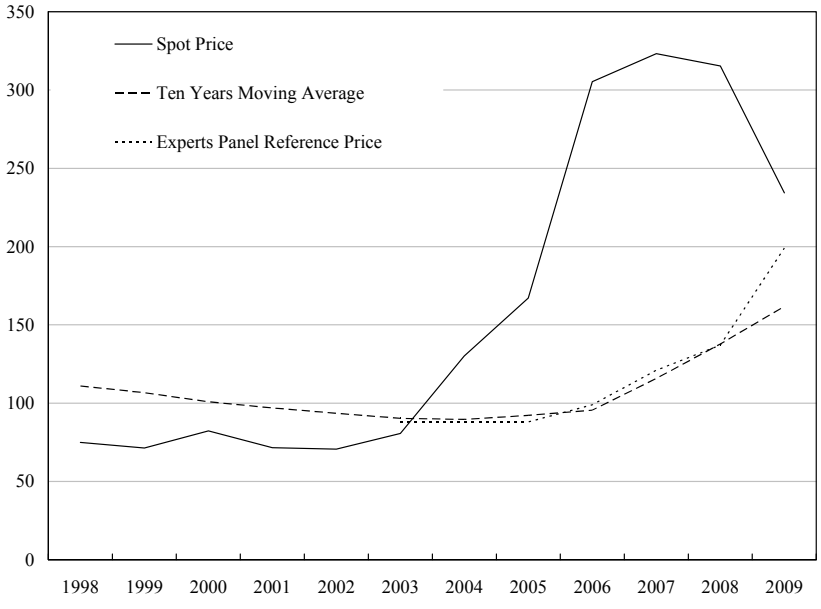
$$R_{s,t}^{c} = R_{t}^{c}\left(\frac{p_{t}^{*}}{p_{t}}\right)^{\gamma} \tag{5}$$

As Marcel *et al.* (2001) and Vladkova-Hollar and Zettelmeyer (2008), we consider a unitary elasticity, such that $\gamma = 1$. For p^*, we considered four different options, depending on available information: future prices, five-year-ahead forecasts, a 10-year moving average or a reference price set by a panel of experts (the case of copper in Chile). As shown in Figure 9 for the case of copper, a 10-year moving average coincides roughly with the forecasts of the experts' panel, with the exception of 2009. For the latest year, it seems that experts consider a larger fraction of the recent rise in copper prices to be persistent. We discard future markets, as they prove to be relatively small and shallow (probably with the exception of oil futures), and prices tend to be very volatile. In what follows, we report our results based on the 10-year moving average price. Commodity revenues are not separately adjusted by the output gap, given that commodity prices are already significantly linked to the business cycle.

As shown in Table 4, as of 2007 a large fraction of observed revenues linked to commodities were likely to be transitory. For Chile, around two thirds of the 11.2 percentage points of GDP linked to copper revenues were due to copper prices above its long-run price. The results for Argentina and Peru indicate that around half of commodity revenues could be considered transitory in 2007, although the absolute magnitudes are smaller than for Chile or Mexico. For the case of Mexico, it would be around one third of the oil revenues that are linked to the oil price cycle (almost 4 per cent of GDP). This table also shows that the global economic crisis, and the consequent decline in commodity prices due to the collapse of global demand, had an important effect on some of the commodity-linked revenues in the region, but the effect is not homogenous. In fact, while in 2009 commodity revenues in Chile declined significantly, in the other three countries the effect was considerably milder.

Figure 9

Copper Prices
(US dollars cents/pound)



Source: Authors' calculations based on data from Cochilco and London Metal Exchange.

Table 4

Commodity-linked Revenues

	Argentina	Chile	Mexico	Peru
Percent of GDP (1)				
1998	0.0	0.5	6.1	2.1
2003	2.5	1.3	7.4	2.5
2007	2.5	11.2	7.9	5.0
2009	2.9	3.4	7.4	3.8
Percent of total revenues (2)				
1998	0.0	2.1	29.8	11.1
2003	10.3	5.7	33.3	14.0
2007	8.6	37.9	35.4	23.7
2009	9.0	11.4	31.0	18.2
Structural commodity revenues (*percent of GDP*) (3)				
1998	0.0	0.7	9.9	3.4
2003	2.3	1.5	5.7	2.3
2007	1.5	4.0	3.9	2.5
2009	2.1	2.3	5.9	2.6
Difference (3)–(1)				
1998	0.0	0.2	3.8	1.3
2003	–0.1	0.2	–1.7	–0.2
2007	–1.0	–7.2	–4.0	–2.5
2009	–0.8	–1.0	–1.5	–1.2

Source: Authors' calculations based on national sources, IMF and ECLAC-ILPES and IDB data.

2.3 Main results

Including all these elements and using the share of each tax on GDP for general governments from ELAC-ILPES and IDB public sector databases of 2006 (except for Colombia and Uruguay, where we used central government data for 2006 and 2008 respectively), we can derive the adjusted balance b^* (as a share on potential output) as:

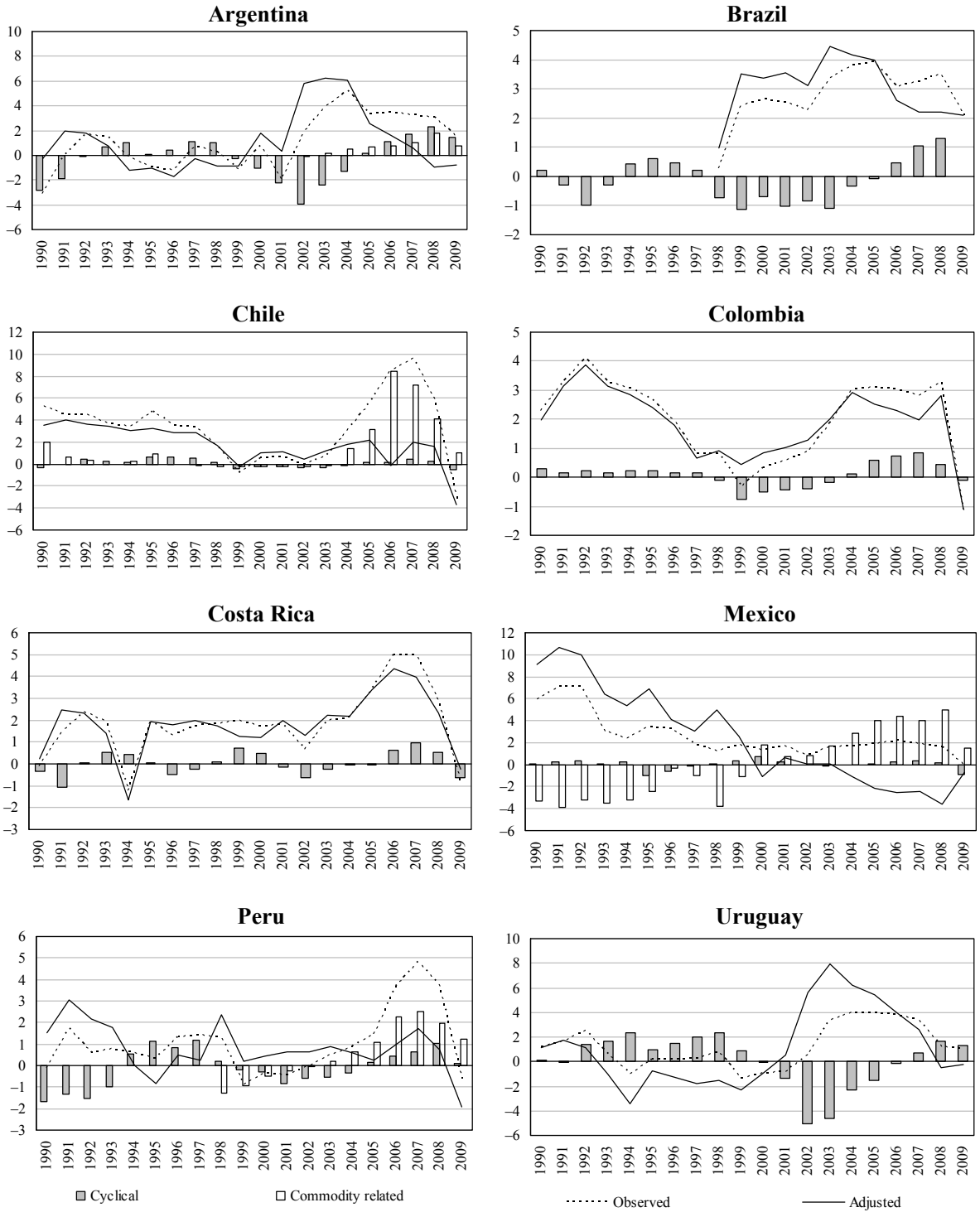
$$b^* = \frac{\left(\sum_{i=1}^{4} T_i (Y^*/Y)^{\varepsilon_{t_i,y}}\right) - G + X}{Y^*} + R_c^s \tag{6}$$

where G are current primary government expenditures, the expression in parenthesis is the cyclically-adjusted receipts from taxes excluding those directly related to commodities, X are non-tax revenues not related to commodities minus capital and net interest spending, Y^* is the level of potential output, and R_c^s are the structural revenues related to commodities from equation (5).

Figure 10 shows the evolution of the primary budget balance (excluding interests) in the selected Latin American economies, the estimated impact of the economic cycle on revenues (automatic stabilization) with the price of commodities (for Argentina, Chile, Mexico and Peru), and the resulting "adjusted primary balance".

Figure 10

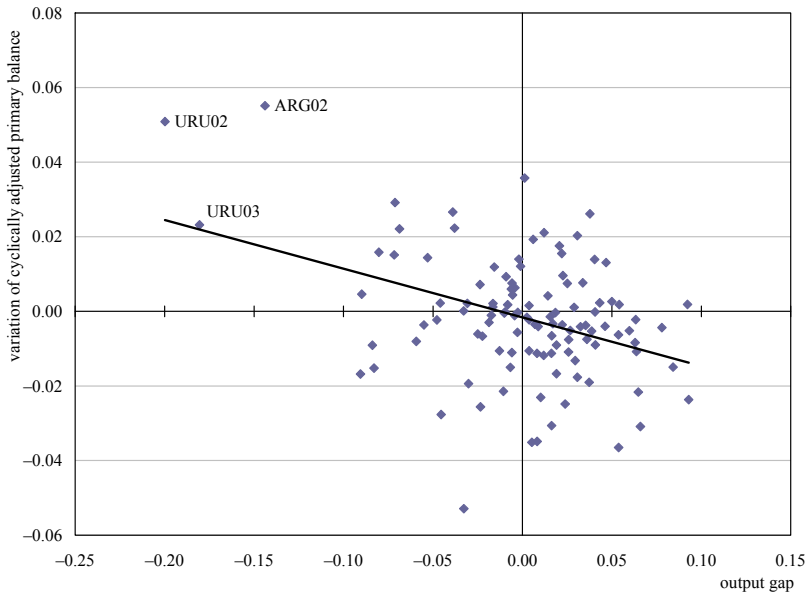
Adjusted Primary Budget Balance
(percent of GDP)



Notes: Primary budget balance is adjusted for deviations of GDP and commodity prices (for Argentina, Chile, Mexico and Peru) around their trends, as explained in Sections 2.1 and 2.2. Non-financial public sector figures in Argentina, Colombia, Mexico and Uruguay, and general government figures for Brazil, Chile, Costa Rica and Peru, from ECLAC-ILPES and IDB databases.
Source: Authors' calculations.

Figure 11

Output Gap and Change in Adjusted Budget Balance
(percent of GDP)



Source: Authors' calculations.

According to our estimates, at the onset of the crisis, adjusted primary balances were in equilibrium or surplus in a majority of countries (1 p.p. of GDP in Peru, 2 p.p. in Uruguay, 2.5 p.p. in Brazil, almost 3 p.p. in Chile and Colombia, and 5 p.p. in Costa Rica; –1.0 p.p. in Argentina and –3.6 p.p. in Mexico). So, even taking into account the positive economic and commodity price cycles, these figures confirm that the region faced the crisis in relatively good shape. The figure also highlights the significant impact of the economic cycle; especially in Argentina and Uruguay (automatic stabilizers via revenue contributed more than 4 per cent of GDP to sustain aggregate demand). Finally, commodity prices (copper, gold and oil) contributed significantly to improve fiscal positions in latest years (around 1 p.p. in Argentina, 2 p.p. in Mexico, 3 p.p. in Peru and over 6 p.p. in Chile). Obviously, 2009 figures reflect a generalized deterioration, driven by cyclical, commodity related and discretionary factors.[14]

Next, we explore the pro-cyclicality of discretionary fiscal policy in the standard way, comparing the variation of the adjusted primary balance and the output gap level. Fiscal policy is defined as counter-cyclical if the surplus increases (deficit decreases) in a year with positive output gap, or if the deficit increases (surplus decreases) when the output gap is negative. As represented in Figure 11, in the last two decades discretionary fiscal policy in Latin America has tended to be pro-cyclical (the correlation coefficient is –0.37 and in more than 60 per cent of cases, 53 out of the 144 cases, discretionary fiscal policy was not stabilizing).

From a national perspective, no country has benefited from sustained countercyclical discretionary fiscal policy, and in all cases, countries show a majority of pro-cyclical fiscal impulses (the most favourable cases are Brazil and Mexico, with 46 and 47 per cent of stabilizing episodes, respectively). In spite of that, based on the correlations of the variation of the adjusted budget balance and output gap level, Chile shows to some extent a countercyclical patter (0.35),

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[14] 2009 budget figures are preliminary for many economies. Data for Argentina, Costa Rica, Colombia and Peru where taken from the respective Central Bank databases, for Mexico and Uruguay from Ministry of Finance databases, and Brazil and Chile from OECD *Economic Outlook* projections (May 2010). Access to stable funding (both internal and external) determined the size of announced fiscal packages in the region. Chile and Peru were the top performers in the "fiscal resilience index"constructed by the OECD (2009b); an index that takes into account the external debt to exports ratio (a standard fiscal solvency indicator), the financing cost of fiscal expansions (proxied by the JP Morgan's EMBI Global spreads), and the government's pre-crisis budget balance with respect to GDP. Not coincidentally, these two countries announced and implemented the biggest fiscal stimuli for 2009.

while in Colombia and Peru discretionary fiscal policy has been fairly neutral (coefficients of correlation of 0.01 and –0.07 respectively). Argentina and Uruguay show the highest pro-cyclically, driven mainly by the impact and policy response to the 2002 crisis (if this episode is excluded, Uruguayan fiscal policy has been fairly neutral). Additionally, we find no clear progress in this field in the last decade. From 2000, fiscal policy has been more pro-cyclical (–0.49 from 2000 vs. –0.22 from 1990 to 1999) or as pro-cyclical at best (–0.18 when controlling for the 2002 crisis). With these criteria, good practices stem again from Costa Rica, where discretionary fiscal policy has turned counter-cyclical, and Chile (where it was maintained throughout the period analysed).

We also test whether these results are symmetric along the economic cycle. Using this simplified approach, discretionary fiscal policy seems to be more pro-cyclical in the crisis, when output gap remains negative (correlation of –0.44) than in booms (–0.15). So, apparently, the pro-cyclicality of fiscal policy in the region is not explained by the existence of profligate governments, but with either internally or externally credit rationed countries, as dramatically shown in 2002 crisis, where a huge fiscal adjustment was implemented in a deep crisis environment in Argentina and Uruguay. Excluding this big shock, no significant difference remains between booms and (regular) busts, an issue that should be borne in mind when setting fiscal rules and institutions. Of course, if the fiscal authorities in the country are aware of the potential impact of such large negative shocks, one could still make the argument that it would be optimal to save more during the good times. However, when it comes to design fiscal rules, it is important to take into account that emerging markets might lose exogenously access to finance during times of turmoil.

While the main focus of this paper is on the cyclicality of fiscal policy in Latin America and the estimation of structural balances, the issue of fiscal sustainability has been of importance for the region, given its recurrent debt problems. Overall, in recent times there has been a reduction of debt-to-GDP levels in the region. However, there are considerable differences within the region. On the one hand, Chile, Costa Rica, Mexico (after the "tequila crisis"), and Peru reduced their debt-to-GDP levels over the last decade and more. Peru and Chile had debt levels of almost 80 per cent of GDP in the early 1990s, while nowadays exhibit levels around 25 per cent of GDP. Less pronounced, but still significant, has been the debt burden reductions in Costa Rica and Mexico from close to 50 per cent of GDP in the mid-1990s to less than 30 per cent in 2008. On the other hand, Argentina and Uruguay have suffered both a debt crisis during the collapse of their fixed exchange rate regimes and associated banking crises in 2001-02. Since then, in part due to debt restructuring, but also due to economic growth and fiscal surpluses they have reduced their debt levels down to around 50 per cent of GDP, which are higher levels than ten years ago. Brazil is closer to the case of Argentina and Uruguay, with still high levels of debt (at least in gross terms) and a somewhat slower reduction than the first group.

Debt sustainability depends on a series of factors such as long-term economic growth perspectives, the cost of funds (interest rate), and the composition of debt; but also things much harder to measure such as expectations (Calvo, 1988) and institutional/political characteristics affecting a country's ability and willingness to service its sovereign debt. Furthermore, exogenous shocks to each of these variables are hard to identify, making debt sustainability analysis a challenging topic. Therefore, in this section we explore some aspects of debt dynamics in the region using standard techniques in the literature, rather than making a precise judgement regarding the need and size of fiscal adjustment in each country.

Although it is not obvious how to establish a benchmark for safe debt levels, one way to approach this issue is to compute the primary surplus required to stabilize debt-to-GDP ratios at their current level, and compare this required surplus with both actual and structural balances.

Given the government budget dynamics in equation (7), fiscal policy is considered

sustainable if the primary surplus (S) is greater than the primary surplus required to stabilize the debt level (D) relative to GDP (Y):

$$D_{t+1} = (1 + r_{t+1})D_t - S_{t+1} \tag{7}$$

where debt levels are end-of-period and r_{t+1} is the average real interest rate during period t+1. Assuming that GDP (Y) grows at a rate g_t , dividing equation (7) by Y_{t+1} yields:

$$d_{t+1} = \frac{1 + r_{t+1}}{1 + g_{t+1}} d_t - s_{t+1} \tag{8}$$

where all lower case variables refer now to GDP ratios.

Thus, for a given interest rate and GDP growth rate (assuming that they are constant over time), the primary surplus that stabilizes the current debt-to-GDP level is given by:

$$\bar{s} = \frac{r - g}{1 + r} \bar{d} \tag{9}$$

It should be recognised that this definition has some limitations. First, it does not say anything regarding the initial debt-to-GDP ratio, which might be too high and therefore an additional fiscal effort to reduce it to a safe level would be required. Second, this "accounting approach" does not consider underlying correlations and endogeneity of variables. For instance, in the presence of default risk, interest rates would increase with the debt burden and with net financing needs if liquidity risks are also present. Growth could in turn depend negatively on the cost of funding (r) and the debt burden (if there is a debt overhang problem, where private investment is lower because economic agents incorporate the prospects of higher future taxes to service the debt).

In addition, valuation effects can have very important quantitative effects, as most countries in the region have painfully learnt during the 1980s and 1990s (debt dollarization). In particular, swings in the real exchange rate often imply large fluctuations in the debt-to-GDP ratio, if the fraction of dollarized debt is different from the share of tradable goods in GDP.[15] Observe that the steady-state debt-to-GDP ratio can be written as:

$$\bar{d} = \frac{B + eD^*}{Y} \tag{10}$$

where e is the relative price of tradable goods in terms of one unit of output, D^* is debt denominated in tradables (dollars) and B in output units. The right-hand-side of equation (10) can be written as:

$$\frac{B}{Y} + \phi \frac{D}{Y} \tag{11}$$

with $\phi = \frac{eD^*}{D}$ representing the share of foreign-currency denominated debt.

The valuation-corrected debt-to-GDP ratio for a given equilibrium exchange rate $\tilde{e}$ is:

$$\tilde{d} = \frac{B}{Y} + \tilde{\phi} \bar{d} \tag{12}$$

---

[15] In addition, the remaining fraction of debt in general is often not nominal debt, but indexed to CPI inflation or short-term interest rates, which move often in tandem with the exchange rate.

where $\tilde{\phi} = \frac{\tilde{e}D^*}{D}$.

Thus, under an appreciated real exchange rate ($e < \tilde{e}$), the valuation-corrected debt ratio will be greater than the observed ratio. This implies that the required primary surplus, shown in equation (13), will also be higher, given that a depreciation of the currency *vis-à-vis* the dollar would be expected in the transition to the steady state. Vice versa, if the currency is depreciated (above the equilibrium exchange rate), the adjusted debt level will be less than the observed one.

$$\tilde{s} = \frac{r-g}{1+r}\tilde{d} \tag{13}$$

In practical terms, we measure the equilibrium real exchange rate to be measured by the average bilateral real exchange rate *vis-à-vis* the US dollar, considering CPI prices over the period 1990-2008. Furthermore, as proxy for the share of foreign currency debt in total debt, we use data on the markets where debt was issued, assuming that all external debt is in US dollars and all domestic debt is indexed to the domestic price level (which we assume to equal the GDP deflator; this is the implicit assumption in equations 11-13).

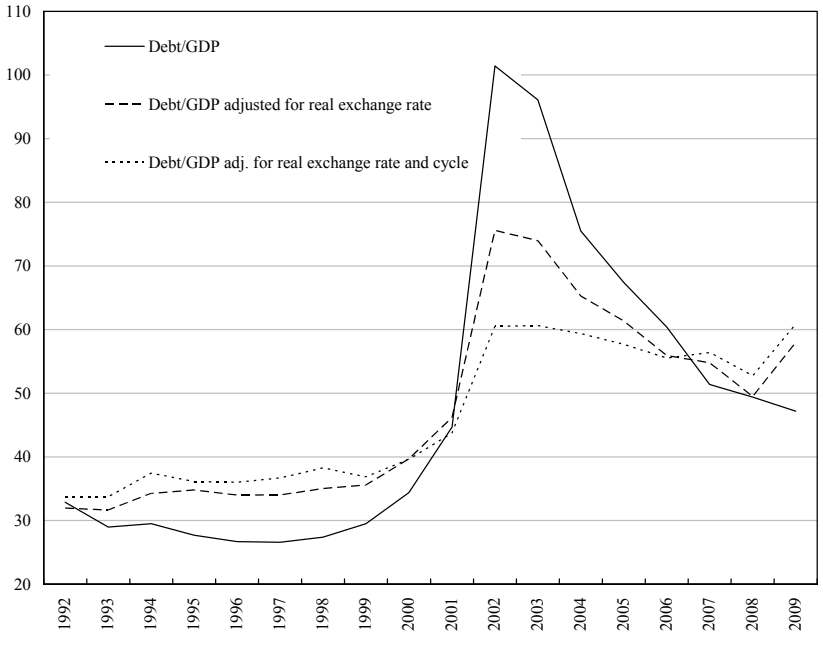
A final adjustment refers to point in the cycle at which GDP stands, given that the debt-to-GDP ratio would be lower during a boom (holding constant the stock of debt), such that our preferred measure of sustainability is given by:

$$\hat{s} = \frac{r-g}{1+r}\tilde{d}\,\frac{Y}{Y^*} \tag{14}$$

where Y^* is potential output. In practical terms, we compute potential output jointly with the business cycle using the structural time series approach described below.

Figure 12

Debt Dynamics and the Real Exchange Rate in Uruguay
(percent of GDP)



Source: Authors' calculations based on ECLAC-ILPES database.

