Budget Balances Decomposed:

Tracking Fiscal Policy in Austria

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Abstract

We track fiscal policy behaviour over time by decomposing the observed budget balance into four unobserved components: (1) a core balance, (2) an automatic or built-in fiscal stabiliser component, (3) a component reflecting discretionary fiscal policy responses to the business cycle, and (4) a component reflecting all other transitory shocks to the fiscal position. Our estimation results for Austria so far highlight that the revenue side seems to be prone to procyclical responses whereas the expenditure side shows opposite behavior. Moreover, during economic downturns the overall impact of fiscal policy seems to be countercyclical, whereas in periods of economic upturn the impact of automatic stabilisers is nearly neutralised.

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1 Introduction and motivation

The Maastricht Treaty and the Stability and Growth Pact (SGP) stipulate that budget balances in EU countries should be balanced over the business cycle, since this would allow automatic stabilisers to work properly in cushioning cyclical fluctuations and to create some room for discretionary policy. Hence, in order to act in accordance with the intention of the SGP, governments should avoid pro-cyclical policies in recessions and strive for budgetary consolidation during economic booms; in other words, governments should behave counter-cyclically and react symmetrically to output fluctuations. This "ideal" notwithstanding, there is some evidence that fiscal policy behaved more pro-cyclically than counter-cyclically in the past decades. Thus the question arises to which extent a fiscal policy regime change is or would have been necessary in order for governments to comply with the spirit of the European fiscal rules.

In order to analyse this issue for a country – as we do for Austria in this paper – one has to assess whether discretionary fiscal policy has actually offset or reinforced the operation of automatic fiscal stabilisers, whether there have been significant transitory variations in the fiscal position unrelated to business cycle fluctuations, and what the behaviour of the underlying ("core") fiscal position over time has been. The variability of the latter reflects discretionary measures not related to the cycle, such as permanent consolidation measures, measures aiming at distributional and allocative/structural goals or effects of macroeconomic shocks, demographic changes, etc.

The economic cycle affects a government's fiscal position – this is all but new. Correcting budget balances for the effects of the business cycle in general gives a better measure of the policy-related part of the budget and reduces the simultaneity bias that may arise as budgets and economic growth interact. The conventional approach relies on adjusting the budget balance for the impact of the automatic stabilisers, i.e. decomposing the budget balance into two components: the cyclically adjusted balance and the automatic stabiliser component (or cyclical component). Adjusting the budget balance for the impact of the

automatic stabilisers is only appropriate, for example, for predicting the room for discretionary stabilisation policy measures in an economic slowdown, given a threshold for the general government deficit (since in this case the cyclical component should indeed be limited to effects of the automatic stabilisers). If, however, the aim is to analyse the policy behaviour related to macroeconomic developments, the adjustment should also include discretionary fiscal measures that have been a normal feature of a country's stabilisation policy (Boije, 2004).

On closer inspection, however, the cyclically adjusted budget balance contains several components that capture different dimensions of fiscal policy, such as a core balance describing the underlying fiscal position; a component reflecting discretionary fiscal policy responses to the business cycle that can move either pro- or counter-cyclically with the output gap; and a residual component capturing all remaining shocks to the fiscal position, reflecting transitory changes in the fiscal position due to non-stabilisation-oriented discretionary policy and/or macroeconomic shocks.[1] Disregarding these latter aspects could provide an explanation for the sometimes quite substantial variations of cyclically adjusted balances during the cycle.

Following an approach suggested by Jaeger (1998) and expanded by Brandner and Diebalek (2000), we track fiscal policy behaviour over time by decomposing the observed budget balance (as a percentage of GDP) into four unobserved components: (1) a core balance, (2) an automatic or built-in fiscal stabiliser component, (3) a component reflecting discretionary fiscal policy responses to the business cycle, and (4) a component reflecting all other transitory shocks to the fiscal position.

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[1] Gali and Perotti (2003) conceptually split the cyclically adjusted budget balance into a "systematic" or "endogenous" component (a component that reflects changes in structural spending or revenues in a systematic way in response to changes in the actual or expected cyclical conditions of the economy; corresponding to γ in section 3) and in a "non-systematic" or "exogenous" component (that captures changes in the budget variables that do not correspond to systematic responses in cyclical conditions, but are instead the consequence of exogenous political processes of extraordinary non-economic circumstances; corresponding to what we name core balance in this paper).