Before computing the required fiscal surpluses, it is useful to explore the relevance of these adjustments. Figure 12 shows the potential importance of these adjustments from a quantitative point of view for the case of Uruguay. Debt levels as a ratio of GDP in the late 1990s were slightly below 30 per cent of GDP. However, when taking into account the appreciation of the real exchange rate with respect to its

Table 5

Debt Sustainability Analysis
(percent of GDP)

Country	Adjusted Primary Balance (2009)	Observed Primary Balance (2000-09)	Required Surplus (Baseline)	Required Surplus (IMF Forecasts)
Argentina	–0.8	2.1	3.1	3.5
Brazil	2.0	3.0	1.3	1.0
Chile	–3.7	2.8	0.1	0.0
Colombia	–1.1	1.6	0.5	0.3
Costa Rica	–0.2	2.3	0.8	0.4
Mexico	–0.7	1.5	1.2	0.4
Peru	–1.9	1.2	-0.1	-0.1
Uruguay	–0.2	1.6	0.9	1.2

Notes: Required surplus corresponds to equation (14) with debt-to-GDP ratios adjusted by the real exchange rate and the business cycle. Observed primary balance is the average of observed fiscal balances as percentage of GDP over the last ten years. IMF forecasts refer to the WEO April 2010 forecast of real GDP growth in 2015.
Source: Authors' calculations.

long-term average, debt levels would have been ten percentage points of GDP higher. The opposite is true for 2002, where the observed debt-to-GDP ratio shot up to over 100 per cent of GDP, while it would have been around 76 per cent of GDP if debt was valued at the long-term real exchange rate, and almost 16 per cent of GDP less if it were taken into account that the Uruguayan economy was in a deep crisis with GDP far below its potential (almost 20 per cent, according to our estimates). Finally, regarding the large reduction in the debt-to-GDP ratio after the crisis of more than 50 percentage points of GDP between 2002 and 2009, our structural measure of debt was reduced by 7.7 percentage points until 2008, but increased in 2009 to reach similar levels as in 2002. Thus, most of the reduction in the debt-to-GDP ratio could be attributed to the rebound in economic growth and the appreciation of the real exchange rate in the aftermath of the devaluation of the currency.

The main results for the eight countries for 2009 are reported in Table 5.[16] As discussed above, in 2009, most countries present a considerably lower structural balance in 2009 than in previous years, given the automatic and discretionary fiscal expansion in response to the economic crisis. However, all countries (except Argentina) have been able during the last decade to exhibit fiscal balances above those required to sustain their current debt levels, such that they could be expected to reverse expansionary policies without major difficulties. In terms of the difference between the adjusted balance and the required balance to keep debt levels at their current values, while Brazil is the only country with a structural balance above the required surplus, for several countries the difference is below two percent (Costa Rica, Uruguay, Colombia, Mexico and Peru).

Argentina and Chile are the exceptions, with a difference of 3.9 and 3.7 per cent of GDP,

[16] For each country we considered the current yields (average 2010) on sovereign debt bonds (JP Morgan's EMBIG) as the relevant interest rate. Observed and trend growth rates in 2009 are estimated according to the methodology explained in Section 3.

respectively. However, Argentina and Chile are in very different situations. First, Chile took discretionary measures with a fiscal impulse of around 5.6 per cent of GDP (comparing 2007 with 2009), while the impulse in Argentina was much smaller (1.3 per cent of GDP). Thus, countercyclical fiscal policy was much stronger in Chile than Argentina. This impulse was taken from a very strong position (debt-to-GDP of only around 6 per cent of GDP) in Chile, which is also reflected in the low fiscal surplus required to balance debt levels at their current value; meanwhile Argentina requires a much higher fiscal primary surplus (and has higher levels of debt, 47.1 per cent of GDP, adjusting for the real exchange rate and the business cycle). In more general terms, the level of the structural balances (as well as the fiscal impulse during 2007-09) is highly correlated with the initial debt position. Countries with higher levels of debt were in a more solid position to have higher structural deficits and larger fiscal impulses (the correlation coefficients with the debt levels are 0.90 and 0.48, respectively).

3 Estimation of output gap

Many researchers have recognised and analysed aggregate cycles in production without reaching consensus on its causes.[17] Lack of consensus regarding the theory is accompanied by an empirical problem; measurement of economic cycles depends on the estimation of potential output, which is unobservable. OECD methodology decomposes production through classical Solow factor decomposition of capital constructed though perpetual inventory methods, labour (hours worked) and multifactor productivity (MFP). Potential output is then constructed as the counter-factual production arising from full capital utilization,[18] unemployment rate equal to the NAIRU, and MFP given by its long-run trend.

Although we follow the above criteria to construct potential output in the Latin American countries, we could not follow OECD methodology by further disaggregating factors by their specific types, by the sectors of the economy where they are being used, or by their rate of utilization. In particular, restrictions on data availability for several Latin American countries forced us to construct capital from aggregate investment figures, using the perpetual inventory method with infinite lifespan and a constant depreciation rate of eight percent. Real investment, real GDP and active population data are chained series[19] built from series in *Penn World* tables, which cover a span of nearly six decades, from 1950 to 2007. The series are extended up to 2013 using IMF's World Economic Outlook estimates and forecast as of April 2010.[20] The treatment of net exports, in real terms (volume) or in terms of its purchasing power (dollars), merits also some attention. While the first measure better reflects production dynamics, the latter better reflects change on income. We opt for the former measure of volume on two grounds: we keep consistency when we later decompose GDP using a production function, and we analyze the effect of terms of trade on fiscal balance separately from the effect of the business cycle. Initial capital stock in 1950 is assumed to be on a balanced growth path, thus approximated by:

$$K_{1950} = I_{1950} / [(1 + g)(1 + n) - (1 - \delta)] \tag{15}$$

where I_{1950} is initial investment expenditure (filtered by a linear interpolation of the log investment

[17] This has lead economist to declare such aggregate behaviour dead in more than one occasion. The latest notable quote came in 2003 from Robert Lucas, who in his presidential address to the *American Economic Association* declared that "the central problem of depression-prevention has been solved, for all practical purposes, and has in fact been solved for many decades".

[18] OECD latest revision to potential output uses total capital rather than a filtered series of such series (OECD, 2008).

[19] See OECD (2001) for the benefit of chained indices with respect to other bases of conversion, especially when looking at higher frequency data and avoiding level comparison across countries.

[20] Potential output is estimated up to 2009. But forecasts for years 2010 onwards are used as a way to circumvent well-known end point filter problems when estimating trends. GDP forecasts are provided by the IMF, while investment forecasts are estimated from those GDP forecasts, using simple regression of investment growth on GDP growth between 1990 and 2009.

throughout the 1950s), g is the average rate of technological progress on that same decade, and n is the corresponding average growth rate of active population.

For the implicit Cobb-Douglas production function we assume a capital share of 0.5 for all countries. This is significantly different from the standard approximation of one third, but closer to the average obtained in the literature that covers emerging markets (see, for example, Gollin, 2002, for country-specific measures of this parameter for a wide range of countries).

Given the broad level of aggregation, cyclical action will be centred in MFP. Several statistical studies have questioned the usual Hodrick-Prescott methodology to de-trend economic series, arguing that it is tailor-made for the output cycles in the US, but not necessarily optimal for any other type of economic series (see Harvey *et al.*, 2008). Furthermore, there is ample evidence that emerging markets have a very different cyclical behaviour than industrialized economies, with some authors putting into question even the existence of cyclical shocks (e.g., Aguiar and Gopinath, 2007).

To address some of these challenges posed in the literature, we de-trend the resulting MFP series using the unobserved components model suggested by Harvey (1998). We use this state-space estimation method to estimate unexpected shocks to the MFP series, decomposing these shocks into three components: shocks that have a permanent effect on MFP, cyclical shocks with an estimated frequency, and time decay, and transitory "white noise" shocks. Permanent shocks determine the trend while the two latter shocks determine the gap to potential output. Harvey (1989) shows that the Hodrick-Prescott filter can be obtained as a particular case of this method, by imposing two additional restrictions: no cyclical component and a predetermined ratio between the variance of transitory and permanent shocks (a ratio that coincides with the parameter lambda of HP filters).

We define the logarithm of multifactor productivity a, and use the state-space domain to decompose the series into three unobserved components: a trend t, a cycle c, and a transitory shock ξ_t:

$$a = t + c + \xi t \tag{16}$$

The trend component accounts for permanent changes in the growth rate of (log) MFP, and is thus interpreted as the "long run trend for multi factor productivity" in potential output. It is specified as growing with a stochastic drift μ:

$$t = t_{-1} + \gamma \Delta_{\text{crisis}} + \mu \tag{17}$$

where t_{-1} is the trend in the previous period and Δ_{crisis} is a year dummy that account for large permanent MFP losses at the beginning of the 1980s debt crisis. The drift rate μ is assumed to follow a random walk:

$$\mu = \mu_{-1} + \beta \Delta_{\text{crisis}} + \xi_\mu \tag{18}$$

where the same 1980s dummy Δ_{crisis} is used to account for any large permanent reduction in MFP's growth rates after the debt crisis. Thus, MFP trend grows at a rate that varies, but that at any time t, is best forecasted as remaining constant and equal to current rate μ. The large recession in the early 1980s and the prolonged low growth that resulted call for adding the Δ_{crisis} dummy, which proves to be significantly negative for both the level and rate of MFP trend. As countries felt the 1980s recession in different years (between 1981 and 1982), for each country we select the year dummy which maximizes the log likelihood (following the AIC criteria).

The cycle component c follows the autoregressive process:

$$c = \rho \cos(\lambda)\, c_{-1} + \rho \sin(\lambda)\, c^*_{-1} + \xi_\chi \tag{19}$$

$$c^* = -\rho \sin(\lambda)\, c_{-1} + \rho \cos(\lambda)\, c^*_{-1} + \xi_{\chi^*} \quad (20)$$

where ξ_χ and ξ_{χ^*} are disturbances with equal variance. The period of the cycle is $2\pi/\lambda$. The damping factor ρ with $0 < \rho < 1$ ensures that c is a stationary ARMA (2, 1) process with complex roots in the autoregressive part. It is assumed that all disturbances are normally distributed and are independent of each other (usual assumption to assure the identification of the parameters). Initial values for the stationary cycle components are given by the unconditional distribution and for the non-stationary trend and drift components by a diffuse prior. The filtered and smoothed values of the unobserved components are generated by the Kalman filter.

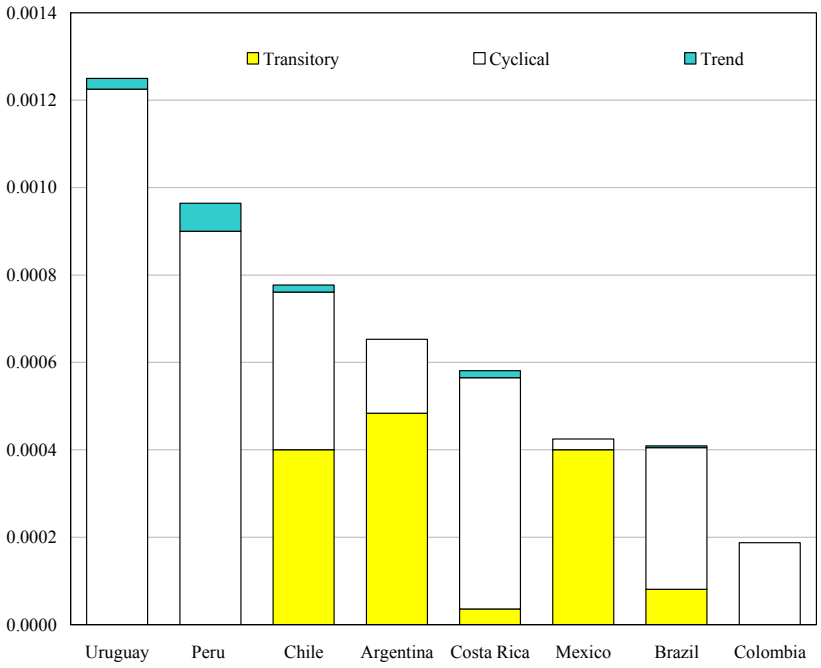
Estimated parameters for the temporary, cyclical and trend components vary significantly across countries. Figure 13 shows the variance decomposition of unexpected shocks in each period ($\xi_\mu + \xi_\chi + \xi_\iota$). While Uruguay has the largest estimated total variance, its shocks are mostly cyclical. The figure also shows that long term estimated shocks to the trend in Chile, Costa Rica, Peru and Uruguay have a statistically significant variance. As expected, even for these countries, this variance is significantly smaller than the estimated variance of the two stationary shocks; a fact that translates into a relatively smooth long-term trend. Though smaller in size than the stationary shocks, trend shocks follow a random walk. Thus their effect is cumulative and large after several periods.

For this reason, while estimated trends in Argentina, Brazil and Uruguay are close to (but different than) zero, growth rate of MFP, together with changes in capital formation, may accumulate and cause significant changes on long run GDP (as observed in Figure 14).

Table 6 shows the estimated damping factor ρ and the estimated period $2\pi/\lambda$ for the stochastic cycle component. Uruguay shows the longest stochastic cycles (averaging 15 years) while Mexico and Peru show the shortest cycles (averaging 9 years). Brazil's estimated cycles are the closest to the "biblical cycle" of 14 years. The damping factor for Costa Rica is the strongest with ρ equal to 0.24 (*i.e.*, the cyclical shock is dampened to a fourth of its size by the following year), while Mexico exhibits the weakest dampening effect with an estimated ρ equal to 0.93 (*i.e.*, it takes 19 years for the cyclical shock to be dampened to a fourth of its size). In Mexico, the high estimated value of ρ, combined with the low estimated variance of cyclical shocks, implies a very stable "almost non-stochastic" cycle.

Figure 13

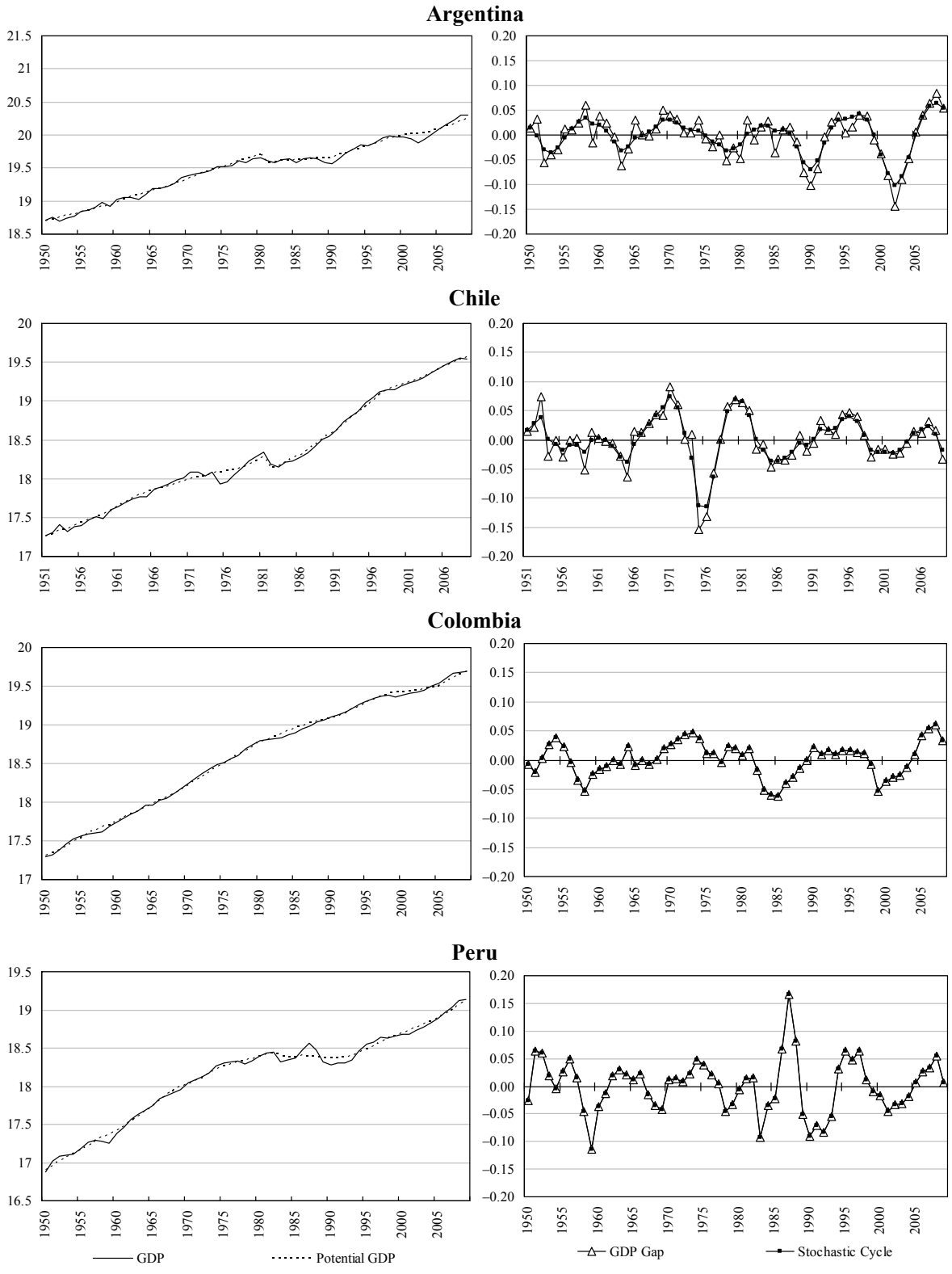
Estimated Variance Decomposition of Shocks to Log MFP



Source: Author's calculations.

Figure 14

Evolution of Estimated Trend and Cycles for Argentina, Chile, Colombia and Peru



Source: Author's calculations.

4 Conclusions and policy implications

Table 6

Estimated Parameters for Cyclical Shocks

Country	Period	ρ
Argentina	11.4	0.84
Brazil	14.1	0.66
Chile	11.6	0.77
Colombia	14.3	0.74
Costa Rica	12.8	0.24
Mexico	8.6	0.93
Uruguay	15.3	0.72
Peru	8.9	0.67

Source: Author's calculations.

This paper aims to contribute to the debate on fiscal policy in Latin America by measuring cyclicality of fiscal balances using a common methodology. At the onset of the international financial crisis in 2008-09, many indicators suggested that Latin American economies were facing the crisis in a much better macroeconomic position that in the past; with positive budget surpluses, lower debt-to-GDP levels and a more credible monetary policy thanks to inflation targeting regimes. Solid macro balances were the new reality in a region where fiscal fragility had been at the root of past protracted crises, such as the dramatic debt crisis of the 1980s.

We track fiscal balances since the early-Nineties for a set of Latin American economies, implementing both standardised cyclical-adjustment OECD methodology and regional specific adjustments for the impact of commodity prices. These estimations allow measuring the size of automatic stabilisers embedded in tax policies, and the cyclicality of discretionary fiscal policy in the region as a whole. Additionally, we perform debt sustainability exercises to analyse how far from a potential benchmark current fiscal balances are.

Our main messages can be summarized as follow. First, there is a great degree of uncertainty concerning output gap estimates in Latin America. Compounded with highly volatile cyclical shocks, there is evidence of highly volatile trends for potential output. Second, commodity cycles may be as relevant to countercyclical policy as economic cycles, because of the former's significance in total fiscal revenues. Third, tax automatic stabilizers are significant, although fairly small. Primary budget balances respond automatically around 0.2 per cent for each percentage point of output gap in the region, half the OECD average (although with significant regional differences). Forth, since the early-Nineties, discretionary fiscal policy has been pro-cyclical in Argentina, Brazil, Costa Rica, Mexico and Uruguay, while neutral in Chile, Colombia and Peru. Fifth, pro-cyclicality of discretionary fiscal policy is probably explained by lack of access to credit during deep crises, rather than by profligate spending. And sixth, from a structural perspective, both cyclically-adjusted balances and debt sustainability analysis confirm the better position enjoyed by most countries in the region before the crisis.

Venues for continuing research include lifting restrictions and understanding the implications of distinguishing cyclical and trend volatility. In a first stage, some hard assumptions we made to apply the OECD methodology may be relaxed, in particular the unitary elasticity of consumption taxes to the cycle, and the consideration of automatic stabilization via expenditure. Additionally, alternative data sources of the distribution of tax payers (administrative data) may be used as a robustness check of the results. Finally, it would be interesting to identify in the tax revenues series the effects of tax and social security reforms implemented since 1990, and to estimate their impact on elasticities.