By means of an unobserved components (UC) model, we provide an estimate of a core balance for Austria. For this purpose we analyse the relationship between the budget balance and the cyclical development of the Austrian economy by looking at the impact of both automatic stabilisers and discretionary policies aimed at output stabilisation – with particular attention to the latter.[2] By doing this, we can assess whether fiscal policy in a broader sense was pro- or counter-cyclical or reacted asymmetrically in up- or downturns. Moreover, by looking at disaggregated data, we can answer the question whether the pro-cyclicality / counter-cyclicality was related primarily to the expenditure or the revenue side.

In section 2 we discuss some related literature before we move on to explain the methodology chosen in section 3. Section 4 is devoted to the discussion of the main results of our study; in section 5 we draw some conclusions.

2   Related literature

The behaviour of fiscal policy over the business cycle has received increasing attention from researchers in recent years. The conventional wisdom is that fiscal policy should be counter-cyclical, stabilising economic growth around potential. In a recession, this would call for higher deficits, while in a boom a contractionary budget would help dampen cyclical upswings and prevent the economy from overheating. This "ideal" notwithstanding, evidence of pro-cyclicality in fiscal policy has been uncovered in a number of studies.

Gali and Perotti (2003) show that EMU countries' fiscal policies seem to have been significantly pro-cyclical in the pre-Maastricht period. In the post-Maastricht period, however, EMU countries' fiscal policies appear to be more counter-cyclical. According to Gali and Perotti, the behaviour of discretionary fiscal policy during recessions turned from being somewhat pro-cyclical to becoming counter-cyclical. EMU countries seem to have

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[2] Further research will focus on the analysis of the "driving forces" of the core balance.

been lagging behind non-EMU countries since they pursued largely pro-cyclical policies during the recession of the early 1990s and changed their behaviour only in the early 2000s. Gali and Perotti base their study on both a panel estimate and individual country regressions. With respect to Austria, interestingly, they find a mildly counter-cyclical fiscal policy before Maastricht (a feature that is in contrast to all other EMU countries) and a stronger counter-cyclicality in the post-Maastricht period.

Hallerberg and Strauch (2002) find pro-cyclical policies for the last three decades, at least for the EU. According to Hallerberg and Strauch, discretionary measures have tended to undermine automatic stabilisers while taxes have fluctuated counter-cyclically in a conventional manner. On the expenditure side, they find that public investment displays a consistent pro-cyclical pattern. The latter was also found by Alberola et al. (2003).

Buti, Franco and Ongena (1997), too, state that contractionary fiscal policies prevailed during recessions and that fiscal discipline was lacking during the expansionary periods as deficits persisted during mild phases of expansions and only abated at the peaks. They conclude that the deterioration during expansions was much more marked than the strengthening of fiscal discipline during recessions, as the debt ratio grew sharply in the 1980s and the first half of the 1990s.

Pro-cyclicality of fiscal behaviour in the EMU countries has also been observed by the IMF (2004). Based on a method very similar to Gali and Perotti (2003), the study shows that the degree of pro-cyclicality reflects, inter alia, country-specific budgetary institutions, structural characteristics, such as the sensitivity to real disturbances, and inherited fiscal positions. According to this IMF study, pro-cyclical fiscal impulses turn out to be more pronounced in good times (loosening) than in bad times (tightening), which points to the difficulty of resisting pressures to increase spending or cut taxes in the face of revenue windfalls. The study, however, also finds that the European fiscal framework appears to have led to some reduction in pro-cyclical fiscal behaviour in EMU, owing to a more counter-cyclical policy stance in bad times that was not balanced out by sufficient deficit reduction in good times.

Also the European Commission (2001) comes to the conclusion that between 1970 and 2000 the deficits of EU countries did not fall during favourable cyclical periods, i.e. that

the effects of the automatic built-in stabilisers were offset by countries' discretionary fiscal policies, namely by tax cuts and, in particular, by expenditure increases, which necessitated a tightening during economic downturns.

Gavin and Perotti (1997) detect that in Latin American countries – in sharp contrast to the industrial economies – fiscal policies have been pro-cyclical, and particularly so in recessions. For industrial countries they find asymmetries insofar as budget surpluses increase during good times; during bad times, however, the fiscal response to changes in output growth is much larger. In their view, for industrial countries this is consistent with the idea that recessions are economically and /or politically more costly than output booms, and that the fiscal policy response to them is accordingly stronger. But it is also consistent with the idea that some elements of the fiscal structure, such as unemployment compensation, are relatively insensitive to the business cycle at high levels of economic activity, but become larger in deep recessions.