ANNEX 1
OUTPUT GAP AND WAGES

Table 7

Regressions of Income Growth to Growth of Output Gap

Country	sW	Coeff.	Std. Err.	*t*	*P*>|*t*|	(95% Conf. Interval)	
Argentina	sGap	1.052835	0.3538535	2.98	0.006	0.32406011	0.78161
	cons	–0.0010282	0.0146514	–0.07	0.945	–0.0312034	0.029147
Chile	sGap	0.696172	0.2313957	3.01	0.006	0.2196036	1.17274
	cons	–0.0014225	0.0055165	–0.26	0.799	–0.0127839	0.0099388
Costa Rica	sGap	1.729863	0.3118525	5.55	0.000	1.087591	2.372136
	cons	–0.0016511	0.0082065	–0.20	0.842	–0.0185527	0.0152505
Mexico	sGap	1.452921	0.3424351	4.24	0.000	0.7476625	2.158179
	cons	0.002872	0.0117638	0.24	0.809	–0.0213559	0.0270999
Peru	sGap	1.954151	0.4909695	3.98	0.001	0.9429808	2.965322
	cons	–0.01838	0.0258092	–0.71	0.483	–0.0715351	0.034775
Uruguay	sGap	0.8907144	0.2280803	3.91	0.001	0.4209743	1.360454
	cons	–0.0116578	0.012358	–0.94	0.355	–0.0371096	0.013794

Results of Unobserved Components Model Estimation for Potential Multi Factor Productivity

Argentina

Sample: 1950-2007 Number of obs = 58 Log likelihood = 105.73313

log MFP	Coeff.	Std. Err.	*z*	*P*>|*z*|	(95% Conf. Interval)	
γ1981	–0.1532983	0.0204885	–7.48	0.000	–0.193455	–0.1131416
β1981	–0.0011573	0.0011727	–0.99	0.324	–0.0034557	0.0011411
S.E. of ξ_μ	$5.45e^{-10}$	0.0002444	0.00	1.000	–0.0004791	0.0004791
$\rho\, cos(\lambda)$	0.7885919	$9.55e^{-06}$	$8.3e^{+04}$	0.000	0.7885732	0.7886106
$\rho\, sin(\lambda)$	–0.4852602	$4.16e^{-06}$	$-1.2e^{+05}$	0.000	–0.4852683	–0.485252
S.E. of ξ_χ	0.013292	0.0032897	4.04	0.000	0.0068444	0.0197397
S.E. of ξ_ι	–0.0221279	0.0035741	–6.19	0.000	–0.029133	–0.0151228

Brazil

Sample: 1950-2007 Number of obs = 58 Log likelihood = 118.84452

log MFP	Coeff.	Std. Err.	*z*	*P*>|*z*|	(95% Conf. Interval)	
γ1981	–0.1207987	0.0291704	–4.14	0.000	–0.1779716	–0.0636257
β1981	–0.0231028	0.0098635	–2.34	0.019	–0.042435	–0.0037707
S.E. of ξ_μ	0.0026364	0.0014108	1.87	0.062	–0.0001286	0.0054014
$\rho\, cos(\lambda)$	0.7330813	$4.68e^{-06}$	$1.6e^{+05}$	0.000	0.7330721	0.7330905
$\rho\, sin(\lambda)$	0.3568044	$1.44e^{-06}$	$2.5e^{+05}$	0.000	0.3568015	0.3568072
S.E. of ξ_χ	0.0181422	0.0035965	5.04	0.000	0.0110932	0.0251912
S.E. of ξ_ι	–0.0090068	0.0044601	–2.02	0.043	–0.0177485	–0.0002651

Chile

Sample: 1950-2007 Number of obs = 57 Log likelihood = 93.5357

log MFP	Coeff.	Std. Err.	*z*	*P*>|*z*|	(95% Conf. Interval)	
γ1982	–0.1585976	0.0411957	–3.85	0.000	–0.2393397	–0.0778556
β1982	0.06319	0.0140235	1.47	0.141	–0.0068536	0.0481175
S.E. of ξ_μ	0.0042634	0.0017336	2.46	0.014	0.0008655	0.0076612
$\rho\, cos(\lambda)$	0.7542281	$2.89e^{-06}$	$2.6e^{+05}$	0.000	0.7542225	0.7542338
$\rho\, sin(\lambda)$	0.4502893	$1.72e^{-06}$	$2.6e^{+05}$	0.000	0.4502859	0.4502927
S.E. of ξ_χ	0.0193095	0.0041932	4.60	0.000	0.011091	0.0275281
S.E. of ξ_ι	0.0203625	0.0039529	5.15	0.000	0.0126149	0.0281101

Colombia

Sample: 1950-2007 Number of obs = 58 Log likelihood = 168.231

log MFP	Coeff.	Std. Err.	*z*	*P*>|*z*|	(95% Conf. Interval)	
γ1982	–0.0589079	0.0163315	–3.61	0.000	–0.090917	–0.0268988
β1982	–0.0202486	0.0009121	–22.20	0.000	–0.0220363	–0.0184609
S.E. of ξ_μ	$3.78e^{-11}$	0.0001884	0.00	1.000	–0.0003692	0.0003692
$\rho\, cos(\lambda)$	0.7802297	0.052166	14.96	0.000	0.6779863	0.8824731
$\rho\, sin(\lambda)$	0.3666441	0.0603868	6.07	0.000	0.2482882	0.4850001
S.E. of ξ_χ	–0.0137002	0.0012958	–10.57	0.000	–0.0162398	–0.0111605
S.E. of ξ_ι	$-6.98e^{-10}$	0.0067861	–0.00	1.000	–0.0133004	0.0133004

Mexico

Sample: 1950-2007 Number of obs = 58 Log likelihood = 123.58014

log MFP	Coeff.	Std. Err.	*z*	*P*>|*z*|	(95% Conf. Interval)	
γ1982	–0.1558083	0.0115221	–13.52	0.000	–0.1783912	–0.1332254
β1982	–0.0150606	0.0007016	–21.46	0.000	–0.0164358	–0.0136854
S.E. of ξ_μ	$9.95e^{-12}$	0.0001558	0.00	1.000	–0.0003054	0.0003054
$\rho\, cos(\lambda)$	0.7152843	$2.40e^{-06}$	$3.0e^{+05}$	0.000	0.7152796	0.715289
$\rho\, sin(\lambda)$	0.6461949	$4.06e^{-06}$	$1.6e^{+05}$	0.000	0.6462028	0.6461869
S.E. of ξ_χ	0.0047896	0.0015288	3.13	0.002	0.0077859	0.0017933
S.E. of ξ_ι	–0.019532	0.002262	–8.63	0.000	–0.0239654	–0.0150986

Peru

Sample: 1950-2007 Number of obs = 58 Log likelihood = 89.85937

log MFP	Coeff.	Std. Err.	*z*	*P*>|*z*|	(95% Conf. Interval)	
γ1981	–0.0245013	0.0455782	–0.54	0.591	–0.1138329	0.0648302
β1981	–0.0336053	0.0225792	–1.49	0.137	–0.0778597	0.0106492
S.E. of ξ_μ	0.0076486	0.002554	2.99	0.003	0.0026427	0.0126544
$\rho\, cos(\lambda)$	0.6275314	$2.78e^{-06}$	$2.3e^{+05}$	0.000	0.6275259	0.6275368
$\rho\, sin(\lambda)$	0.5331292	$2.36e^{-06}$	$2.3e^{+05}$	0.000	0.5331246	0.5331338
S.E. of ξ_χ	0.0298896	0.0030726	9.73	0.000	0.0359118	0.0238673
S.E. of ξ_ι	$2.89e^{-32}$	0.0116013	0.00	1.000	–0.0227381	0.0227381

Uruguay

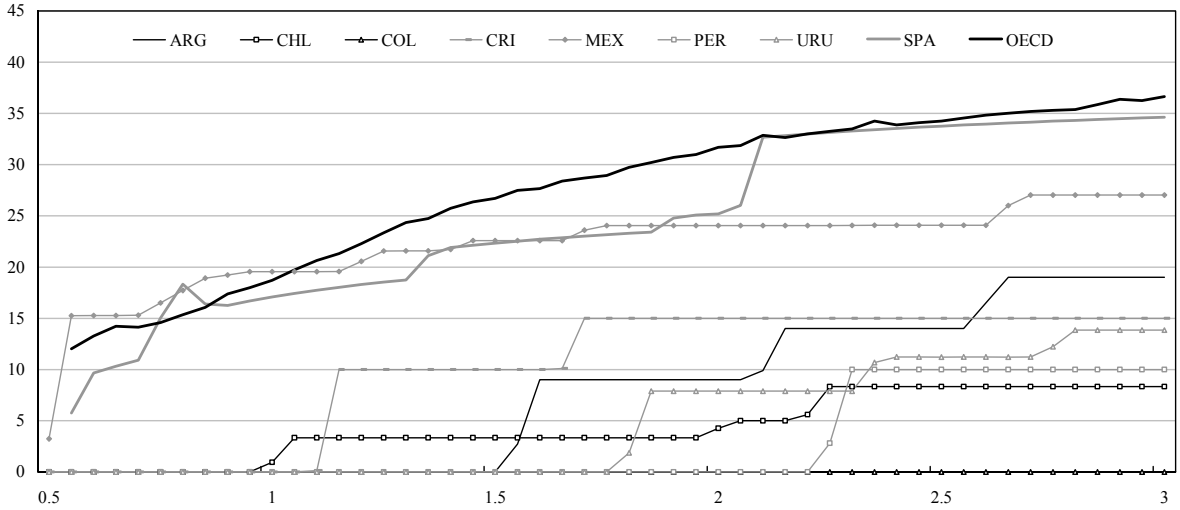
Sample: 1950-2007 Number of obs = 58 Log likelihood = 89.822777

log MFP	**Coeff.**	**Std. Err.**	***z***	***P*>|*z*|**	**(95% Conf. Interval)**	
γ1982	–0.0956271	0.0450603	–2.12	0.034	–0.1839436	–0.0073105
β1982	0.0032569	0.0192269	0.17	0.865	–0.0344272	0.040941
S.E. of ξ_μ	0.0052465	0.0025954	2.02	0.043	0.0001596	0.0103334
$\rho\, cos(\lambda)$	0.7841392	$3.36e^{-06}$	$2.3e^{+05}$	0.000	0.7841326	0.7841458
$\rho\, sin(\lambda)$	0.3442606	$2.25e^{-06}$	$1.5e^{+05}$	0.000	0.3442562	0.344265
S.E. of ξ_χ	0.0352872	0.0035362	9.98	0.000	0.0283563	0.0422181
S.E. of ξ_ι	$2.72e^{-07}$	0.0103452	0.00	1.000	–0.020276	0.0202765

ANNEX 2
TAX RATES

Figure 16

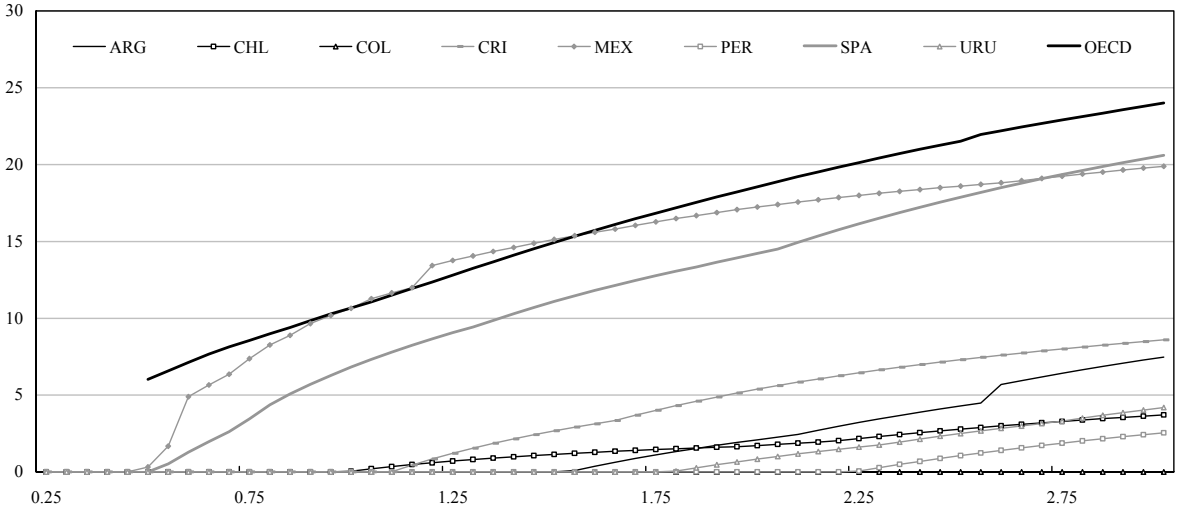
Marginal Personal Income Tax by Income Levels
(percent)



Note: Marginal tax rate by household labour income level.
1 represents the national average. OECD unweighted average, excluding Chile and Mexico.
Source: Authors' calculations based on OECD's *Taxing Wages* (Mexico), Ministries of Finance (Chile and Uruguay) and own elaboration (Argentina, Colombia, Costa Rica and Peru).

Figure 17

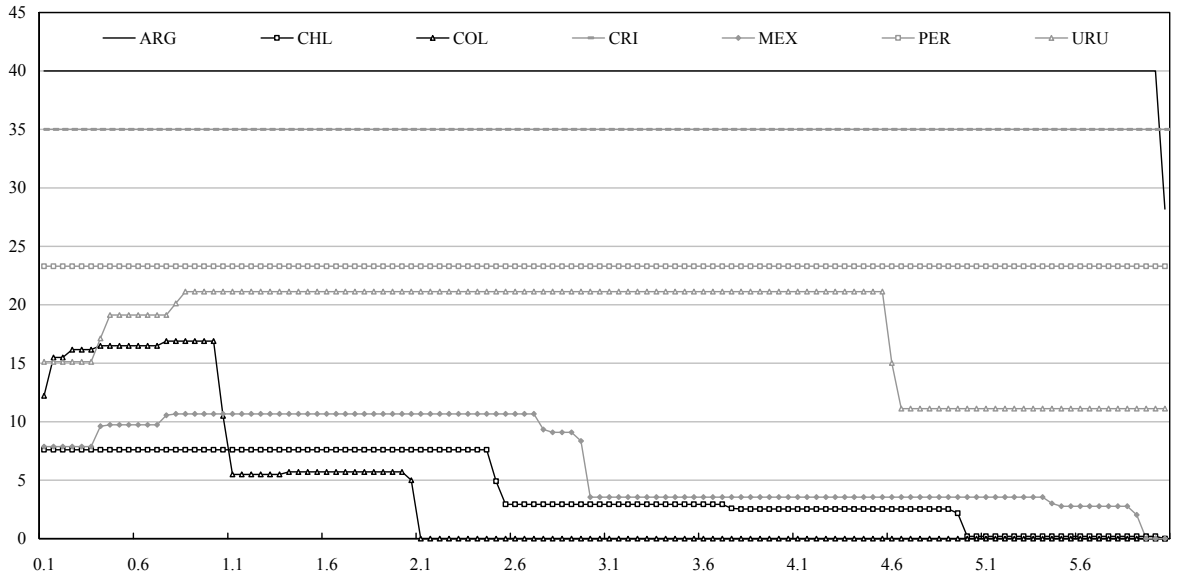
Average Personal Income Tax by Income Levels
(percent)



Note: Average tax rate by household labour income level.
1 represents the national average. OECD unweighted average, excluding Chile and Mexico.
Source: Authors' calculations based on OECD's *Taxing Wages* (Mexico), Ministries of Finance (Chile and Uruguay) and own elaboration (Argentina, Colombia, Costa Rica and Peru).

Figure 18

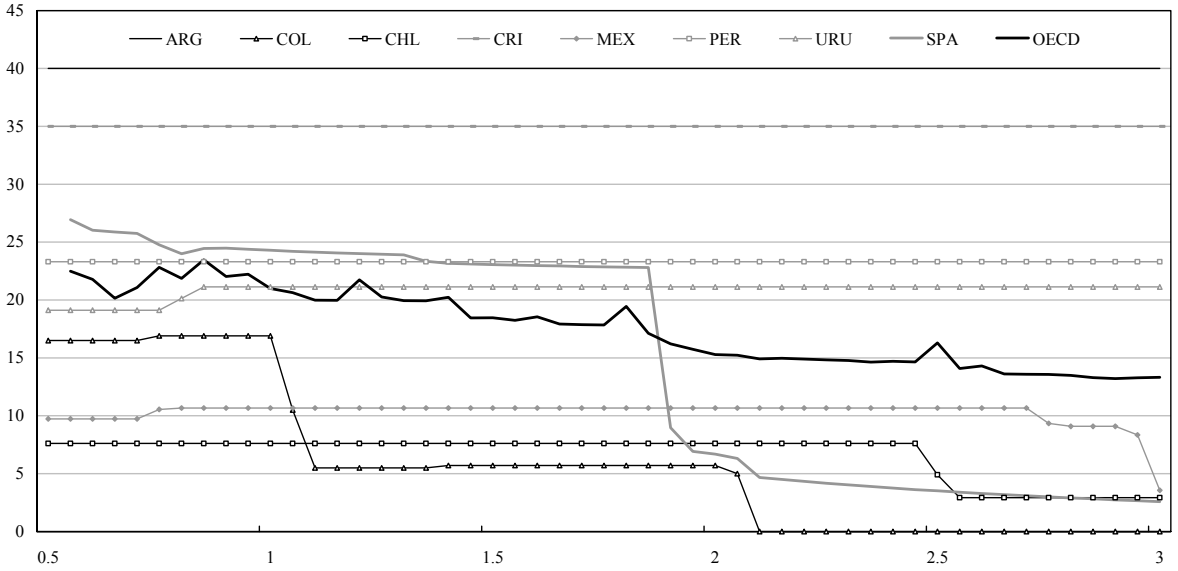
Marginal Social Contribution Tax by Income Levels
(percent)



Note: Marginal tax rate by household labour income level.
1 represents the national average.
Source: Authors' calculations based on OECD's *Taxing Wages* (Mexico), Ministries of Finance (Chile and Uruguay) and own elaboration (Argentina, Colombia, Costa Rica and Peru).

Figure 19

Average Social Contribution Tax by Income Levels
(percent)



Note: Average tax rate by household labour income level.
1 represents the national average. OECD unweighted average, excluding Chile and Mexico.
Source: Authors' calculations based on OECD's *Taxing Wages* (Mexico), Ministries of Finance (Chile and Uruguay) and own elaboration (Argentina, Colombia, Costa Rica and Peru).

Table 8

General Government Revenues
(percent of GDP)

Country	Tax					Current Primary Revenue	
	Corporate	Personal	Indirect	Social Security	Total	Non-tax Revenue	Total
Argentina	**3.5**	**1.5**	**11.6**	**3.8**	**20.4**	**2.8**	**23.2**
Brazil	**3.4**	**0.3**	**14.2**	**8.1**	**26.1**	**4.8**	**30.9**
Chile	**5.5**	**1.0**	**9.4**	**1.4**	**17.2**	**8.1**	**25.3**
Colombia	**5.7**	**0.2**	**5.6**	**2.2**	**15.6**	**12.6**	**28.2**
Costa Rica	**3.2**	**1.3**	**8.9**	**6.4**	**19.8**	**2.7**	**22.5**
Mexico	**2.3**	**2.0**	**3.7**	**1.3**	**9.3**	**13.3**	**22.6**
Peru	**5.2**	**1.4**	**7.0**	**1.6**	**15.1**	**3.1**	**18.2**
Uruguay	**2.6**	**1.9**	**10.1**	**6.2**	**20.8**	**6.2**	**27.0**
France	2.2	9.0	15.1	18.5	44.7	4.6	49.4
Germany	0.8	9.8	12.0	18.6	41.1	3.1	44.2
Italy	2.5	11.2	14.5	13.1	41.3	2.6	44.0
Japan	2.9	4.6	8.3	10.6	26.3	1.5	27.8
Korea	3.1	4.0	12.8	4.7	24.5	3.1	27.7
Spain	3.4	7.2	12.0	13.7	36.2	2.7	38.9
United Kingdom	2.9	12.5	13.3	7.8	36.4	3.0	39.4
United States	2.1	9.1	7.3	7.0	25.4	4.9	30.4

Note: Data is referred to 2003 for the OECD excluding Chile and Mexico, 2008 for Uruguay and 2006 for Latin America.
Source: ECLAC-ILPES and IDB databases, and Girouard and André (2005).

Table 9

Tax Elasticities

Country	Corporate Income Tax	Personal Income Tax	Indirect Taxes	Social Security Contributions	Total over Cycl-adj Taxes	Total over GDP
Argentina	**0.83**	**3.61**	**1.00**	**1.08**	**1.16**	**0.27**
Brazil	**1.17**	**2.72**	**1.00**	**1.44**	**0.95**	**0.25**
Chile	**0.66**	**3.51**	**1.00**	**1.30**	**1.30**	**0.14**
Colombia	**0.96**	**2.65**	**1.00**	**0.55**	**0.94**	**0.14**
Costa Rica	**0.27**	**4.49**	**1.00**	**1.67**	**1.31**	**0.27**
Mexico	**0.69**	**2.95**	**1.00**	**0.76**	**1.29**	**0.13**
Peru	**0.38**	**5.33**	**1.00**	**1.94**	**1.54**	**0.18**
Uruguay	**1.18**	**2.85**	**1.00**	**0.95**	**1.17**	**0.25**
LAC	**0.69**	**3.61**	**1.00**	**1.28**	**1.22**	**0.19**
Canada	1.55	1.10	1.00	0.56	1.03	0.34
France	1.59	1.18	1.00	0.79	0.98	0.49
Germany	1.53	1.61	1.00	0.57	0.96	0.44
Italy	1.12	1.79	1.00	0.86	1.18	0.40
Japan	1.65	1.17	1.00	0.55	0.92	0.39
Korea	1.52	1.40	1.00	0.51	1.04	0.25
Spain	1.15	1.92	1.00	0.68	1.08	0.39
United Kingdom	1.66	1.18	1.00	0.91	1.10	0.34
United States	1.53	1.30	1.00	0.64	1.05	0.24
OECD	1.47	1.21	1.00	0.71	1.02	0.40

Note: LAC unweighted average. OECD unweighted average, excluding Chile and Mexico.
Source: Authors' calculations for Argentina, Chile, Colombia, Costa Rica, Mexico and Uruguay, De Mello and Moccero (2006) for Brazil, and Girouard and André (2005) for the rest.

ANNEX 3
COMMODITY SERIES

Argentina

We consider export taxes introduced in 2002 ("Derechos de exportaciones"). All data are available at: http://www.mecon.gov.ar/sip/basehome/rectrib.htm

Prices come from the IMF commodity price database (food and energy indices) and are weighted according to their importance in exports.

Chile

- Corporate income tax paid by CODELCO
- Transfers from CODELCO to the central government
- Royalties paid by private mining firms

All these data come from DIPRES (www.dipres.cl). The price adjustment is based on a 10-year rolling window average of copper prices from COCHILO (refined copper prices BML/LME in US$).

Mexico

- PEMEX net income
- Royalties paid by private firms in the petrol sector to the federal government
- Special tax on petrol related income
- Specific net excise tax (IEPS)

All data come from the SHCP (www.apartados.hacienda.gob.mx). The price adjustment is based on a 10-year rolling window oil prices from the IMF commodity price database.

Peru

- Royalties paid by mining sector
- Corporate income tax paid by mining and hydrocarbon sector, petrol refinery, fishing sector, non-metal minerals
- General Internal Sales Tax of same sectors

Prices are taken from the IMF commodity prices database (copper, fishmeal, oil and gold), weighted by importance of sectors in revenues.

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THE IMPACT OF THE INTERNATIONAL FINANCIAL CRISES UPON EMERGING ECONOMIES AND THE PERFORMANCE OF DISCRETIONARY FISCAL POLICIES: THE CASE OF ARGENTINA

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1 Introduction

The last world financial crisis that started in the United States in September 2007, and spread thereafter across countries in the European Union, did not hit Latin America with the same negative impact that previous crises did for the simple reason that emerging countries in the Region exhibited in this occasion both lower external private and public debt exposure and better macroeconomic fundamentals which somehow permitted them to isolate their public sectors and domestic financial systems from turbulences.

Nevertheless, negative impacts began soon to be felt via economies' external sector as the international debacle dwindled the world demand for developing countries' manufactured and non manufactured exports which not only reduced economic sectors' levels of activity and employment but also imposed serious strains upon their public finances, as governments found themselves not only with fiscal revenues curtailed but also facing internal demands for more active fiscal polices implying tax reductions, expenditure increases or both.

In the meantime, and contemporaneously to the development of the crises, an important debate was taking place on whether discretionary fiscal policies should be resorted to, in place of automatic stabilizers, in order to check cyclical problems, whose reach went beyond the pure theoretic interest as it held important economic policy implications. Let it in this connection suffice to mention Auerbach's (2002) arguments that while considerable doubts remained about the real impact of discretionary fiscal policies upon output and its effectiveness to really play stabilizing roles, automatic stabilizers contributed to reducing cyclical fluctuations, despite attributes in tax systems that tended to weaken their real potential. In the same line of reasoning, Taylor (2008) asserted that "despite this widespread agreement of a decade ago, there has recently been a dramatic revival of interest in discretionary fiscal policy (…) nevertheless, after reviewing the empirical evidence during the past decade and determine whether it calls for such a revival, I find that it does not".

In the light of the preceding observations, and having been Argentina one of countries whose manufacturing sectors suffered the consequences of the international recession, the paper aims at showing, in the first place, the extent to what the international crises hit government's tax revenues (both those stemming from the external trade as well as those whose yield depends on the internal activity level). Second, the reduction of the primary fiscal surplus will be analyzed in order to determine the percentage of the fiscal loss that can be explained by the working of automatic stabilizers as compared to the percentage directly responding to the fall in the activity level.

Next, the argument will be assessed that in Argentina, contrariwise to other emerging countries, international crises can not solely be blamed for the government's fiscal difficulties as other causes, stemming mainly from domestic economic and political decisions, intertwined with the former's negative impact on fiscal balances and contributed also to eroding primary fiscal surpluses. In this connection, the point will be assessed of whether required stimulus measures were of an adequate size and, at the same time, if discretionary fiscal actions combined tax

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reductions and increased expenditures or only privileged one side of the government's budget restraint.

The plan of the paper is as follows: Section 2 surveys some seminal papers and the recent theoretical and empirical literature related to the actual effectiveness or efficacy of discretionary fiscal policies, in the light of international crises and their world impact; Section 3 presents the stylized facts, which include a brief analysis of the performance of some relevant Argentine macroeconomic variables as well as the evolution of economic activity indexes and of government revenues and expenditures, as of the occurrence of the last international crisis; Section 4 includes methodologies for assessing the impact of alternative fiscal policies and present some results, and Section 5 concludes.

2 Discretionary fiscal policies in the literature

Even though discretionary fiscal policies have been, more often than not, used to produce countervailing expansionary or contractive effects to reverting the impact of cycles upon aggregate demand, the literature has in general not shown unanimity at the moment of assessing its efficacy nor are empirical evidences conclusive in supporting the argument of active fiscal policies' superiority respect of automatic stabilizers (such us built-in flexibility of taxation) or monetary policies.

Despite Keynesian discretionary fiscal policies' appeal to policy makers, attention received in the literature, as early as the forties in the past century, adopted a critical stance towards their effectiveness. In particular Friedman (1948) expressed that no attempt should be made to vary the volume of government expenditures (goods, services or transfers), either directly or inversely, in response to cyclical fluctuations in business activity, as changes in spending should solely be made on the basis of the community's desire, need, and willingness to pay for public services. In the same line, Friedman considered that tax structures should not be changed in response to cyclical fluctuations, though actual receipts will, of course vary automatically.

Johansen's text (1965), in discussing alternative forms of stabilization policy, gathered in turn the most common criticisms on the use of active fiscal policy; first, the question of timing or how to ensure that measures were applied at the right moment; second, the matter of the appropriate dosage of measures, in terms of strength or size, faced both the problems of shortage of information and a somewhere incomplete knowledge of the reaction mechanisms in operation; third, unavoidable lags of various kinds in the case that time was needed to perform decisions (*i.e.*, parliamentary delay in studying and enacting tax or spending laws, tax legal lags, administrative lags) might cause that the expected impact of measures to be thwarted and, even worse, that untimely discretionary measures helped to deepen rather than to ease the effect of cycles; fourth, certain capital outlays proved difficult to be used counter cyclically as their planning, construction and legal arrangements could take a long time and, at the same time, stopping constructions for stabilization purposes might cause a greater loss in terms of efficiency of resource allocation, particularly when expenditures were directed towards sensible projects. In discouraging the use of capital expenditures for stabilization, Johansen ended by suggesting that taxes were more suitable to regulate the level of total demand.

On a slightly different but also valuable view of the matter, the seminal paper by Musgrave and Miller (1955) started by emphasizing that the essence of compensatory fiscal policy lied in adjusting government receipts and expenditures so as to induce stabilizing patterns in the economy by increasing spending and reducing tax revenues during depressions, and proceeding in a converse way when inflationary pressures prevailed. These authors expressly acknowledged that compensatory effects could not only stem from properly timed changes in expenditure programs

and in tax rates but also be brought about automatically by diverse means, as for instance when built-in flexibility features characterized tax structures.[1] Nevertheless, and quoting empirical evidence from the United States, Musgrave and Miller arrived at the important conclusion that although preliminary results suggested that automatic stabilizers might be important to maintaining stability over the long run, the empirical analysis did not confirm the growing assertion that built-in flexibility sufficed and that deliberate countercyclical fiscal policy could be dispensed with.

More recently, Blanchard and Perotti (1999) somehow entered the debate by using a structural VAR model based on institutional information[2] on tax, transfer systems and the timing of tax collection in order to assess their automatic response to activity or, in other words, to identifying the dynamic effects of fiscal innovations upon economic activity in the United States in the period following World War Two. In documenting the effect of fiscal policy on economic activity, the authors emphasized that budget variables might move for a set of reasons within which output stabilization might not be predominant whereas, and at the same time and due to decision and implementation lags, at a quarterly frequency, little or no discretionary responses of fiscal policy to unexpected movements in activity have been noticed. In concluding Blanchard and Perotti, though confirming respectively the positive and negative effect of government spending and tax shocks upon output, their empirical investigation cast doubts on the size and variation of these effects as in most cases multipliers were small and often close to one; added to this, they found that, conversely to the case of private consumption, private investment was crowded out by spending innovations.

In well known contribution by Taylor (2000) a rather critical stance was sustained on the actual countercyclical strength of discretionary fiscal policies, in view of what he asserted to be more frequently seen a greater effectiveness of automatic stabilizers and monetary policies in stabilizing the level of aggregate demand backed, in the case of the former, by the larger overall size of changes in taxes and spending compared to those in active fiscal policies, let alone the fact that automatic changes (especially those based on non cyclical progressivity of the tax and the transfer system) impacted upon aggregate demand in a more predictable way and more quicker than the discretionary ones. In analyzing the efficacy of both automatic stabilizers and monetary policies *vis-à-vis* discretionary fiscal policies Taylor recalled again that the latter were conditioned by implementation lags for what a substantial amount of time was required, after the need was acknowledged, to changing (in the right dosage) government spending and tax rates for impacting on the demand level affected by the cycle; apart from this, the possibility that forward looking agents disregarded temporary measures also run counter discretionary fiscal stabilization policies' chances of success.

Taylor also insisted on two important features of monetary policies and automatic stabilizers; that is, the greater flexibility to changing instruments and the element of certainty monetary policy rules provided, the latter feature being also found in fiscal automatic stabilizers owing to their greater predictability. On the contrary, the traditional contention that discretionary fiscal policies had to put up with the problems of implementation lags, irreversibility and political constraints seemed, in Taylor words, to have undermined more in recent years the confidence on the impact of active fiscal policies.[3] Nevertheless, Taylor pointed out a number of situations in which the performance of active fiscal policies seemed to fare better than its alternatives: first, when nominal

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[1] Musgrave and Miller provided in their article a form of measuring the degree of built-in flexibility in terms of the community's propensity to consume, the income elasticity of the tax yield and the average tax rate.

[2] In words of Blanchard and Perotti, this would permit to construct estimates of the effects of unexpected changes in activity upon fiscal variables (*i.e.*, estimates of fiscal policy shocks).

[3] Conclusions from Blanchard and Perotti (1999) are in this connection quoted by Taylor as an example of his assertion.

interest rates were approaching 0 and monetary policies lose power to stimulate demand further;[4] second, under a Mundellian fixed exchange rate with capital mobility framework world interest rates were given to countries, the cyclical function would have to be performed by fiscal policy as monetary policies were constrained not to react cyclically; third, in the consideration of long term issues, which naturally required less frequent changes, discretionary fiscal policies seemed to be reserved a more favorable position in relation to monetary policies or automatic stabilizers.

Contemporaneously to Blanchard's paper, Cohen and Follette's contribution (2000) on the theoretical and empirical analysis of automatic fiscal stabilizers using post World War II U.S. data also added collateral but rich arguments to the debate over alternative stabilizing fiscal policies. In assessing Romer's assertion 1999) that the fact that post war recessions had become less frequent and business expansions substantially longer in the U.S. should be attributed to the rise of macroeconomic policy in the period and, particularly, to automatic fiscal stabilizers (income-based tax system and unemployment insurance benefits mainly) playing a prominent role changing likely recessions into periods of normal growth,[5] Cohen and Follette presented intriguing and ambiguous empirical results as by means of frequency domain techniques they were able to show strong links between income cyclical variations and federal government and taxes that in turn suggested automatic fiscal stabilizers' potential to play a quantitatively important stabilizing role but their results were less conclusive when resorting to a large scale macro-econometric model of the U.S. economy (FRB/US) as, in spite of being able to prove that automatic fiscal stabilizers had a large damping effect upon personal consumption expenditures, they were seen to play a very modest role in damping the short-run effect of aggregate demand shocks in real GDP and also little stabilization provided in the case of an aggregate supply shock fell well short of expected.

The possible over reliance on automatic stabilizers, as a form of mitigating fluctuations in aggregate demand without any explicit, or only little, government intervention was also investigated by Auerbach and Feenberg (2000) using a simulation model based on a file of actual tax returns for the period 1962-95 and in which the impact of hypothetical changes in income and its components upon individual tax payments was considered. By recalling usual arguments they stressed that automatic stabilizers (such as the federal income tax in the U.S.) avoided lags in implementation that could cause discretionary fiscal policy to run behind the events. However, they conditioned the effectiveness of automatic stabilizers to theirs being able also to offset shock-caused falls or rises in aggregate economic activity; that is, the possibility of inducing also private purchases via an increase in disposable income.[6]

In analyzing results achieved, Aschauer and Feenberg pointed out that when measuring the tax system's role as an automatic stabilizer, the income elasticity of taxes had the severe shortcoming of being invariant with respect to whether the share of income taken as taxes was high or low, for what they suggested to take tax system's built-in flexibility or the ratio of the change in taxes with respect to a change in before-tax income. At the same time, the point was emphasized that the working of automatic stabilizers presumed that the effect of taxes on before-tax income changes made household expenditures on goods and services less volatile; nevertheless, such a result might not be consistent with the behavior of rational, forward-looking agents unless long lived increases were expected or when households faced a liquidity constraint depressing current consumption below its desired level. For all that, the authors concluded that there has been, since the 1960s, little change in the role of the tax system as an automatic stabilizer; in extending their arguments, they stressed that the tax system's effectiveness to stabilizing aggregate demand (via

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[4] There is widespread consensus on that, with nominal interest rates hitting 0, further declines in the inflation rate would cause the real interest rate to increase and would reduce aggregate demand.

[5] Let alone their contribution in boosting growth in the first year following the recession trough.

[6] Aschauer and Feenberg quoted in this regard that it also mattered how large a private response in consumption the increase in disposable income generated.

changes in income tax, payroll tax, income distribution)[7] was lower than its estimated 1981 peak and rather similar to that of the 1960s. Finally, Aschauer and Feenberg acknowledged that regarding tax induced consumption responses as the most important single source of automatic stabilization of aggregate demand and considering that the former offset no more than 8 per cent of initial shocks to GDP, in line with what Cohen and Follette found in their application of a macro model, modest results somehow reaffirmed the limits of automatic stabilizers.

What seemed to be a stalemate situation in the controversy regained however recent strength, mainly as a consequence of last international crises started in 2007 in the U.S. and transmitted to European economies and to countries elsewhere, as several new papers on the revival of fiscal policy suggest. In this regard, Taylor's new contribution (2009), based on an empirical analysis for the U.S. economy as of 2001, was intended to reassert his traditional contention that fiscal policy should avoid countercyclical discretionary actions and focus instead on automatic stabilizers. In illustrating his viewpoint, Taylor referred to two important countercyclical discretionary measures in the decade: the large temporary tax rebates of 2001 and 2008 which, in both cases coincided with recessions started in March 2001 and December 2007 and exhibited no response or implementation lags or lack of timing that normally reduce the efficacy of active fiscal policies; nevertheless, when the evolution of series of disposable personal income with and without the inclusion of rebate payments to individuals and families and of personal consumption expenditures were drawn, results exhibited the conclusion that temporary rebates did not do much to stimulate consumption and aggregate demand. This revealing feature fell in line with the permanent income theory (life cycle theory) in which temporary increases in income were predicted to lead to proportionately smaller increases in consumption than a permanent rise in income[8] for what Taylor concluded that the effect of tax rebate payments on aggregate consumption did not avail the idea that a revival of discretionary fiscal policies was necessary for stabilizing purposes.[9] This author also analyzed empirical evidence on how automatic stabilizers had changed over time in the U.S., for what he resorted to an econometric estimation of coefficients of structural and cyclical deficit components on GDP gap and concluded from figures shown that while the coefficient on the cyclical component remained fairly constant around 0.34 or 0.35, the coefficient on the structural component increased a dramatically over time; should the latter's high responsiveness continue into the ongoing recession, automatic stabilizers would be very powerful. In sum, shown empirical results did not yield evidence – on Taylor's words – to change the agreement of a decade ago to focus fiscal policy on automatic stabilizers rather than on discretionary fiscal policy.

Feldstein (2009) in turn wondered why governments all around the world were now resorting to massive stimulus packages when no more than two years ago there was consensus among economists that active fiscal policy was not an appropriate countercyclical instrument. In attempting to rationalize the mentioned discredit of discretionary measures, Feldstein recalled that the potential stabilizing contribution of active tax and spending Keynesian fiscal policy was challenged by empirical research that showed that the Keynesian multipliers were in fact much more smaller than assumed due to crowding out of interest-sensitive spending caused by the induced rise in the demand for money and by the effect of the larger national debt on long term interest rates, let alone demand leakages produced by imports and fiscal impacts upon the exchange rate whose ultimate outcome were a reduced value for the multiplier. Also, uncertainties on whether stimulus packages performed after the trough in economic activity might also help active fiscal policies to increase cyclical volatility.

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7 They also included indexing provisions, factoring in heterogeneity with respect to consumption responses and income volatility.

8 Taylor stressed however that life cycle theories were approximations no taking into account liquidity constraints making it difficult for some consumers to borrow.

9 Taylor also included simulations for the impact of government spending finding also little reliable empirical evidence that discretionary public expenditures led to ending a recession or to accelerating a recovery.

In spite of the above mentioned shortcomings, Feldstein based the revival of fiscal policy in that, contrariwise to past recessions caused by sharp counter inflationary interest rates rises, the 2007 U.S. crisis was the result of underestimated risks and excessive leverage the natural sequence being widespread defaults on subprime mortgages, massive erosion of families' wealth, marked contraction of consumer expenditures and a fall in firms investment and real estate values. Feldstein completed this grim description by stressing that the high damaging impact the decline of value of mortgage-securities and derivatives had on the capital of financial institutions and the disruption of the credit market made monetary policy (reduction of interest rates) incapable of dealing with the problem and explained also the sudden economists' advocacy for fiscal stimulus.

In acknowledging the new different scenario, Feldstein further advanced in considering why traditional arguments against discretionary fiscal policies might not longer be an impediment, in particular the delays in starting infrastructure projects (as downturn in aggregate demand is expected to last longer than previous recessions) and the possibility of governments to accede to debt not likely to be offset by higher interest rate. In the same line of reasoning, the author mentioned alternative forms of tax reductions (other than the one-time tax cut) that could be successfully used, as well as various forms of investment tax credits. Finally, proposals of design were advanced as necessary conditions to make the fiscal package a successful stabilizing tool are advanced; in this connection, the objectives of increasing both private consumption and business investment called, according to Feldstein, for the indefinite postponement of individual income tax rate increases and tax rates on dividends and capital gains while, in turn, these tax policy recommendations needed to be accompanied by large and fast (speed of outlays) and government spending[10] properly targeted at fostering aggregate demand and employment.

Several years after the paper on automatic stabilizers (2000), co-authored with Feenberg, Auerbach (2009) revised U.S. crises and discretionary stabilizing experiences since 1982 and attempted in turn to explain the new fiscal activism on grounds that the effectiveness of monetary policy was challenged given the severity of the recession stemming from 2007-08 crisis and that the strength of automatic stabilizers weakened over time due to indexation of the individual income tax and reduction in marginal tax rates. Other arguments raised by Aschauer were the limit case of zero-nominal interest rate bound thwarting monetary policy's stabilizing efforts, in agreement with Taylor's stance on the matter, and also a new interpretation of the Lucas' critique[11] whereby there would be benefits for potential fiscal intervention in an environment characterized by nominal rigidities, liquidity constraints and credit-market disruptions.

But at the same time that Aschauer accepted that the particular circumstances of the 2007-08 U.S. recession gave room to a renewed fiscal activism, he warned about the relative little advances in discretionary policy application and made it clear that more and urgent attention should be given to policy design should policy makers expect active fiscal policy on a large scale render the expected results; in connection to this, the paper included an interesting empirical analysis of investment incentives in the period 1962-2007 and of how assumedly stabilizing designs might on the contrary end discouraging investments.

3 The stylized facts

The ensuing set of diagrams intend to show whether the recession started in the U.S. in the

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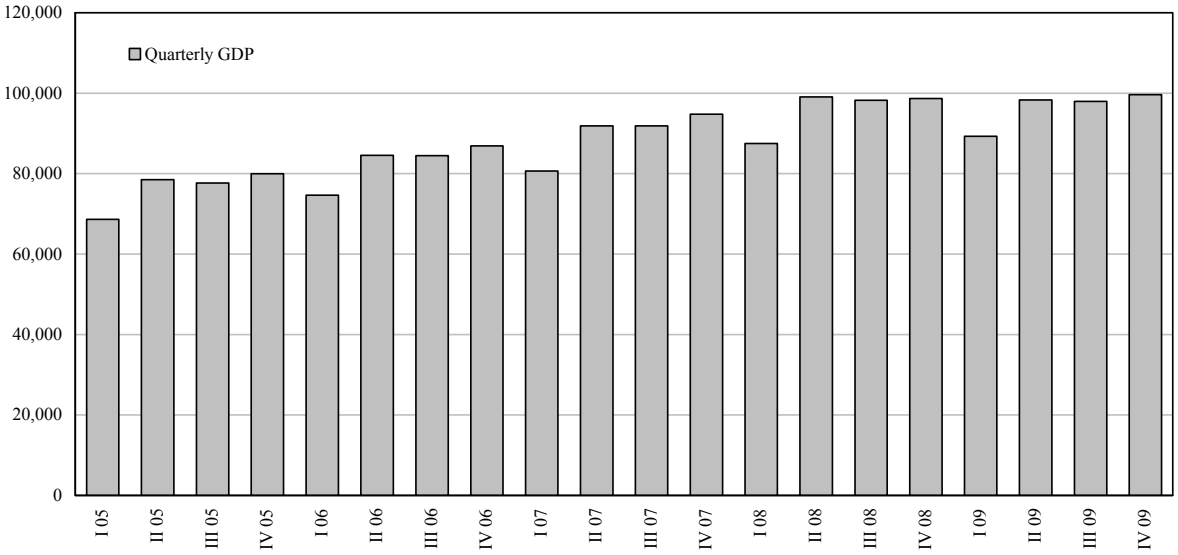
[10] In analyzing priority areas in which the government planned to increase outlays, Feldstein deemed as an important omission in the stimulus package to rule out temporary funding increases in the field of defense, intelligence and research.

[11] Let it be remembering that the core of Lucas' critique (1976) was the idea that rational agents should respond to changes in policy and that would in turn reduce whatever potential efficacy countercyclical policies might have.

Figure 1

Argentina – Quarterly Evolution of Gross Domestic Product
(seasonally adjusted, million of pesos of 1993)



Source: Own estimates on the basis of data from the Secretary of Economic Policy, Argentina.

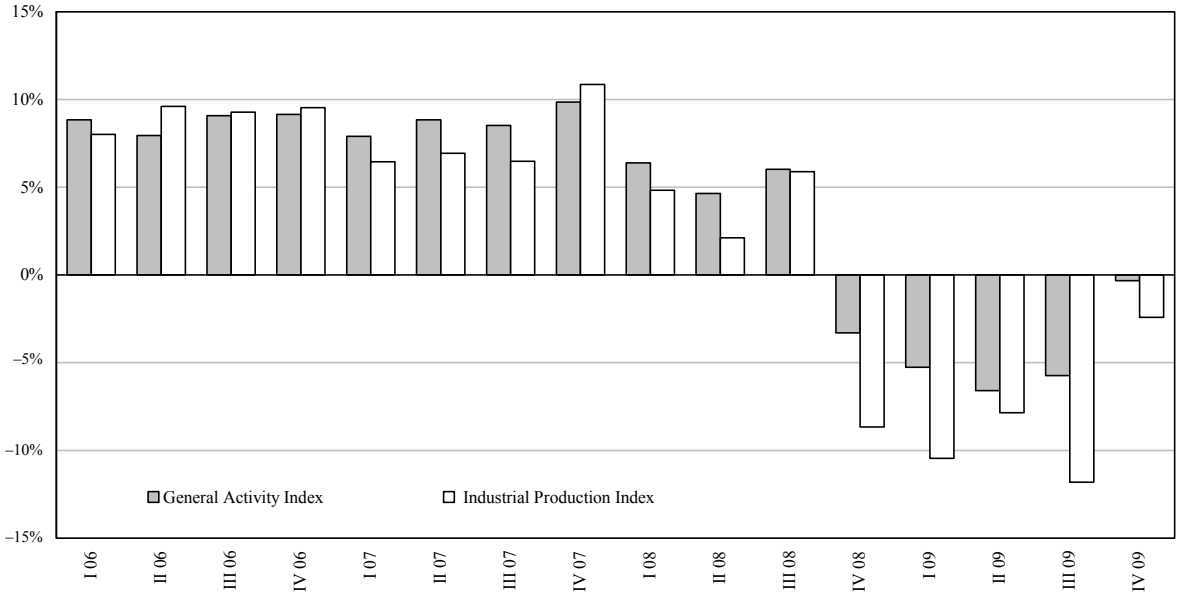
third quarter of 2007 and transmitted to Western Europe and other countries in Asia by the end of 2008 hit the Argentine or if, as hypothesized above, macroeconomic fundamentals somehow helped the country to insulate itself from the financial crisis, save for the negative impact of a dwindled world demand for its exports.

At first sight, the evidence yielded by the Figure 1 indicates a steady growth of the quarterly gross domestic product spanning until 2008, and only interrupted by the cyclical performance shown by all the first quarters. However growth rates, ranging from 8.5 to 9.2 per cent in the first three years, fell to 6.8 per cent in 2008 and reached an almost nil value in 2009 for reasons that partially responded to the international crises but also (and perhaps mainly) to government's policies adding uncertainty to the decision-making process of domestic economic sectors; in this regard, developed countries' contracted demand of manufactured goods and the subsequent export fall of emerging economies combined in Argentina with negative domestic government decisions including banning on certain agricultural exports (such as beef meat, dairy products, wheat and maize) and the raise of export duties on soybean that brought about supply's reductions, withholding of commercial transactions and the loss of government revenues.

The negative impact of the 2007-08 international crises on Argentine industrial sectors is partly reflected by the ensuing Figure 2 in which the performance of the inter annual rates of change of General Activity and Industrial Production Indices from 2006 through 2009 is depicted. As can be seen, the evolution of both indices kept a cyclical but slightly rising trend until the end of 2007 and fell abruptly thereafter with lower though positive figures in 2008 and negative values in 2009. It needs however be emphasized that, apart from the loss of markets abroad due to the crises (mainly those belonging to NAFTA), industrial production levels were also damaged by the sluggish rate of growth of private investment that fell from an annual 18.2 per cent in 2006, to 13.6 per cent in 2007, 9.1 per cent in 2008 and a negative figure of around 10 per cent in 2009. Most analysts coincided on that a greater government intervention in the economy, the state

Figure 2

Argentina – Inter Annual Rates of Change of General Activity and Industrial Production Indexes



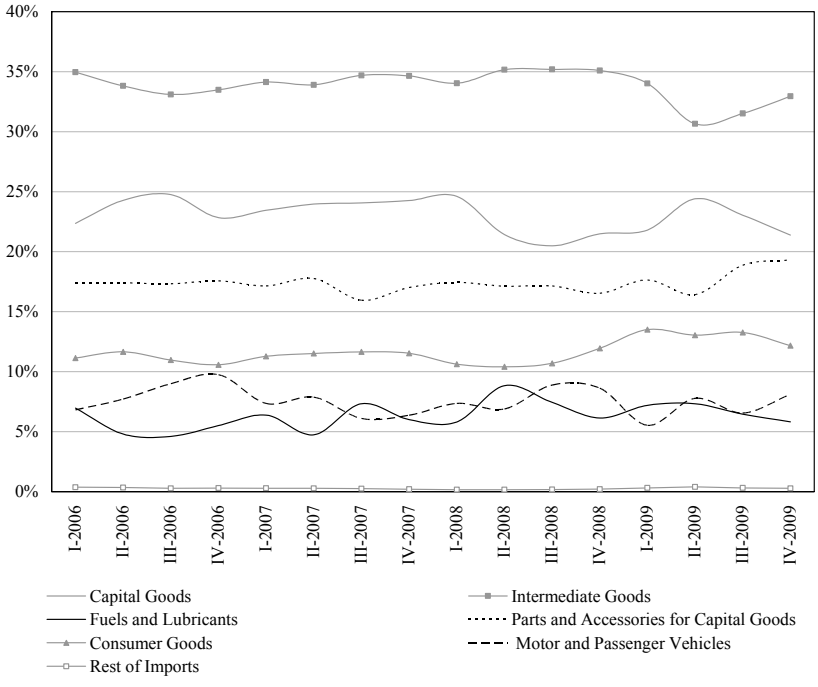
Source: Ferreres, O.J. y Asociados, Database, Buenos Aires (Argentina).

takeover of some formerly privatized public utilities and of the private pension system and advances considered unduly upon property rights were the main causes discouraging further domestic and international private investment in the country.

From a different angle, data from Figure 3 serve to confirm that whatever damaging effects smaller exports – due to international crises – might have had upon domestic industrial sectors, the sluggish behavior of investment mattered more; in this connection, import's component percentages show that the fall in the participation of capital and intermediate goods and of spare parts for

Figure 3

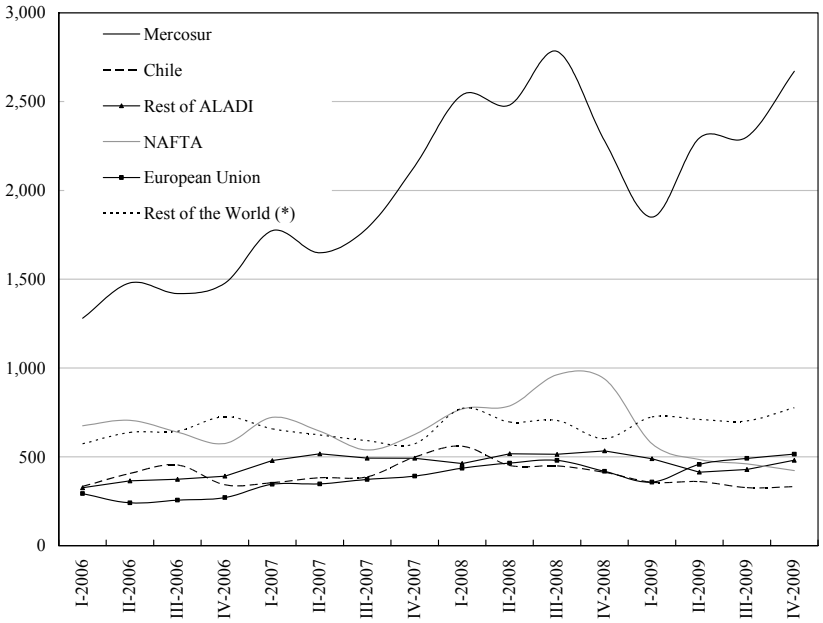
Argentina – Quarterly Evolution of Import's Components
(percent of total imports)



Source: National Institute of Statistics and Censuses (INDEC), Argentina.

Figure 4

Argentina – Quarterly Evolution of Industrial Goods Exports
(million of current dollars)



Source: Data from the National Institute of Statistics and Censuses (INDEC).
(*) Including: Rest of ALADI, EU, ASEAN, China, Republic of Korea, Japan, India, MAGHREB and Egypt and the rest of the world.

capital goods was noticeable as of I-2007, when the U.S. crisis was still to burst; thereafter only imports of intermediate goods and of spare parts and accessories for capital goods reverted in 2009 the downward trend whereas the relative participation of capital good imports continued declining. As imports did not keep up pace with exports, the impact of the mentioned feature was still higher as the smaller relative participation of imports needed for industrial sectors to keep going corresponded also to smaller total import levels, relative to other macroeconomic variables such as exports and output.

As referred to above, the negative impact of the 2007 U.S. crisis and the subsequent 2008 problems in many European developed economies upon Latin American countries' export sectors, intertwined in Argentina with domestically unsolved policy problems that outweighed the effects of international crises. In support of this assertion the coming Figure 4, depicting the quarterly evolution of industrial good exports in the period 2006-09, renders evidence that the negative impact of crises was only relatively felt by domestic manufacturing sectors in reason of the country's membership to the regional economic integration known as MERCOSUR; as shown below, whatever negative effects arising from NAFTA – as of 2007 – and European countries' imports in 2008 were compensated by increased exports to Brazil and that permitted to make up the trade losses from other importing origins.

Contrariwise to the above mentioned case, exports of agro-industrial goods and agricultural commodities highlight the already mentioned domestic problems as exports kept growing steadily throughout the crises' development and only fell by 2009 when the consequences of export bans and quotas and tax rate increases began to be felt. Negative effects of the international crises were however visible with respect to China (one of Argentina's single most important customers) as its agro-industrial imports moved back during 2008 whereas imports of soybean started to shrink in 2007 and behaved cyclically until the end of 2008. Again, lower 2009 exports responded to the supply scarcity in origin of exportable agricultural goods mainly due to domestic withholding of operations by farmers.

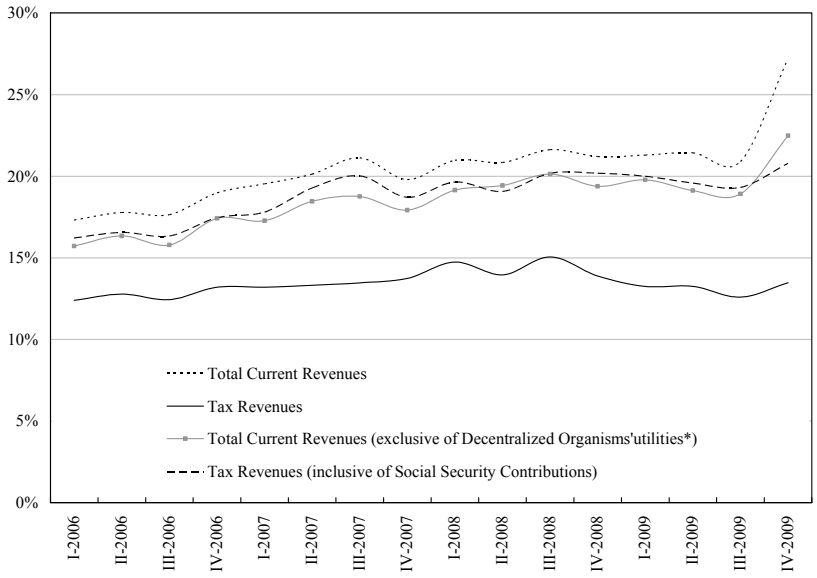
The extent to which the impact of the international crises and of domestic problems actually affected the sustainability of Argentine public finances, as well as the room the federal government had to undertake active fiscal policies, is immediately shown in the following diagrams depicting

the performance of public revenues and expenditures and the evolution of the federal government primary surplus in the period 2006-09, all in terms of GDP. At first sight, seasonally-adjusted series from Figure 5 show that tax revenues kept growing until year 2008 when they began to exhibit a cyclical pattern and, as of the third quarter of 2008, a marked declination; nevertheless, the negative effects upon federal revenues were modest and mainly reflected the stagnation of the income tax yield in less than 5 percentage points of GDP (Figure 7).

The Argentine federal government somehow succeeded in isolating its overall revenues' performance from the negative impacts of 2007 and 2008 international crises since, as shown by the Figure 5 for quarterly values and in the bars for annual values (Figure 6), both the series for tax revenues (inclusive of social security contributions) and total current revenues slightly rose in the period under analysis; the point is however worth mentioning that it was a discretionary change allowing contributors belonging to the Private Individual Capitalization Regime to switch to the PAYG system, followed

Figure 5

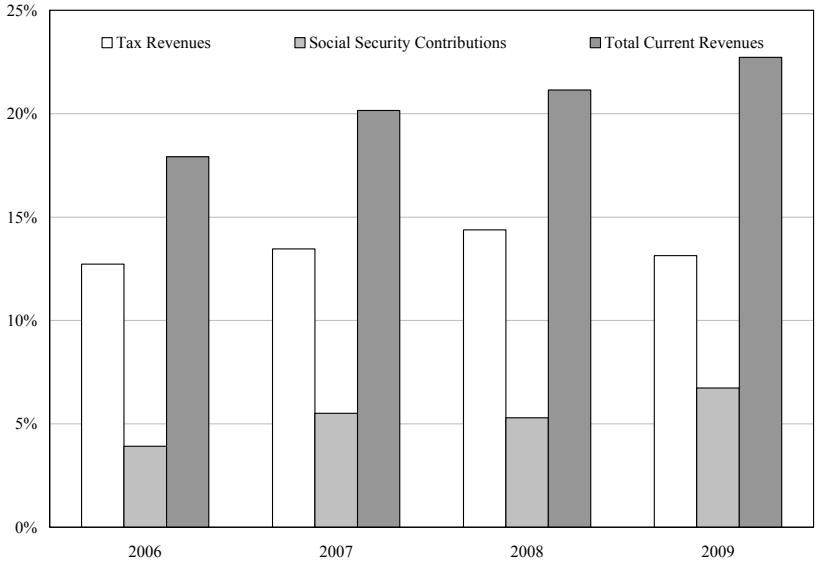
Argentina – Quarterly Evolution of Federal Public Revenues
(seasonally adjusted variables, percent of GDP)



Source: Data from Secretary of Economic Policy and National Bureau of Investigation and Fiscal Analysis, Argentina.
(*) Decentralized Organisms'utilities includes utilities from Central Bank and ANSeS and Special Drawing Rights.

Figure 6

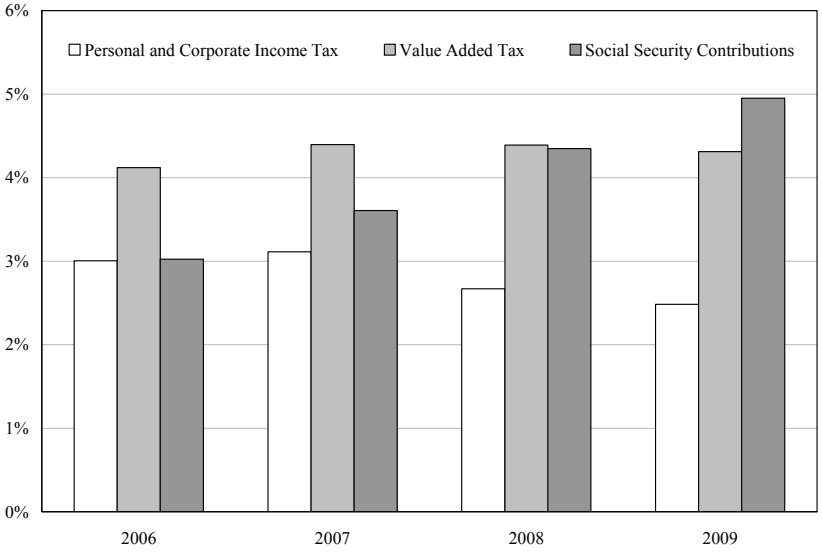
Argentina – Federal Government's Current Revenues
(percent of GDP)



Source: Secretary of Economic Policy and the National Bureau of Investigation and Fiscal Analysis.

Figure 7

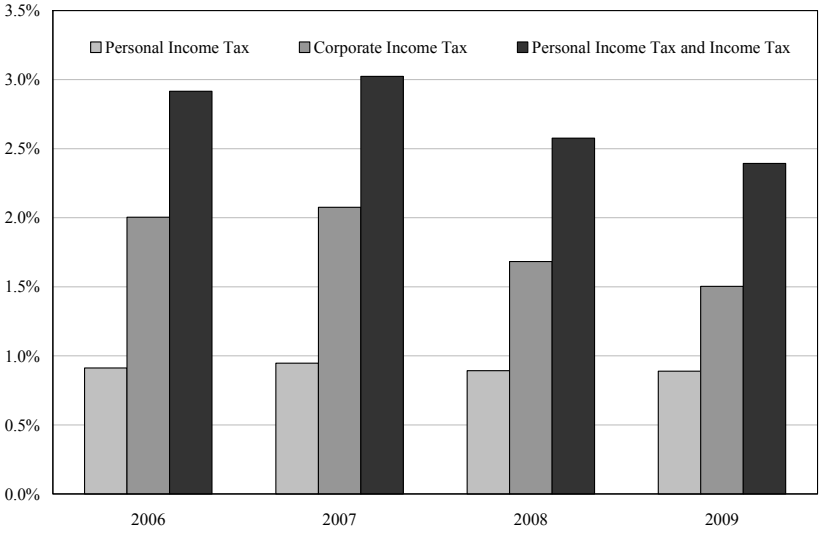
Argentina – Evolution of Income Tax, Value Added Tax and Social Security Contributions Perceived by the Federal Government
(percent of GDP)



Source: Data from Secretary of Economic Policy and National Bureau of Investigation and Fiscal Analysis.

Figure 8

Argentina – Evolution of Individual and Corporation Income Tax perceived by the Federal Government
(percent of GDP)



Source: Secretary of Economic Policy and the National Bureau of Investigation and Fiscal Analysis.

by the elimination of Private Pension Funds in 2009, what determined the evolution of the tax revenue series. The series for current revenues also reflects the favorable impact, in 2009, of the special drawing rights delivered by the International Monetary Fund among its member countries.

It must however be borne in mind that the negative effect of international crises upon government's revenues and budget surplus was rather limited on the following two accounts: the fall in industrial exports, by being generally tax exempted, did not directly affect tax revenues except for some slight loss in corporate income tax yield (see Figure 8) owing to industrial firms' lesser profitability; likewise the loss in revenues due to the mentioned withholding of agricultural exports was compensated in 2008-09 by a discretionary raise of tax rates for soybean and other commodities (Figure 9).

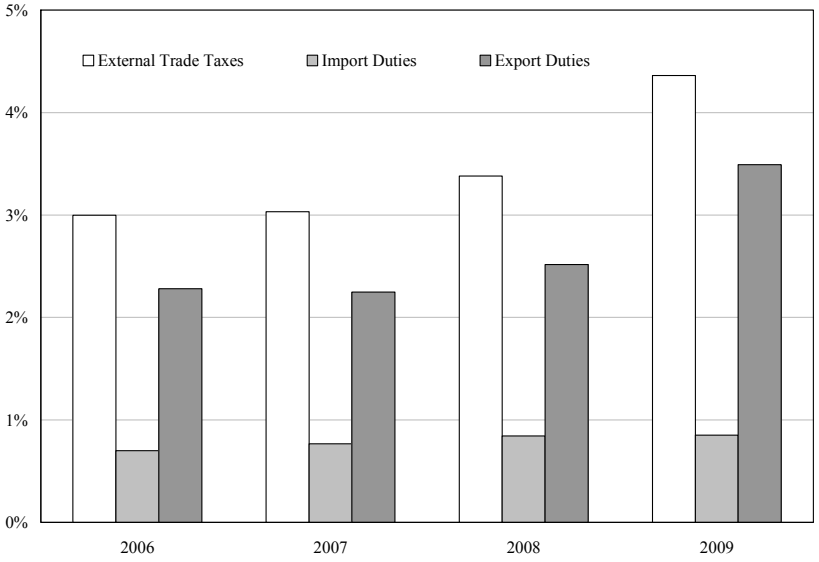
Figure 8 clearly reflect what has so far been argued in the sense that negative effects upon tax revenues stemming from ambiguous domestic economic policies outweighed those caused by international crises; in this connection, the declination of corporate income tax yield in

percents of GDP, shown by Figures 7 and 8, as well as the stagnation of economic growth rate in 2008-09 (Figures 1 and 2), reflect firms' lower production levels due to investment shortages in key sectors, lesser sales and an incipient unemployment rise that forced the government to resort to discretionary fiscal actions based on public expenditures.

In explaining therefore the Argentine federal government's fiscal strain, as said above hardly attributable to international crises, the emphasis must be placed in current public spending rather than in revenues since it results evident that the former's rate of growth did not keep pace but outweighed that of public current revenues; as shown by Figure 10, while revenues' participation in GDP climbed 27 per cent in the 2006-09, expenditures almost rose 60 per cent in the same period in response to the government's decision not to allow increases in tariffs of transport, electricity, gas and petrol. This in turn demanded ever-increasing budgetary subsidies to be permanently channeled to utilities and firms providing public services.

Figure 9

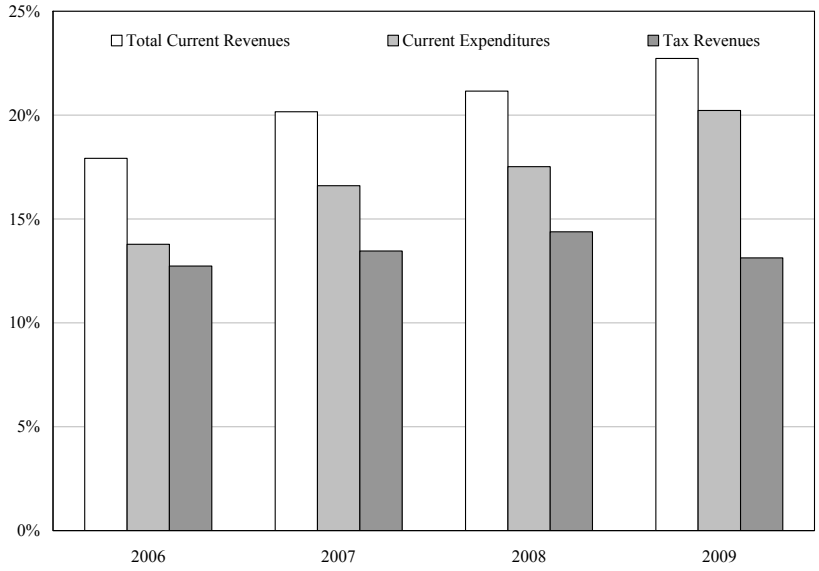
Argentina – Evolution of External Trade Taxes raised by the Federal Government
(percent of GDP)



Source: Secretary of Economic Policy and the National Bureau of Investigation and Fiscal Analysis.

Figure 10

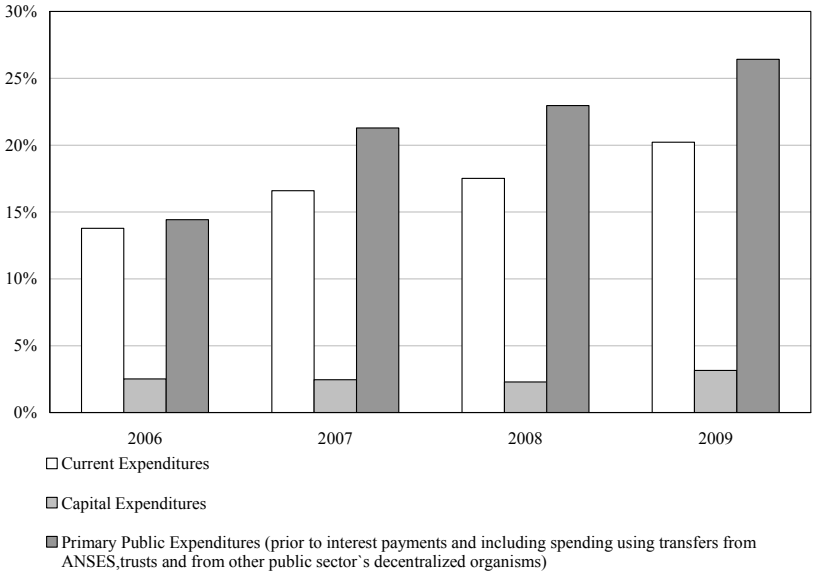
Argentina – Federal Government's Current Revenues and Expenditures
(percent of GDP)



Source: Secretary of Economic Policy and the National Bureau of Investigation and Fiscal Analysis.

Figure 11

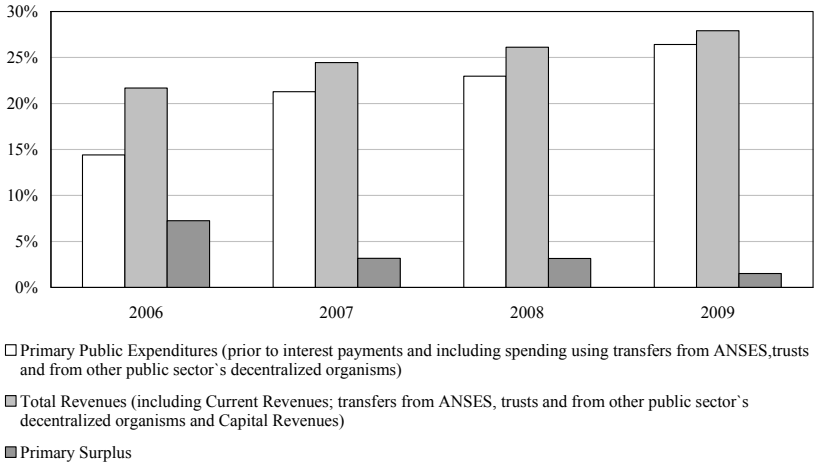
Argentina – Federal Government's Primary Expenditures
(percent of GDP)



Source: Secretary of Economic Policy and the National Bureau of Investigation and Fiscal Analysis.

Figure 12

Argentina – Federal Government's Total Revenues, Primary Expenditures and Surplus
(percent of GDP)



Source: Secretary of Economic Policy and the National Bureau of Investigation and Fiscal Analysis.

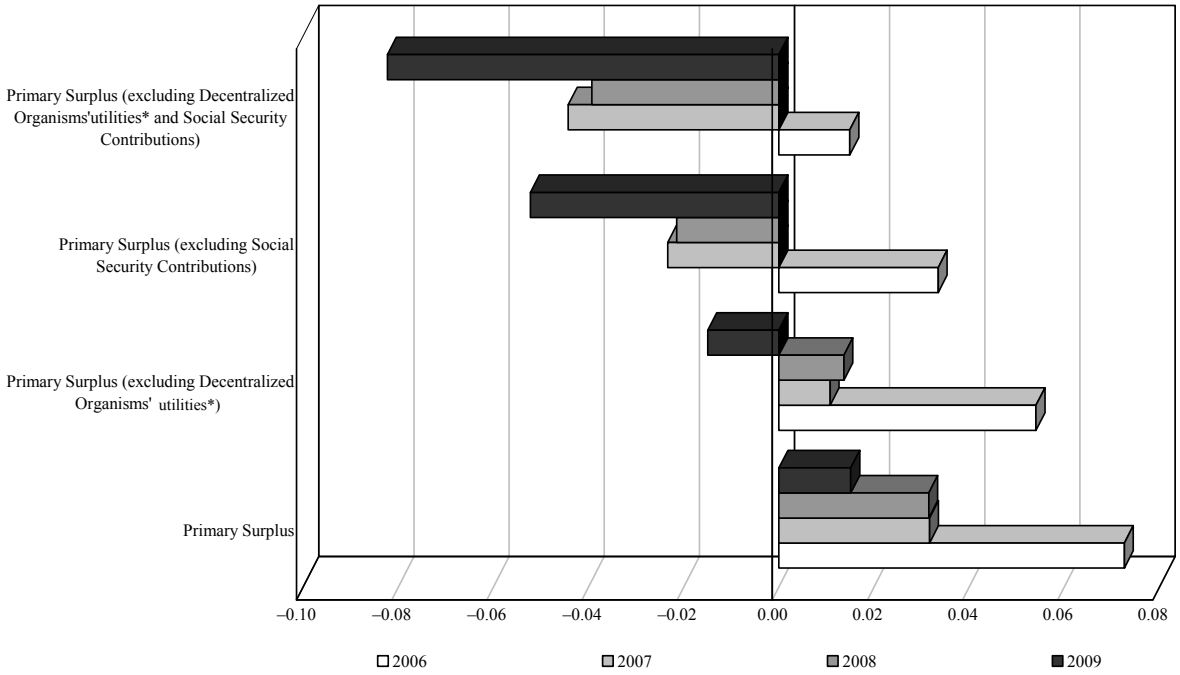
The impulse on public expenditures is also explained by the Argentine federal government's need to curb a slight but dangerous rise in unemployment following the stagnation of growth rates in 2008-09. The inflection point in the path of public spending is clearly depicted by the bar diagram in Figure 11 and mainly responded to fiscal discretionary actions basically concentrated in two programs: the first one, called Argentina works, seeking to promote micro firms and small cooperatives and the second one called Children's Universal Grant, aimed at curbing poverty and whereby households whose members were unemployed or informal labor were granted a monthly grant per child under eighteen.[12] Nevertheless, and as Figure 11 shows, capital outlays also grew in the period as the government also increased the financing of subnational and local infrastructure investment.

It goes without saying that the government's commitment to maintain, for political reasons, the freezing on

[12] Children's Universal Grant for Social Protection benefits unemployed persons and informal labor's 3,500,000 children (under eighteen) by granting their families a monthly payment of $ 180 (50 dollars) per child subject to the condition of theirs regularly attending school.

Figure 13

Argentina – Annual Evolution of Federal Primary Surplus
(percent of GDP)



Source: Data from Secretary of Economic Policy and National Bureau of Investigation and Fiscal Analysis.
* Decentralized Organisms' utilities includes utilities from Central Bank and ANSeS and Special Drawing Rights.

tariffs immediately impacted upon the level of the primary surplus which, as Figure 12 shows, underwent a dramatic downward switch in the period 2006-09.

Figure 13, showing the evolution of the Primary Surplus when various definitions are taken into account, permits in turn to have a better knowledge of how the decision to use subsidies substantially eroded the former. By considering first the bottom of the figure, the primary surplus fell from 3.5 per cent of GDP, in 2006, to 1.5 per cent in 2009; nevertheless, the figure for the last year would be even smaller (0.6 per cent of GDP) should the exceptionally received IMF's Special Drawing Rights were not considered. Particularly worrying the picture at the top of Figure 13 results since, if social security contributions were not considered, the primary deficit would amount to 5-6 per cent points of GDP; the preceding assertion is revealing in respect of the present Argentine fiscal weakness which suggests, even ruling out effects of international crises, that the actual level of primary surplus mostly responds to exceptional revenue flows (as the special drawing rights) and to discretionary actions such as the seizing of the private individual capitalization regime occurred in 2009.

4 Recent fiscal actions in Argentina. Measures of discretional orientation and automatic stabilizers

4.1 Two methodologies for assessing performance

When analyzing fiscal policy actions, cyclical factors that have a transitory effect upon

budget balances must be distinguished from structural changes causing a lasting impact on the result of fiscal actions since, when changes derived from active fiscal policies are not isolated from those stemming of fluctuations in economic activity, the performance of the budget balance is far from being a good indicator of governments' discretionary policies. Thus, the resulting budget outcome can be considered to stem from the following two elements:

- an economic environment induced component, associated to the concept of "cyclical balance" and that leaves aside the effect of other variables;
- a "structural balance" which will exist if the economy follows its long run growth path; therefore, its behaviour will depend on the policy operation and not on the current economic circumstances.

The cyclical balance, or "built-in stabilizer", component of the budget balance should be self-cancelling as the cyclical output gap is closed so that it is temporary and non-structural. On the other hand, the structural budget is the one that would persist if the economy were to grow steadily at its highest sustainable unemployment rate, *i.e.*, the same as the potential output.

Muller and Price (1984) stated that the cyclically-adjusted indicator had advantages over the unadjusted budget balance in a number of respects:

- the analysis of short-term fiscal stance: the cyclically-adjusted budget balance can be interpreted as an index of "discretionary" policy action in the sense that it regards budget deficit changes as a cause rather than the effect of variations in economic activity;
- medium-term budget planning and control: separating cyclically self-correcting changes in the budget from more permanent shifts may enable the longer-run course of public spending and taxation to be controlled more efficiently;
- fiscal neutrality and economic stability: setting and pursuing budget balance targets independently of the phase of the business cycle implies the need to offset "automatic stabilizers";
- the monitoring of potential financial market pressures: private sector credit demands may be lower in periods of cyclical demand weakness, and financial markets may thus be unaffected by fluctuations in government debts which are perceived as temporary. In that case, interest rates may be particularly influenced by the long run trend of accumulation of government debt in private portfolios. As a result, the structural budget deficit may then be a better gauge of government pressures on interest rate than the actual budget deficit.

Two methodologies are resorted to in this paper: the one by the IMF due to Heller, Haas and Mansur (1986), and the OECD's, by Girouard and André (2005) and van der Noord (2000). In both cases, the quantification of the discretionary action is obtained from the observed budget deficit, net of the variation caused by cyclical and non discretionary factors.

The IMF's index of Fiscal Policy orientation was originally developed by the German Council of Economic Experts (GCEE) and described in detail by Dernberg (1975).[13] The measure

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[13] The measure currently used by the GCEE differs from the measure currently used by the Fund. Specifically, the cyclically neutral level of government expending is defined as being equal to the actual budget in the base period; more precisely:

$$H_t^n = g_0 Y^P + (r_t - r_0) k Y^P + (s_t - s_0) Y^P$$

where:

H_t^n: Cyclically neutral level of government expending.; $g_0 = \frac{G_0}{Y^P}$: Base-year expenditure ratio; $r_t = \frac{R_t}{k Y_t^P}$:

(continues)

of the Cyclically Neutral Budget (CNB) was derived from the actual budget by assuming that nominal tax revenues are unit elastic with respect to actual nominal income, and government expenditures are unit elastic with respect to potential output valued at current prices. This indicator yields a measure of fiscal discretionary actions with respect to a benchmark year and is defined as:

$$CNB_t = (G_t - T_t) - (g_0 YP_t - t_o Y_t) \quad (1)$$

where $g_0 = \frac{G_0}{YP_0}$ and $t_0 = \frac{T_0}{Y_0}$

T_t and T_0 stand for total public revenues for year t and 0, respectively;

G_t and G_0 stand for total public expenditures for year t and 0, respectively;

Y_t and Y_0 stand for the observed products in year t and the benchmark year, respectively;

YP_t and YP_0 stand for the potential products in year t and the benchmark year, respectively.

Equation (1) above permits to distinguish a cyclically budget profile[14] allowing for effects of the cycle upon the budget, known as the "Cyclical Balance" (CB), and coinciding with the second term in the right hand side of equation (1):

$$CB_t = g_0 YP_t - t_o Y_t \quad (2)$$

As can be noticed, public expenditures will be cyclically neutral if they change in the same proportion as the nominal potential GDP whereas more than proportional changes will be expansive, irrespective of the causes for the increase (discretionary policies, inflationary effects). More than proportional variations in revenues, with respect to the observed nominal GDP, will in turn be contractive; the CB will therefore tend to rise in recessions and to diminish during peaks of economic activity. It transpires from equation (1) that when the observed deficit is greater than the Cyclical Balance, that is a positive CNB, the fiscal action will be expansive and the opposite will stand with a negative CNB.

The appeal of the IMF's index resides in that estimations of revenue and spending income elasticity are not required for what the process of calculus is much simpler than those of other measures. It is not however free from criticisms as the discretionary component is credited for the tax yield increase associated to fiscal progressivity; a consequence of this is that it tends to overestimate the contractive effect of fiscal policies during economic expansions, whereas the opposite occurs in recessions. Likewise, the discretionary component embodies the residual effect of automatic stabilizers, given the assumption that that revenue and spending income elasticity equal unity.

As for the second methodology (OECD's), the structural balance permits to assess the budgetary outcome from two alternative perspectives: In the first place, as a measure of discretionary fiscal actions in absence of cyclical variations or automatic stabilizers; in the second place, the budgetary outcome may also be interpreted as an index of fiscal policy sustainability.

Current-year tax ratio; $r_0 = \frac{R_0}{kY_0^P}$: Base-year tax; ratio; Y^P: Potential Output; k: Normal capacity utilization rate; $s_t = \frac{S_t}{Y_t^P}$: Current-year non tax revenue ratio; $s_0 = \frac{S_0}{Y_0^P}$: Base-year non tax revenue ratio. A complete description of the GCEE's methodology can be found in Federal Republic of Germany (1983), pp. 267-68.

[14] In determining this profile a benchmark year must be chosen, based on the sought objectives for what the index is used.

In using the OECD's methodology for assessing the impact of discretionary policies, in absence of cyclical variations, the respective cyclical components must be removed from observed actual revenue and spending levels.

In relation to tax revenues, four types can be distinguished: corporate and individuals income taxes, valued added tax and social security contributions. Public spending will only includes items related to the business cycle, for what only transfers oriented to enhancing employment are computed.

The budgetary cyclical component, b^{**}, is defined as:

$$b^{**} = b - b^{*} \tag{3}$$

whereas the cyclical adjusted budgetary outcome, b^{*}, is in turn defined as:

$$b^{*} = \frac{\left[(\sum_{i=1}^{4} T_i^{*}) - G^{*} + X \right]}{Y^{*}} \tag{4}$$

where:

G^{*} equals the cyclically-adjusted current primary public spending,

T_i^{*} is the cyclically-adjusted tax revenue of i^{th} category,

X are not tax revenues, net of capital and interest expenses,

Y^{*} stands for the potential output.

Cyclically-adjusted components are computed, in the case of revenues, from the ratio between the potential and actual output weighted by its elasticity and, in the case of expenses, from the ratio between the structural and observed unemployment weighted by its elasticity.

$$\frac{T_i^{*}}{T_i} = \left(\frac{Y^{*}}{Y} \right)^{\beta_{i,y}^{t}} ; \frac{G^{*}}{G} = \left(\frac{U^{*}}{U} \right)^{\beta_{g,u}}$$

where:

T_i are i^{th} category's actual tax revenues,

G is the actual current public spending, net of capital and interest expenses,

Y stands for the observed gross product,

U^{*} indicates the level of structural unemployment,

U indicates the actual level of unemployment,

$\beta_{i,y}^{t}$: i^{th} category's elasticity of tax revenues respect of the output gap,

$\beta_{g,u}$: current public spending elasticity respect of the ratio between the levels of structural and actual unemployment.

From the above expressions, the cyclically-adjusted budgetary outcome may be defined as:

$$b^* = \frac{\left[\left(\sum_{i=1}^{4} T_i \left(\frac{Y^*}{Y}\right)^{\beta_{i,y}^t}\right) - G\left(\frac{U^*}{U}\right)^{\beta_{g,u}} + X\right]}{Y^*} \tag{5}$$

whereas the cyclical component of budget will be:

$$b^{**} = \frac{1}{Y}\sum_{i=1}^{4} T_i \left[1 - \left(\frac{Y^*}{Y}\right)^{\beta_{i,y}^t - 1}\right] - \frac{G}{Y}\left[1 - \left(\frac{U^*}{U}\right)^{\beta_{g,u} - 1}\right] + \frac{X}{Y}\left[1 - \left(\frac{Y^*}{Y}\right)^{-1}\right] \tag{6}$$

Expression (6) stresses that the cyclical component of the budgetary outcome corresponds to the cyclical components of tax revenue and current primary public spending. As observed, they are related to the output gap, the share of different tax and current spending categories in GDP and the respective elasticities.

From a conceptual stance, elasticities $\beta_{i,y}^t$ may be split into two components: i^{th} tax elasticity respect of its tax base and the latter's elasticity respect of the output gap. The elasticity of current public spending $\beta_{g,u}$, is computed as the product between the elasticity of unemployment respect of the output gap and the elasticity of current public spending respect of the unemployment gap (equivalent to the proportion of current spending oriented to employment actions).

As for the estimation of elasticities for the four tax categories and the primary public spending:

1) Individuals income tax and social security contributions

In this case the elasticity $\beta_{t,y}^t$ with respect to the output gap follows from the following expression:

$$\beta_{t,y}^t = \frac{dT}{dy}\frac{y}{T} = \frac{d[(T/L)L]}{dy}\frac{y}{T} = \left(\frac{dL}{dy}\frac{y}{L}\right)\left[1 + \left(\frac{d[(T/L)]}{dw}\frac{w}{T/L}\right)\left(\frac{dw}{dL}\frac{L}{w}\right)\right] \tag{7}$$

in which y is the gap between the observed Y and the potential product Y^* while L and w respectively stand for employment and wage levels.

In order to estimate the elasticity of Individuals Income Tax with respect to its tax base, marginal and average rates for a representative household, for several points in the earning distribution,[15] must first be computed. Formally, the elasticity of income tax collection respect of incomes may be expressed as follows:

$$\beta_{tGP,earnings}^t = \left(\sum_{i=1}^{n} \gamma_i MA_i\right) / \left(\sum_{i=1}^{n} \gamma_i AV_i\right) \tag{8}$$

where:

γ_i is share of the i^{th} decile's earnings in total earnings,

[15] Income distribution was drawn on the basis of information on Total Household Income, available from the Household Permanent Survey (EPH) of Argentina and setting 2006=100. The reason to use 2006 as a benchmark year was the stability observed in macroeconomic fundamentals.

MA_i is the marginal income tax rate at point i over the earning distribution,[16]

AV_i is the average income tax rate at point i over the earning distribution,

Next, the elasticity of Social Security Contributions with respect to its tax base was set equal to unity given that the Contributions have a flat rate,

The elasticity of incomes perceived by wage earners with respect to the output gap was estimated by multiplying elasticities a_1 and b_1, in turn obtained from the following regressions:

$$\Delta Log\left(\frac{L_t}{L_t^*}\right) = a_0 + a_1 \Delta Log\left(\frac{Y_t}{Y_t^*}\right) + \varepsilon_t \tag{9}$$

$$\Delta Log\left(\frac{w_t L_t}{Y_t^*}\right) = b_0 + b_1 \Delta Log\left(\frac{L_t}{L_t^*}\right) + \mu_t \tag{10}$$

Thus, the elasticity of Individuals Income Tax, (7), stems from the product of expressions (8), (9) and (10);

2) Corporate income tax

In order to achieve the elasticity of Corporate Income Tax respect of the of the output gap $\beta^t_{t_{GC},y}$, the assumption was held that the tax rate was strictly proportional since in this case cyclical variations in tax collections keep proportion with variations in the tax base (*i.e.*, firms' returns). The corresponding elasticity can then be estimated as follows:

$$\beta^t_{t_{GC},y} = \frac{dT}{dy}\frac{y}{T} = \frac{dZ}{dy}\frac{y}{Z} \tag{11}$$

where y stands for the gap between the observed (Y) and the potential product (Y^*) and Z represent firms' returns.[17] Needless to emphasize, the proportionality assumption implies that the tax elasticity coincides with the elasticity of the tax base with respect to the output gap;

3) Elasticity of the value added tax

In computing the elasticity of indirect taxes, private consumption must be taken as the tax base and the following regression was resorted to:

$$\Delta Log\left(\frac{C_t}{Y_t^*}\right) = d_0 + d_1 \Delta Log\left(\frac{Y_t}{Y_t^*}\right) + \eta_t \tag{12}$$

4) Elasticity of current primary spending

The elasticity of primary current spending highlights the cyclical variation in expenditures devoted to enhancing employment. Owing to the assumption of proportionality between spending channeled to employment aims and unemployment, the elasticity of primary current spending equals elasticity of unemployment with respect to the output gap, weighted by the share of spending oriented to employment creation within the current primary spending; formally:

$$\beta_{g,u} = \left(\frac{dG}{dU}\right)\frac{U}{G} = \frac{UB}{G}\left(\frac{dUB}{dU}\right)\frac{U}{UB} = \frac{UB}{G} \tag{13}$$

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[16] According to the Argentine Income Tax (Law 24621).

[17] In order to estimate the share of firms' return upon the observed product, the Firms' Operating Gross Surplus as percentage of gross domestic product was used.

$$\beta_{g,y} = \left(\frac{dG}{dY}\right)\frac{Y}{G} = \frac{UB}{G}\left(\frac{dUB}{dY}\right)\frac{Y}{UB} = \frac{UB}{G}\left(\frac{dU}{dY}\right)\frac{Y}{U} = \beta_{g,u}\beta_{u,y} \quad (14)$$

where:

$\beta_{g,u}$ is the elasticity of primary current spending respect of the unemployment gap,

$\beta_{g,y}$ is the elasticity of primary current spending respect of the output gap,

G is the primary current spending,

UB is spending oriented to enhance employment,

U is unemployment's observed level.

The OECD's methodology estimates the impact of the business cycle upon the fiscal balance using indexes that capture the effect of resource utilization's degree, and the deviation between the actual and potential output and between the actual and structural unemployment. The points need be stressed that calculations are in this case subject to measurement errors related to estimations of potential output and structural unemployment.

The OECD's theoretical framework has however two deficiencies. First, and as stated in Muller P. and Price R. (1984), the cyclically-adjusted budget embraces a wide set of discretionary policy actions, including inflation-induced fiscal drag and variations in nominal debt interest payments; second, and as stressed by André and Giraud (2005), surpluses adjusted by the cycle may be influenced by temporary shocks not directly related to the cycle, including one-off operations, creative accounting, classification errors and asset price cycles.

From the perspective of an index of fiscal policy sustainability, the cyclically-adjusted balance, developed by the OECD, exhibits deficiencies owing to the impossibility of counting with precise and complete information related to all factors inducing variations in the economic activity level.

4.2 Analysis of results

This section presents and analyzes results for the period 2006-09, obtained by using the methodologies developed above and aimed firstly at estimating the impact of the business cycle upon the fiscal balance and at determining the structural deficit, net of automatic stabilizers' effects (OECD's), and secondly, at assessing whether international financial crises favoured discretional fiscal policy actions (IMF).

In seeking to determine the business cycle adjusted balance, values of the elasticity of corporate and individuals income tax, value added tax and social security contributions with respect to the output gap were estimated and shown in the following Table 1, as well as the elasticity of primary current spending with respect to the gap between observed and structural unemployment levels.[18]

Table 2 shows results for the balance adjusted by effect of the cycle (*i.e.*, the structural balance), this being obtained by subtracting the budgetary cyclical component from the actual levels of revenues and expenditures.

In the first place, a continuous reduction of the structural balance is easily observed as of 2006, its lowest value being reached in year 2009. Total revenues (in terms of gross domestic product) exhibited also a positive though decreasing growth rate during the period considered,

[18] The Hodrick-Prescott filter was used for estimating potential gross product and the structural unemployment level.

Table 1

Argentina – Revenue and Expenditures Elasticities

Corporate Income Tax*	1.56
Social Security Contributions	1.96
Personal Income Tax	2.72
Current Expenditures	–0.18
Value Added Tax**	1

Source: Own estimates on the basis of data from Secretary of Economic Policy and the National Bureau of Investigation and Fiscal Analysis of Argentina.
* The estimation of the tax base elasticity of Corporate Income Tax through the OECD's methodology was not significant. For this reason, an alternative procedure was resorted to consisting in estimating the elasticity of Firms' Operating Gross Surplus with respect to the output gap.
** The estimation of the tax base elasticity of the Value Added Tax through the OECD's methodology was not significant for what, and given that the tax has a flat rate, the elasticity value was conventionally equated to one.

Table 2

Argentina – Actual and Cyclically-adjusted Fiscal Balance
(percent of GDP)

Item	2006	2007	2008	2009
Total Revenues*	21.68	24.46	26.12	27.93
Primary Public Expenditures**	14.42	21.29	22.97	26.42
Primary Surplus	7.26	3.17	3.15	1.51
Cyclical Component	–1.24	–0.52	2.07	0.17
Cyclically-adjusted Primary Surplus	8.50	3.68	1.08	1.34
Interest payments	1.76	2.03	1.73	2.14
Budget Balance	5.50	1.14	1.42	–0.63
Output Gap	0.96	0.99	1.05	1.00

Source: Own estimates on the basis of data from Secretary of Economic Policy and the National Bureau of Investigation and Fiscal Analysis of Argentina.
* Total Revenues (including current revenues; transfers from ANSES, trusts and other public sector's decentralized organisms and capital revenues).
** Primary Public Expenditures (prior to interest payments and including spending using transfers from ANSES, trusts and other public sector's decentralized organisms).

which can be explained by the following reasons: despite the 12.8 per cent increase in 2007, domestic problems impacted negatively in 2008 upon Value Added and Income Taxes' yield and caused in turn a contraction of tax revenues (in percent of gross domestic product). The fall was however made up with transfers from ANSES,[19] following the elimination of the Private Pension Fund System and with IMF' Special Draw Rights received in 2009, for what the evolution of total revenues continued to be positive during 2008 and 2009 although at lower rates (6.8 and 6.9 per cent respectively).

Second, Primary Public Spending (in terms of gross domestic product) increased 47.6 and 7.9 per cent in 2007 and 2008 respectively, due not only to the already mentioned policy of maintaining subsidies but also to a generalized increment in capital outlays which, given the performance of total revenues mentioned in the above paragraph, caused the Primary Surplus to shrink 56.3 and 0.6 per cent in 2007 and 2008, respectively.

It is worth emphasizing again that neither the 2007 and 2008

[19] The National Administration of Social Security.

increases in total revenues nor the increases in Primary Public Spending resulted from government's discretionary fiscal actions to countervail the effects of the international financial crises but rather to the political commitment of maintaining, via ever increasing budgetary subsidies, the freezing imposed on tariffs of public services and utilities (transport, electricity, gas and combustibles). As a consequence, Primary Public Spending (in terms of GDP) underwent an increase of 15 per cent during 2009 and the Primary Surplus (also in terms of GDP) suffered a substantial reduction of 52 per cent compared to its 2008 figure; at the same time, and owing to a substantial 23.4 per cent increase in interest payments, the Financial Budget Surplus also showed a marked reduction in 2009.

Reasons for the continuous declining of the structural superavit have to be sought at the observed superavit's decreasing evolution, in turn due to the lesser relative importance of the automatic stabilizers' role. This is visible from the output gap evolution that gradually converged to unity.

In particular, the 52 per cent reduction in the 2009 observed fiscal superavit, accompanied by the performance of automatic stabilizers (*i.e.*, cyclical component), which experienced a 91.7 per cent contraction in 2009, allowed the structural superavit to rise from 1.08 to 1.34 per cent points of gross domestic product in 2008 and 2009, respectively (24 per cent). The above numerical conclusion implies that to the extent that the economic activity level converges towards its potential level, the observed budgetary balance tends to equal its structural level.

In conclusion, the analysis of results obtained using the methodology by Girouard and André (OCDE) suggests that the main explanation for the weakness of the structural balance lies in the discretionary performance of fiscal actions used to deal with problems arising from the unsolved domestic economic situations.

Next, and in order to carry out a deeper analysis of the possible discretional orientation of fiscal policy the second methodology, due to the IMF, was resorted to and the results for the period 2006-09[20] are presented in ensuing the Table 3.

As previously described, fiscal policy was expansive in 2007 and 2009 which explains the observed reduction in the Primary Surplus, whose lower level was reached in 2009. There was however some countervailing fiscal policy during 2009, aimed at checking increased unemployment stemming from lower activity levels in industrial sectors facing both a shrink in exports due to the fall in the world demand and bottlenecks due to investment shortage. The assumedly government's discretionary response to world conditions amounted to 1.56 percentage point of GDP and was only limited to the spending side of the budget, as they consisted mainly of programs seeking to enhance social contention[21] and to check extreme poverty, as well as to finance infrastructure investment.[22]

Table 4, showing the structure of Current and Capital Transfers in 2009, serves the purpose of highlighting those discretionary fiscal actions that led to the marked decline of fiscal budget in that year. Current transfers exhibited an inter-annual increase of 0.97 percentage points of GDP, 50 per cent of which can be explained by additional transfers channeled to firms' financial assistance and trust funds and employment enhancing actions and social public spending, whereas 20, 17.6 and 12.4 per cent respectively went to household grants, financial assistance to

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[20] For obtaining the indexes, the budgetary balance was defined as "surplus" and not as "deficit".

[21] See footnote 12.

[22] Let the fact be noticed that that Argentina exclusively resorted to spending discretionary fiscal policies, and not to discretionary tax measures and that the size of measures amounted to a modest percentage of GDP, as was also stressed by international organisms. See in this connection IMF (2009), Table 4 (G-20 Estimative Costs of Discretionary Measures 2008-10) and Table 5 (G-20 Stimulus Measures 2008-10).

Table 3

Argentina – Evolution of the Budget Balance
(percent of GDP)

Item	2006	2007	2008	2009
Total Revenues*	21.68	24.46	26.12	27.93
Primary Public Expenditures**	14.42	21.29	22.97	26.42
Primary Surplus	7.26	3.17	3.15	1.51
Cyclical Component	3.10	7.17	3.07	3.07
Cyclically-neutral Budget	4.16	–4.00	0.08	–1.56
Interest payments	1.76	2.03	1.73	2.14
Budget Balance	5.50	1.14	1.42	–0.63

Source: Own estimates on the basis of data from Secretary of Economic Policy, the National Bureau of Investigation and Fiscal Analysis and the Economic Commission for Latin America and the Caribbean.
* Total Revenues (including current revenues; transfers from ANSES, trusts and other public sector's decentralized organisms and capital revenues).
** Primary Public Expenditures (prior to interest payments and including spending using transfers from ANSES, trusts and other public sector's decentralized organisms).

Table 4

Argentina – 2009's Discretionary Fiscal Actions

Item	**Absolute Increment** *(millions of current pesos)*	**Absolute Increment** *(percent of GDP)*
Current Transfers	14,803.80	1.29
- Transfers to Universities	2,474.80	0.22
- Budgetary Transfers to Aerolineas Argentinas	1,235.40	0.11
- Transfers to External Sector	24.1	0.00
Net Current Transfers	11,093.60	0.97
Capital Transfers	6,451.90	0.56
Total Transfers	17,545.50	1.53

Source: On the basis of data from the Budget National Bureau of Argentina.

provinces and the social security system. On the other side, social public expenditure and Infrastructure Investment in turn accounted for 90 per cent of the increase in capital transfers (0.56 percentage points of GDP compared to the previous year's figure). In all, figures show that the overall observed fiscal stimulus rose to 1.53 percentage points of gross domestic product.

Table 5

Argentina – Overall Cyclical Responsiveness of the Budget

Parameter	2006	2007	2008	2009
Corporate Income Tax	5.20%	5.30%	5.00%	4.50%
Personal Income Tax	4.10%	4.30%	4.60%	4.60%
Value Added Tax	7.20%	7.70%	7.80%	7.60%
Social Security Contributions	7.40%	8.80%	10.00%	13.20%
Current Expenditures	–0.02%	–0.03%	–0.03%	–0.04%
Cyclical sensitivity of Tax Revenues	23.90%	26.20%	27.40%	29.90%
Overall cyclical responsiveness of the budget	24.00%	26.20%	27.40%	30.00%

Source: Own estimates on the basis of data from Secretary of Economic Policy and the National Bureau of Investigation and Fiscal Analysis of Argentina.

Was the Argentine fiscal stimulus appropriate in size? Or did it fall short of required by the prevailing economic conditions in the period considered? In conceptually dealing with the matter, Uxó and Salinas (2009), stressed that the size of the required discretional fiscal stimulus varies in function of several elements such as the actual demand contraction, automatic stabilizers' effectiveness and the efficacy of fiscal actions used to impact upon the product; thus, the necessary fiscal discretionary stimulus will be greater the larger the economy's output gap, the weaker the performance of automatic stabilizers and the lesser the size of fiscal policy multipliers.

The quotient between the deficit increase and the output gap, used to estimating the size of the necessary fiscal stimulus, rendered for 2009 a value of 0.52 percentage points of the output gap. This result is wholly explained by the fall of the primary surplus in that year, period in which the Argentine GDP approached its structural level. From a different angle, if attention is rather focused on exceptional fiscal measures taken to deal with crises, an alternative procedure is also at hand consisting in taking the quotient between the size of discretionary actions (in percents of the actual GDP) and the output gap, which renders a value of 1.56 percentage points of the output gap.

In seeking to complete the analysis of the structural balance performance, the overall cyclical sensitivity of the budget to the economic cycle, measured by the semi-elasticity of the budget balance (as a percent of GDP) with respect to the output gap,[23] is achieved. According to results from Table 5, the overall cyclical sensitivity has risen during the last four years from 24 per cent in 2006 to 30 per cent in 2009. In the last year, the increase in the effectiveness of the overall sensitivity of the budget can be explained by the elimination of the Private Pension Fund System, which caused the increment in Social Security revenues; the latter gives support to the idea that, in Argentina, automatic stabilizers do not suffice to check cyclical perturbations in isolation and discretionary fiscal policies must always accompany stabilizing actions.

Furthermore, the low Corporate Income Tax's cyclical sensitivity (5.2-5.3 per cent in 2006-07 and 5-4.5 per cent in 2008-09) does not come as a surprise as its tax yield stems basically from firms subject to flat tax rates, and not from individuals subject to progressive tax rates; also, a discretionary tax spending increase, whose effect was to reduce the income elasticity of the tax in

[23] It is defined as the difference between the cyclical sensitivity of the four categories of taxes and the one expenditure item, weighted by their respective shares in GDP.

2009, helped in turn to reduce income taxation's stabilizing power. Nevertheless, the built-in flexibility of the Individual Income Tax slightly rose from a value of 4.1 per cent in 2006 to 4.6 per cent in 2009, due to the increasing share of its revenue in GDP.

As Rezk (1982) already asserted after reviewing VAT's implementation in the country, the automatic stabilizing function the theory traditionally assigned to Individuals Income Taxes was in Argentina mainly assumed by the Value Added Tax, as percentages from Table 5 indicate. Notwithstanding the mentioned feature, VAT's stabilizing power was seen to increase from 7.2 per cent in 2006 to 7.8 per cent in 2008, due to the increase in the share of its revenue in GDP; however, the cyclical sensitivity of the VAT diminished in 2009 following the occurrence of lower economic activity levels.

In sum, it can be concluded from the application of the IMF's that the Argentine structural deficit's performance in the period 2006-09 mainly responded to the discretional bias of the fiscal policy, whose main focus resided in poverty-checking and employment enhancement current public expenditures and infrastructure capital outlays. It is worth pointing out in this connection that the loss of automatic stabilizers' relevance can be explained not only for their actual low effectiveness but mainly for the convergence of the economic activity towards its structural level.

5 Conclusions

1. Although international crises in part accounted for the recent weak Argentine economic performance, main causes for the latter have to be sought in domestic economic policies in so far they added uncertainty to the decision process of economic sectors. In this connection, the negative impact of international crises acted in Argentina intertwined with domestically unsolved policy problems that sometimes outweighed and amplified the former's effects.

2. The negative impact of the international crises upon the balance of trade was only relatively felt by domestic manufacturing sectors in reason of Argentina's membership to the regional economic integration known as MERCOSUR. Whatever negative effects arising from NAFTA – as of 2007 – and European countries in 2008, were compensated by the increased exports to Brazil. Apart from the loss of markets abroad due to the crisis, industrial production levels were also damaged by the sluggish rate of growth of private investment, due to the profit loss of firms.

3. The exports of agroindustrial goods and of agricultural commodities fell in 2009 when the consequences of the domestic problems (export bans and tax rate increases) began to be felt. The main negative effects of international crisis were visible with respect to China (one of Argentina's single most important customers).

4. Total government revenues (in terms of GDP) exhibited a positive, though decreasing, growth rate during the period considered, which can be explained by the following reasons: despite the 12.8 per cent increase in 2007, domestic problems impacted negatively in 2008 upon Value Added and Income Taxes' yield and caused in turn a contraction of tax revenues (in percent of gross domestic product), in spite of the rise in transfers received from ANSES, stemming from the eliminated Private Pension Fund System, and of IMF's special draw rights received in 2009.

5. An stagnated growth rate and local firms' lesser returns, were the major causes of the tax revenue shrinking, specially in Corporate Income Tax.

6. Primary Public Spending (in terms of GDP) increased 47.6 and 7.9 per cent in 2007 and 2008 respectively. The increase in Primary Public Expenditures in 2008 did not respond to government's discretionary fiscal actions to countervail the effects of the international financial crises but rather to the policy decision of maintaining subsidies and continuing the freezing imposed on tariffs of public services and utilities, but also to a generalized increment in capital

outlays which, given the performance of total revenues, caused the Primary Surplus to shrink 56.3 and 0.6 per cent in 2007 and 2008, respectively.

7. In explaining the Argentine federal government's fiscal strain, the emphasis must be placed in current public spending rather than in revenues since it results evident that the former's rate of growth did not keep pace but outweighed that of public current revenues. The present Argentine fiscal weakness which suggests, even ruling out effects of international crises, that the actual level of primary surplus mostly responds to exceptional revenue flows (as the special drawing rights) and to discretionary actions such as the seizing of the private individual capitalization regime occurred in 2009.

8. Fiscal policy was expansive in 2007 and 2009 which explains the observed reduction in the Primary Surplus, whose lower level was reached in 2009, amounting to 1.56 percentage point of GDP of government's discretionary response to world conditions. On the other side, the observed fiscal stimulus rose to 1.53 percentage points of GDP, which was only limited to the spending side of the budget, as they consisted mainly of programs seeking to enhance social contention and to check extreme poverty, as well as to finance infrastructure investment.

9. The overall cyclical sensitivity of total tax revenue has been increasing and stabilized around 30 per cent in 2009. However, the response of the budget balance to the GDP did not suffice to check cyclical perturbations, for this reason discretionary fiscal policies had to somehow accompany stabilizing actions.

APPENDIX

Effect of the output gap on employment, 1994: IV-2008: I

Dependent Variable: DLOG(WORK)
Method: Least Squares
Included observations: 54 after adjustments
DLOG(WORK)=C(1)+C(2)*DLOG(GAP)

Variable	Coefficient	Std. Error	*t*-Statistic	Prob.
C(1)	$9.45E^{-13}$	$3.63E^{-11}$	0.02605	0.97931753
C(2)	$1.00E^{+00}$	$4.26E^{-10}$	2349215837.483	0
R-squared	$1.00E^{+00}$	Mean dependent var.		0.001
Adjusted *R*-squared	1	S.D. dependent var.		0.086
S.E. of regression	$2.67E^{-10}$	Akaike info criterion		–41.216
Sum squared resid	$3.70E^{-18}$	Schwarz criterion		–41.142
Log likelihood	1114.824	Hannan-Quinn criterion		–41.187
F-statistic	$5.52E^{+18}$	Durbin-Watson statistic		2.887
Prob(*F*-statistic)	0			

Effect of employment on wages, 1994: IV-2008: I

Dependent Variable: DLOG(WAGE)
Method: Least Squares
Included observations: 54 after adjustments
DLOG(WAGE)=C(1)+C(2)*DLOG(WORK)

Variable	Coefficient	Std. Error	*t*-Statistic	Prob.
C(1)	0.01834	0.01468	1.24897	0.21726765
C(2)	0.96388	0.17220	5.59734	8.26E-07
R-squared	0.3760	Mean dependent var.		0.01915
Adjusted *R*-squared	0.3640	S.D. dependent var.		0.13528
S.E. of regression	0.1079	Akaike info criterion		–1.58E+00
Sum squared resid	0.6052	Schwarz criterion		–1.5055031
Log likelihood	44.6376	Hannan-Quinn criterion		–1.55E+00
F-statistic	31.3302	Durbin-Watson statistic		2.94E+00
Prob(*F*-statistic)	$8.26E^{-07}$			

Summary of elasticities

Employment Elasticity of Wages	0.96
Output Elasticity of Employment	1
Elasticity of Corporate Income Tax	1.56
Elasticity of Social Security Contribution	1.96
Elasticity of Personal Income Tax	2.7244
Elasticity of Total Income Tax	0.9113157
Elasticity on Unemployment with Respect to the Output Gap	–4.3996771
Share of Unemployment-related Expenditures with Respect to the Output Gap	0.04100992
Elasticity of Current Primary Expenditure	–0.1804304

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COMMENTS ON SESSION 1
AUTOMATIC STABILISERS AND DISCRETIONARY FISCAL POLICY

Adi Brender[*]

1 Key analytical issues for policy choice and design

A basic question facing policy makers at the outset of a crisis is to accurately portray the economy's position at the crisis outset. Such a characterization is essential to avoid overreaction and to calculate the costs of the intervention in light of the country's medium and long-term needs and risks. Two key components of such analysis are the evaluation of the output gap and of the economy's "trend" growth. It is quite possible, and in the case of the current crisis very likely, that many economies operated above capacity in the years preceding the crisis, and that estimates of trend growth based on performance during these years are exaggerated. If this is the case, policies should not aim at reaching the same trend growth in the years to come, nor should they count on a return to the level of tax revenues that was associated with this output level. Moreover, tax revenues in many countries also included a substantial component that was associated with the unsustainable developments in the capital and real-estate markets, and such excesses should not be part of the expected long-term revenues.

Once the economy's position at the outset is understood, another challenging task is to properly characterize the source of the shock – demand or supply. This stage is critical in forming the appropriate policy response. It is also essential to identify whether the shock is cyclical or permanent and how it is understood by the markets. It is likely that the effectiveness of an expansionary fiscal policy will be affected by the markets' evaluation of the policy's sustainability, which depends on whether the shock is perceived to be permanent or temporary. While in the first case offsetting Ricardian considerations may show up as well as an increase in the country's risk premium, in the latter case these effects are less likely to constrain the fiscal strategy.

Once the economic environment and the shock have been characterized**,** policy-makers are faced with the task of identifying and choosing the required policy measures. This choice depends on several considerations, not all of which will necessarily lead to the same composition of measures:

- **Intervene beyond the automatic stabilizers?** In most countries the operation of the automatic stabilizers moderated the decline of economic activity at times of crisis, but at a cost of increasing the public debt. An important decision for the government is whether to settle for this effect or add discretionary measures to further support economic activity.
- **When to act?** If a government considers discretionary intervention, a key question is when to intervene. An early intervention has the advantage of tackling the recession soon and possibly preventing deterioration. In contrast, a delayed response provides scope to avoid unnecessary interventions, and their associated costs and distortions, in short recessions where the economy – helped by the automatic stabilizers – may recover on its own.
- **What is effective?** Some policy measures that work well in one country in one period may not lead to the desired results in other circumstances. For example, construction projects may work well where planning procedures are quick, land is available and employment in this sector is predominantly by locals. In contrast, it may not work where foreign workers fill most of the jobs in this sector.

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[*] Bank of Israel.

- **What causes the smallest long-run damage?** Interventions during a crisis may have significant negative long-run effects. These may be due to public debt accumulation, distorted incentives in the case of transfer payments, or moral hazard where business support and rescue operations are activated.
- **Market information:** One important feature that governments have to consider when operating during a crisis is that information derived from the markets may be less indicative than in normal times. The recent crisis and the preceding period were characterized by the departure of asset prices, project evaluations and risk assessments from "sensible" values. While these market perceptions are still relevant in certain aspects (e.g., whether "correct" or not, they influence the cost of government borrowing), governments may need the "courage" to decide that the markets are "wrong" and intervene based on their own (preferably well justified) assessments.

2 What have we learned in the current crisis?

While there are many analytical considerations in implementing fiscal policy during a crisis, the development of the current crisis has demonstrated that, in practice, policy decisions have to be taken in "real-time" with a high degree of uncertainty. Policy makers in the height of a crisis do not usually poses the required information and analysis, so decisions need to be based on a "balance of risks", not on "solid" data. In the current crisis it was particularly evident that the existing analytical tools were inaccurate, as emphasized by Fischer and Justo above: *"in this juncture the estimates of the cyclical budget component are possibly more uncertain than ever, given the difficulty in knowing what are really the representative output gap as well as budgetary sensitivity to the cycle"*.

An important lesson that should be drawn from this realization is that given the sharp changes of what we thought we knew about 2009, it would be hasty to base decisions on what we think we know about 2060, the current target year for long-term fiscal frameworks (which changed a lot too). Another lesson that can be drawn from the developments that led to the crisis is that – just like in the financial markets – there is always a new "story" for good old fiscal expansions. To contain this risk, fiscal economists should keep models simple and based on long-run **past** developments. We should remind ourselves constantly that the fundamentals of the economy change less frequently than might be suggested by analyses based on the "last observation". The principle of keeping our models simple and transparent should be especially adhered to in setting fiscal rules.

The current crisis poses even more difficulties to policy makers than a normal recession during the business cycle. First, this crisis is global, meaning that it is more difficult to "push" the problem away to other countries. Policies that usually work by enhancing competitiveness and raising net exports were less likely to work when trading partners are hit simultaneously. Second, the risk of financial collapse demanded – in some countries – significant fiscal resources that gave rise to potential Ricardian considerations with little impact on real activity (compared to normal periods, not to the counterfactual of not saving the financial institutions). Finally, the size of the shock and of the required intervention to make an impact were simply too big to ignore "fairness" issues; implying a larger cost of the intervention in order to spread the help beyond the segments of society that were directly affected by the crisis.

In such a crisis the balance of risks tilts clearly in favor of fiscal intervention to avoid the "liquidity trap" and significant hysteresis effects, even at the cost of future adjustments. The two papers I discuss below deal with the question of "how to intervene", rather than "whether to intervene", which, in the current crisis, is the more relevant and useful analysis. Specifically,

Bouthevillain and Dufrenot compare the size of multipliers in recessions and "normal" times and point out which measures are more effective in each, and Fischer and Justo provide detailed data on the measures that European governments implemented during the current crisis and classify them according to various criteria.

3 Comments on "Are the Effects of Fiscal Changes Different in Times of Crisis and Non-crisis? – The French Case" by Carine Bouthevillain and Gilles Dufrenot

The paper examines the differences in the effectiveness of policy measures in recessions, compared to "normal" times. While this is an interesting question in general, it is less relevant to the current crisis which is not a "regular" recession. Accordingly, the relevant question is non-linearity in the effectiveness of various measures during recessions, not differences between recessions and "normal" times. While the authors do allow the data to decide where the breaking points are, with the potential that these breaking points will separate large crises from all other periods, the sample does not contain enough data points with "serious" recessions, as evident from the average growth rates in the periods classified by the model as "recession"; such an analysis would probably require a panel of quite a few countries. Moreover, limiting the number of "regimes" to 2, significantly reduces the probability that the periods identifies as "recession regime" will provide a relevant parameterization for the effectiveness of policy measures in a crisis like the current one.[1]

A second important caveat of the paper is the selection of the variables: there is too much "data mining" instead of analytical reasoning in the choice of the RHS variables. As discussed above, this type of modeling may lead eventually to results that place too much weight on "what works", rather than on "what makes sense", precisely the type of modeling associated with the policy misconceptions preceding the crisis. This process of choosing the variables is reflected, *inter alia*, in the non-intuitive lag structure in some equations – even if AIC supports them. Additionally, the regime-switching methodology should also control for changes in the political arena that may affect fiscal policies. While the analysis is definitely in the domain of legitimate academic and analytical analysis, jumping from it to policy prescriptions should be done with extreme caution.

In terms of Model Specification, the chosen explanatory variables: change in openness, short-term interest rates, the shares of public expenditure and revenues in GDP, do not seem to be the best candidates to explain changes in growth. More appropriate variables would be, for example, the change in world trade, Investment in the previous period, the growth rate of the population at ages 25-64, and changes in tax rates. Moreover, in dealing with issues of Ricardian effects, the key relevant variables are those that reflect long-term perceptions – which indicate future taxation – and not cyclical increases in public debt. In order to account for those, the model needs to use variables such as a persistent rise of debt, cyclically adjusted fiscal variables and debt levels. Again, using such variables would probably be easier in a multi-country panel, which seems to be the more appropriate empirical setting for the studied question. This is particularly relevant because **the available fiscal data are not really quarterly** – the quarterly fiscal figures are interpolated from annual data – a key problem in identifying the true fiscal response in quarterly estimation.

Another issue related to model specification is that when the output gap is small or negative, fiscal expansions lead to inflation – not to growth. This may bias the results towards not finding an effect of fiscal expansion on real GDP growth in such periods. Accordingly, there is a need to

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[1] A disturbing feature of the methodology is that periods are classified differently in each equation.

control in some form for the output gap or, more specifically, for the interaction of the output gap with fiscal policy. This bias is particularly important in the current setting of the estimation which allows only two "states of the world" and "forces" a single coefficient for all the periods that are not a "recession".

The analysis in the paper, especially with respect to potential Ricardian effects could benefit from separating endogenous developments from discrete measures. As mentioned above, Ricardian effects should result predominantly from permanent (discrete) measures, while cyclical developments should be associated with them to a much lesser extent. For example, if transfers rise (relative to GDP) during a growth period, this increase is likely to reflect legislation; in a recession it is probably an endogenous response. The opposite is probably true for taxes. Without, at least, such a basic analysis, the scope for useful analysis of Ricardian effects is fairly limited, and seems to be overdone in the paper. Without this analysis the interpretation of the coefficients in general is also hampered.

The policy implications derived from the results suggests that expansionary fiscal policy – either raising expenditure or cutting taxes – is effective in times of recession. Moreover, the authors also find that in non-recession periods cutting expenditures will moderate growth by a lesser degree (if at all, according to Table 1b) than the acceleration achieved during the recession,[2] and that raising taxes in non-recession periods does not affect growth. Hence, the results indicate a permanent gain in the level of GDP from countercyclical fiscal adjustments. I find this result to suggest, predominantly, that further work is needed to strengthen and examine the paper's empirical findings.

The investment and employment equations provide more depth for the analysis, but essentially also carry the same basic problems as the growth equations. I would not repeat those. However, the fact that the methodology identifies different periods as a recession in each equation undermines the benefit from this expansion. As for the specific findings, it is worth noting that the results suggest that the effect of subsidies on investment is with a lag of 2 quarters, meaning that measures implemented during recessions – allowing for some lag between the recognition of the crisis and policy implementation – typically affect performance when the economy already begins to recover. Again, there is no offsetting effect when these subsidies are removed as the economy emerges out of the recession. As for the private employment equations, it should be better explained why lagged public investment has a negative effect on private employment (in regime 2), and the reversed sign of unit labor costs. Such findings are more indicative of endogeneity problems in the estimation rather than the behavior of the economy.

4 Comments on "Government Fiscal and Real Economy Responses to the Crises: Automatic Stabilisers Versus Automatic Stabilisation" by Jonas Fischer and Isabelle Justo

Fischer and Justo constructed a very useful dataset on the policy measures adopted by EU members in the current crisis. This dataset is useful and will probably serve many future studies and policy discussions. Moreover, given the uniqueness of the current crisis, the approach adopted in this paper – to examine the developments in a cross-section setting rather than in time-series – is indeed the more appropriate one. Nevertheless, as an independent study this paper is a miss, because it provides too little analysis. The key feature absent in their work is a greater focus on the cross-section variability rather than on averages for the sample. Since the authors do a thorough job in collecting and describing the data on the policy measures, I will focus my comments on

[2] The authors highlight this result, although they do not provide a test whether it is statistically significant.

suggestions for more ambitious analysis that could be implemented by the authors – sort of a "wish list".

In terms of the descriptive data, the authors could compare the size of measures in various policy areas to the initial level of expenditure. In some fields the addition to public expenditure during the crisis was small in absolute terms but significant compared to the base. This may provide an indication for the potential capacity limitations facing policy-makers when they want to target certain activities or fields of activity.

To enhance the analytical value of the paper the authors could present a breakdown of the policy measures taken by the country's fiscal position at the outset of the crisis and the required long-term fiscal adjustment, and according to the size of government relative to GDP. It would also be interesting to show a descriptive analysis of the relationship between the types of measures adopted and labor market conditions, the relation between the size of discrete policy measures and the need for financial sector support, and the effect of initial country risk on the intervention's magnitude and the selection of instruments. Furthermore, it would be useful to examine if discretionary interventions tended to complement the automatic stabilizers to a given absolute size, or whether the two types of fiscal expansions are positively correlated.

As for more ambitious in-depth analysis, it would be valuable to study the effectiveness of automatic stabilizers and discretionary measures with long-term regressions, or simulate coefficients taken from other studies, and compare the projected elasticities with those in the current crisis. The key question that would be particularly interesting in the current study is whether the measures that were chosen in the recent crisis are those that were found to be effective in the past, and whether different past country experiences affected the recent composition of policy instruments. While these questions definitely go beyond the current scope of the paper, much of the relevant raw information is already presented in the paper, and the added examination would substantially upgrade the analysis.

COMMENTS ON SESSION 1
AUTOMATIC STABILISERS AND DISCRETIONARY FISCAL POLICY

Geert Langenus[*]

Let me start by thanking the organisers for inviting me and giving me the opportunity to discuss two excellent papers, the one by Ludger Schuknecht on "Fiscal Activism in Booms, Busts and Beyond" and the one by Britta Hamburg *et al.* comparing the fiscal policy reaction to the recession in Germany and Italy. The tone and the messages of both papers are quite different. Ludger is essentially telling us that policy mistakes have been made both in the run-up to and during the crisis while the second paper argues that the Italian and German government have all in all done a good job as they have successfully limited the drop in output in a relatively similar and efficient manner. So, clearly there is a difference in views there. What both papers agree upon, though, is that the time has now come to face the challenge of designing and implementing a coherent fiscal exit strategy, although I also sensed a greater urgency in Ludger's paper and presentation than in the paper by the colleagues of the Deutsche Bundesbank and the Banca d'Italia.

Let me treat both papers in chronological order and start with the one by Ludger Schuknecht. In my view, this paper offers an excellent descriptive analysis of the policies before and during the Great 2008-09 Recession. Fiscal – but also other – policies were overly imprudent in good times. This was partially obscured by the problems in measuring output gaps and structural fiscal positions in real time (and, more in particular, an overestimation of the growth outlook) and compounded by unsustainable private-sector developments leading to macroeconomic imbalances. Then, when the recession hit, there was a panic reaction and governments all over the world rediscovered the alleged virtues of "old skool" Keynesiansm, which substantially aggravated already existing fiscal sustainability problems. Now the issue is to implement fiscal consolidation strategies in a timely manner with a view to bringing public finances closer to a sustainable path and expenditure retrenchment should – for a number of reasons – be a key ingredient of those strategies.

I reckon that, if economic historians look back upon the current episode in fifty years' time or so, this is more or less the story that they will come up with. Of course, Ludger's great merit is that he writes this today, rather than 50 years from now, when the dust has far from settled and opinions on what governments should and should not do still diverge quite a lot (including, e.g., calls from leading policy analysts to address government debt problems by creating more inflation).

I would argue that this paper is vintage Schuknecht: it presents a logical sequence of arguments, specifically highlighting where policy mistakes have been made and, obviously, it ends with a call to substantially reduce government expenditure ratios! The thing is, it is really hard to find fault with the reasoning and, to be honest, I am not going to try very hard. I realise that I am not doing my job as discussant very well but what I would like to do instead is to offer some general comments that will mostly corroborate or add to the story.

Let me start with the measurement issue. The paper reminds us again about the difficulties involved in gauging the structural component of the budget balances, especially in times of strong cyclical fluctuations. In this connection, there are three possible reactions. First, one can stop using these indicators altogether. However, it is obviously highly doubtful whether nominal budget balances will prove to be a more reliable compass for fiscal analysis. Second, one can try to further

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The views expressed here are those of the author and not necessarily those of the National Bank of Belgium.

improve the methods used for the cyclical adjustment of budget balances (by, e.g., explicitly accounting for asset price cycles) but there is a clear risk of "overburdening" the indicator. Finally, one may interpret structural balance estimates with (greater) caution. In this connection, it may be worthwhile to focus more on methods that help to *explain*, rather than just gauge movements in structural balances as they can point to windfalls or shortfalls that can not be traced back to policy actions or structural elements. However, as long as one accepts that the current assessment of the cyclical position to some extent depends on projected future developments – and, to my mind, this is the only viable approach from an intellectual point of view –, estimates of structural balances will continue to come with at least some degree of uncertainty. In addition, one should not forget that a more serious problem, that is not explicitly addressed in the paper, is the apparent general unreliability of the actual government accounts for certain countries. To my mind, structural reforms are also warranted in the area of government finance statistics both at the national level in certain countries, but most likely also at the level of Eurostat. In the recent past and in part due to limitations in terms of its mandate, the latter institution has not always been the "rapid statistical reaction force" that fiscal analysts would want.

My second general comment pertains to the fact that quite a few of the elements in the cocktail that according to Ludger led up to the recent recession and the very worrisome public finance situation were actually well-known: fiscal analysts have repeatedly warned that buoyant expenditure trends and, more generally, a post-Maastricht "fiscal fatigue" were weakening the budgetary fundamentals and making government budgets more vulnerable to adverse shocks. The fact that substantial revenue windfalls are not always captured by traditional cyclical adjustment methods and, hence, estimates of structural budget balances may offer a false sense of comfort, has been documented many times, not least by Ludger himself. It seems fair to say that there was no shortage of warnings against unsustainable fiscal – but also macroeconomic – developments. Actually, in some ways, the current episode even looks like a more spectacular remake – with, granted, a starring role for a new villain, the financial sector – of the fiscal crisis at the beginning of the decade when the euro area and the EU fiscal framework were hit by the first wave of excessive deficits. It would appear that, while the writing may have been on the wall, the font was apparently not clear or big enough for governments to start following the path of activist prudence recommend by Ludger. Against this background, a solid case can in my view be made for strengthening the (supra-national) regulatory and institutional framework for public finances.

In this connection, the current crisis provides an ideal opportunity to rethink the design but especially the implementation of the EU fiscal rules. If the latter are to contribute to preventing the emergence of huge fiscal imbalances, then, clearly, more attention should be paid to sound fiscal positions in the medium and the longer term. This implies in my view that the so-called preventive procedures of the Stability and Growth Pact, that are anchored to the achievement of sound medium-term objectives for public finances, should become truly binding. In addition, one should carefully consider whether the new approach to defining these medium-term objectives will be sufficiently prudent, especially when taking into account the longer-term fiscal challenges related to population ageing. As regards the corrective procedures of the Pact, it may be appropriate to turn back some of the "flexibility" that was introduced in EU fiscal rules when the Pact was reformed in 2005. Turning to the national fiscal frameworks, it seems obvious that national rules can be a useful complement to the Stability and Growth Pact. However, certain countries may also explore the scope for (further) delegating specific aspects of budgetary policy to independent fiscal councils. In this respect, the elaboration of prudent macroeconomic and government revenue assumptions for the budget is an example that comes to mind. More generally, the crisis has also clearly shown that a much broader assessment of fiscal risks is warranted: rather than just focusing on budget balances, one should pay greater attention to public debt developments, implicit liabilities and macroeconomic imbalances. I would argue that the Stability and Growth Pact was the main victim

of the fiscal slippage as of 2001. It would be somewhat ironic, but certainly very welcome, if the more dramatic fiscal problems that we experience today would lead to tougher EU fiscal rules...

Finally, as any story about the Great Recession 2008-09, also Ludger's paper contains a chapter about the financial institutions and the government support measures to keep some important ones afloat. What always strikes me, is that fiscal analysts, including the ones that tend to be rather critical of interventionist policies, are typically more hesitant to criticise the measures taken to support ailing financial institutions. Even Ludger, whom nobody will accuse of having the habit of turning a blind eye on policy mistakes, indicates that these measures "can probably be called rather successful". This generally more lenient attitude is probably related to the fact that the absence of any intervention could have triggered a financial meltdown and a much deeper or longer recession. Still, in retrospect one can ask whether tax money has been used wisely in all bank rescue operations, in particular as a perceived "fiscal largesse" for the banking sector at least represents a communication challenge in times when draconian consolidation measures appear necessary for many countries. In my view a number of parallels can be drawn with the story about the real economy that go beyond the obvious lack of prudence in good times. First, I could think of a number of cases where panic-driven government actions have clearly led to second-best solutions. Second, as with the Keynesian demand management, it does not seem outrageous to think that also the fiscal support measures for the banking sector have sometimes been captured by special interests.

I turn now to the second paper that I will discuss, the excellent empirical assessment of the fiscal reaction in Italy and Germany that was presented by Sandro Momigliano. The paper makes a couple of very interesting points. First, appearances can be deceiving: the authors argue that, all in all, fiscal policy was loosened to a roughly similar extent in both countries despite the alleged different size of the "stimulus measures". Second, their simulations suggest that this fiscal reaction salvaged some 1 percent of 2009 GDP in Italy and some 2 per cent of 2009 GDP in Germany. The different impact is attributed to country differences in fiscal multipliers; in this connection, the growth contribution of Italian automatic stabilisers is surprisingly low to my mind. Finally, they also present a "neutral" benchmark simulation showing what would have been the outcome in the absence of any policy reaction and an earlier version of the paper that I read, suggested that a comparison with this benchmark showed that the policy reaction may have been relatively efficient. My comments will generally focus on how to assess – the efficiency and, more generally, the appropriateness of – a government's fiscal reaction.

The first issue in this respect is the correct measurement of this fiscal reaction. One of the things that I like very much about the Hamburg et al. paper is the fact that it clearly shows that there is a significant gap between the "bottom-up" and the "top-down" approach, *i.e.* between a measurement based on the adding up of individual stimulus measures and one anchored to the change in structural (primary) budget balances. As indicated in the paper, the bottom-up approach is biased by differences in budgetary (*i.e.* mostly expenditure) trends as well as political economy issues: governments may have reasons to misrepresent actual stimulus efforts. While the top-down approach, on the other hand, may be affected by the measurement problems related to the real-time assessment of the cyclical situation and referred to in Ludger Schuknecht's paper, it would still seem to be a more reliable yardstick to gauge policy intervention in my view. However, it is crucially important to try to identify the sources of the gap between these two approaches to get a deeper understanding of the orientation of fiscal policy. At any rate, the paper also clearly shows the need to look at explicit policy action and automatic stabilisers together.

Turning to the measurement of the fiscal impact, this paper uses the macroeconometric models of the Banca d'Italia and the Deutsche Bundesbank. I am certainly not in position to quarrel with the modelers of these two institutions but such models obviously tend to reflect *average* behaviour. In this connection, it should be stressed that appendix A suggests that both models are

basically of the Keynesian type in the short run. Hence, we should probably not expect the empirical results to point to negative, or even small, fiscal multipliers. However, several studies show that fiscal multipliers may be regime-dependent. This is the case for the paper by Bouthevillain and Dufrénot that was presented here in the same session but, e.g., also for Tagkalakis (2008) and Nickel and Vansteenkiste (2008). Against this background, the million-dollar question is to what extent the current exceptional circumstances change the "normal" fiscal multipliers. What is the impact, in particular, of the higher incidence of liquidity constraints (that could be expected to increase multipliers) and of the increased fiscal stress (that could be expected to lower multipliers)?

At any rate, an appraisal of the efficiency of the fiscal intervention generally relates the fiscal reaction to its impact. In this connection, one can compare efficiency across countries but also try to relate the fiscal reaction to some benchmark (e.g., a no-policy-change scenario). The version of the paper that was presented by Sandro mainly focuses on the cross-country dimension and compares the fiscal reactions in Germany and Italy.

The paper specifically gauges the impact of the fiscal stimulus (measured in the "bottom-up" way) and the automatic stabilisers. With respect to the former, Italy is shown to be more "efficient" as a marginal budgetary worsening is accompanied by a boost to GDP of more than half a percentage point, while the increase to German GDP of somewhat less than 1 percentage point seems to require a significant worsening of the budget balance by 0.9 per cent of GDP. This may be due to the higher share, in Italy, of stimulus measures that, according to the literature, have a higher multiplier, such as the car scrapping schemes, as well as the increased incentives for investment in machinery. However, it should be stressed that the net budgetary impact of the Italian stimulus measures is lowered by the exceptional capital taxes, that were introduced to (partly) finance these measures. While these taxes are assumed to have only a negligible, if any, impact on current activity growth, the authors indicate that they may have important negative effects on government revenue in the coming years. In this sense, the measured "efficiency" of the Italian stimulus package in 2009 may come at a significant cost. As regards the automatic stabilisers, the picture is quite different, as, in this case, the German government seems to be much more efficient – when comparing the budgetary impact to the boost in GDP – in cushioning the impact of the recession. I was a personally a bit puzzled by the relatively low impact of the automatic stabilisers in Italy (a worsening in the budget balance by 1.2 per cent of GDP would only boost GDP growth by 0.3 percentage points). The authors attribute the striking difference with the results for Germany to differences in the importance of unemployment benefits between both countries and, more generally, to higher multipliers in the model for the German economy. However, to my mind the paper could benefit from a deeper discussion of this issue (e.g., could it be that social expenditure is more targeted in Germany and that multipliers are generally lower in Italy due to Ricardian effects stemming from the higher level of government debt?).

By focusing on the stimulus measures and the automatic stabilisers the authors neglect the differences in budgetary trends, even though they indicated before that these may be important and the "bottom-up" measurement of fiscal stimulus that is used here may give a misleading picture of the actual fiscal policy loosening. Against that background, it may be worthwhile to develop more the other dimension in the paper, *i.e.* the comparison of government actions in each country with a neutral benchmark. Obviously, it is not easy to define such a neutral benchmark. The authors' approach is to hold all budget items constant with respect to trend GDP. While that corresponds to my understanding of a neutral policy stance on the expenditure side, one could also define a neutral stance on the revenue side as a situation in which all revenue items grow (or, in this case, fall) in line with *actual* GDP. By comparing the results of this alternative simulation of a neutral policy stance with the actual developments, one may get an impression of the overall impact of policy action (irrespective of whether it comes with the "stimulus" label) in both countries.

Finally, apart from the quantification of the macroeconomic impact of the fiscal stimulus, which is the main focus of this paper, there are also a number of more qualitative considerations. To my mind, these primarily pertain to the third T of the 3T mantra: were the measures appropriately "targeted", or to put it more bluntly: did the money end up where it was most needed? At least one observer – Ludger Schuknecht – is rather pessimistic on this issue as in his paper he argues that "targeting was poor", "stimuli were also captured by special interests" and there was "little focus on facilitating economic restructuring". Let's take the example of the car scrapping schemes that were a key element of the stimulus packages in both countries considered here. On the one hand, one could argue that these subsidies target industries in need. On the other hand, one could also point to the important lobbying power of the car manufacturing industry: jobs were also threatened in, say, the local grocery stores but it may be more difficult to elicit government support measures in this case, even though such measures may have been equally appropriate, or inappropriate, as those in favour of the car producers. In addition, it is questionable whether support for the car manufacturing industry is the best example of stimulus measures that facilitate economic restructuring. More generally, I would like to stress that the "old" arguments against active demand management are still very relevant in my view: this applies to the political economy considerations related to "appropriate" targeting but also to the timeliness and the reversibility of the stimulus measures. In this latter connection, governments should now prove that they are capable of taking away the stimulus when it can no longer be justified in the context of the substantial consolidation programmes that are now required in most OECD countries.

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COMMENTS ON SESSION 1
AUTOMATIC STABILISERS AND DISCRETIONARY FISCAL POLICY

AUTOMATIC FISCAL STABILISERS: WHAT THEY ARE AND WHAT THEY DO

Martin Larch[*]

During the Great Recession of 2008-09, fiscal policy played an important role in leaning against the sharp downturn of aggregate economic activity. Utterly shunned as a stabilisation tool in the years before the crisis, fiscal policy – especially discretionary stabilisation – celebrated an impressive comeback. As the policy rates of monetary authorities approached or hit the zero lower bound, the conviction soon gained ground that fiscal stimulus packages were needed. By the end of 2008, the US and most countries in the EU had implemented or had decided to implement fiscal measures to boost aggregate demand.

The size of the discretionary fiscal expansions varied significantly across the Atlantic: the US swiftly deliberated massive increases in government expenditure, while European governments were more prudent in terms of both timing and size of their interventions. In 2009, the US budget deficit widened by around 3 percentage points in cyclically-adjusted terms (a gauge of discretionary fiscal policy making) as opposed to "only" 1.5 percentage points in the euro area.

In view of the global dimension of the crisis, the apparent difference between the discretionary fiscal commitment of the US and the EU gave rise to a trans-Atlantic debate about the appropriate size of fiscal stimulus packages: the US felt that Europe could do more, whereas European governments defended their comparatively prudent stimulus packages by pointing to their larger automatic stabilisers. Alongside the political debate, scholars of public finances intensified a decades-long discussion about the relative importance and relative merits of discretionary versus automatic fiscal stabilisation.

The three papers on which I was asked to comment on – "Fiscal Policy in the United States: Automatic Stabilizers, Discretionary Fiscal Policy Actions, and the Economy" by Glenn Follette and Byron Lutz, "Fiscal Policy in Latin America: Countercyclical and Sustainable at Last?" by Christian Daude, Ángel Melguizo and Alejandro Neut, and "The Impact of the International Financial Crisis upon Emerging Economies and the Performance of Discretionary Fiscal Policies: The Case of Argentina" by Ernesto Rezk, Ginette Lafit and Vanina Ricca – are part of this revived discussion. While focusing on different countries or set of countries and using different methodologies, they all engage in an empirical exercise that examines the role played by the two "classical instruments" of fiscal stabilisation – automatic and discretionary – over past and recent cycles, including the Great Depression.

Apart from the valuable insights that the three papers offer about fiscal policy making and fiscal stabilisation in the US and Latin America, they also highlight some important and still unsettled issues associated with the measurement and interpretation of automatic stabilisers. In spite of a relatively large and seasoned body of literature on automatic stabilisers, the three papers are fairly representative for the persisting lack of clarity about what automatic fiscal stabilisers actual are and how we should assess their effectiveness with respect to output smoothing.

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Except for the notional understanding that automatic stabilisers involve budgetary arrangements that help smooth output without the explicit intervention of a country's fiscal authority, views in the literature very much diverge about which elements or components of the budget effectively provide the bulk of automatic stabilisation over the cycle. This lack of consensus is also reflected in the three papers.

There are no doubts concerning unemployment benefits: their mechanics and impact is unambiguous. But then unemployment benefits are a fairly negligible part of the government budget in most advanced countries. The bulk of automatic stabilisation originates somewhere else; but where?

Very early work associated automatic stabilisation with the built-in adjustment of the *level* of revenues and expenditure in a counter-cyclical fashion (e.g., Musgrave and Miller, 1948). According to this view, which dominated the literature for a long time, automatic stabilisers produce a smoothing effect on output mainly because revenues decline during downturns and increase during upturns. Later work also pointed to the stabilising properties of progressive taxation (e.g., Auerbach and Feeberg, 2000) but stuck to the notion that automatic stabilisation was mainly due to automatic variations of revenues. Follette and Lutz as well as Rezk *et al.* follow this tradition. In their paper automatic stabilisation results from changes of revenues and expenditure produced (*i.e.*, unemployment benefits) by cyclical swings in economic activity.

An alternative interpretation of automatic stabilisation is centred on the size of government. Fatás and Mihov (2001) were among the first to argue that provided governments can borrow, automatic stabilisation, essentially resulted from the inertia of discretionary spending over the cycle. If governments did not borrow to keep expenditure levels steady in the face of cyclical down- and upswings, that is if expenditure where to follow output, the budget would provide little automatic smoothing. Daude *et al.* implicitly take this view. I say implicitly because their position is not fully consistent. When discussing the concept of automatic stabilisation they refer to cyclical swings of revenues. However, when estimating the size of automatic stabilisers they follow an approach developed by the OECD, more specifically by Van den Noord (2000) and Girouard and André (2005), an approach which explicitly argues that the strength of automatic stabilisation is largely determined by the size of government.

On the face of it, the different views about the actual source of automatic stabilisation could be interpreted as a purely semantic issue. After all, and by their very nature automatic stabilizers mitigate output fluctuations without any explicit government action. Hence, as long as they do their job, it may be rather futile to ponder about whether they act on the revenue or the expenditure side.

Nevertheless, the issue of substance becomes apparent when trying to assess the actual effect of automatic stabilisation on output. This can only be done by comparing two types of budgetary arrangements: one in which automatic stabilisers are taken to be on, the other in which they are taken to be off. It is in this context, when defining the benchmark against which the effect of automatic stabilisers is to be gauged, that the professed notion of automatic stabilisation makes a difference.

In the literature there is no commonly agreed view of what a "neutral" budget looks like. Also in this respect the three papers are representative. Those who argue that stabilisation mainly stems from cyclical changes in the level of taxation use a benchmark budget where both government revenues and expenditure are fixed in absolute values. This is the case for Follette and Lutz and to some extent also for Rezk *et al.*. Specifically, when simulating the effect of automatic stabilisers on output Follette and Lutz define the neutral budget as one in which revenues and expenditure are invariant with respect to output. Rezk *et al.* make reference to Musgrave and Miller whose analysis rests on the same assumption concerning a neutral budget. Daude *et al.*, by contrast, seem to think like Follette and Lutz and Rezk *et al.* but resort to a methodology that uses a different

benchmark, namely one in which both revenues and expenditure change in line with output. The same benchmark is also used by Brunila *et al.* (2003).

While equally arbitrary from an *ex ante* point of view, the two benchmarks have very different implications when it comes to assessing the degree by which automatic stabilisers help mitigate output fluctuations. If the benchmark is one in which revenues and expenditure vary in proportion to GDP, then proportional taxation does not produce any automatic stabilisation of output. In this case, stabilisation results from keeping expenditure steady. If on the other hand the benchmark is one where revenues and expenditure are fixed in level terms, any form of taxation that assumes a link between revenues and output will have a stabilising effect.

Can we reach any judgement about the relative merits or demerits of the two benchmarks? In my view yes. I would argue that invariant revenue and expenditure levels are neither a fair nor a useful benchmark for a "neutral" budget. To me neutrality means that budgetary aggregates remain neutral with respect to GDP, the macro variable that is expected to be stabilised. Invariant revenues and expenditure level do not score on this count.

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