As pro-cyclicality contrasts with the stabilisation function of fiscal policy, a number of explanations are offered for these results, including conflicting policy goals, information problems (real-time data problems), complexity of decision-making and (standard argument against fine tuning) implementation lags. Talvi and Vegh (2000) offer a model rationalising pro-cyclical fiscal policies primarily in developing countries but also in the industrialised world – for countries with a large variability of the tax base in general. If the latter is the case, tax smoothing would require large deficits to be run in economic downturns, and high surpluses in upswings. But finance ministers may be tempted to avoid large surpluses knowing that they will nurture political pressures to spend public monies, and prefer to run a pro-cyclical policy. Tornell and Lane (1999), on the other hand, argue that the degree of political competition increases during upswings. After all, each group or power block competing for public resources knows that governments will not run surpluses during economic expansions, but that other groups will increase their appropriate share by an even greater amount. Therefore, they will compete more intensely for resources during expansions, and less so during recessions. As a consequence, fiscal policy becomes more pro-cyclical the more fragmented and open governments are to such pressures.

Yet a range of literature also points to possible asymmetries in fiscal responses to recessions and upturns. Mayes and Virén (2004) find strong evidence of asymmetric

cyclical behaviour of government deficits, with these asymmetries mainly relating to the cyclically adjusted deficit. Structural deficits increase when output shrinks, but structural deficits (structural surpluses) also tend to increase (decrease) when output expands. According to Mayes and Virén, the different cyclical effects show up in both revenues and expenditures. Revenues seem to be more sensitive to output growth in depressions than in booms. Thus, in booms, the revenue/trend output ratio remains more or less constant, while in depressions it decreases quite markedly. Expenditures seem to increase in depressions and decrease in booms. They conclude that from the viewpoint of counter-cyclical fiscal policy, the main problem appears to be behaviour in "good times" when discretionary action does not seem to help smooth the output growth path.

Also the OECD (2003) concludes – on the basis of a panel estimate – that, overall, countries conducted pro-cyclical fiscal policies in cyclical upturns and counter-cyclical policies in downturns. However, sustainability problems associated with indebtedness seem to be a key determinant of whether the fiscal stance is pro-cyclical during downturns.

Forni and Momigliano (2004), using real time data, find that fiscal policy was generally counter-cyclical during adverse economic periods. They conclude that fiscal policy was more counter-cyclical at the beginning of the 1990s than during the recent downturns.

Balassone and Francese (2004), too, highlight that fiscal policies in OECD countries have been counter-cyclical mainly in downturns. While automatic stabilisers are left free to operate during downturns, during expansions their effect is compensated by discretionary loosening, which implies that budgetary balances are not improving in upturns. Moreover, they show that overall elasticities (including the discretionary actions) are asymmetric with respect to upturns and downturns.

Tujula and Wolswijk (2004) show that fiscal policies have not operated symmetrically over the business cycle as governments have been more prone to stimulate economies in downswings via expanding budgets than to restrict economic growth in upswings via tightening budget balances.

In contrast to the above mentioned studies, Mélitz (2000) highlights that fiscal policy responds in a stabilising manner to the cycle; the automatic stabilisation through fiscal

policy is, however, much weaker than generally perceived.[3] Moreover, while expansion raises tax receipts, it also raises government expenditures. Net stabilisation therefore only occurs because of a larger reaction of taxes than expenditures. His findings are in principle in line with Wyplosz (1999), who also shows the "same mildness" of the stabilising response to the cycle. According to Wyplosz' estimates an extra percent of output above potential raises the primary budget surplus by 0.18 (Mélitz' estimate, in contrast, amounts to about 0.10). This actually means weak automatic stabilisation in contrast to what is usually estimated (see van den Noord (2000), Girouard and André (2005)). Lane (2003) finds that current government spending tends to be mildly counter-cyclical; however, the government consumption component of current spending is pro-cyclical. Hence, he concludes that the counter-cyclical behaviour of current government spending emanates from the behaviour of government transfers (automatic stabilisers) and/or debt interest payments. The most pro-cyclical component of government spending is government investment[4]. Wage government spending is highlighted as the most important channel by which these variables affect fiscal cyclicality. Hercowitz and Strawczynski (2004) – similar to Lane (2003) – find the deficit/GDP ratio to be counter-cyclical. According to their finding, this is mostly due to recessions whereas in expansions, the deficit/GDP ratio is essentially a-cyclical.

In checking for the cycle dependency of cyclically adjusted figures of the European Commission (EC), Alberola et al. (2003) by means of a panel estimate conclude that the cyclical component seems to be overestimated, which means that the cyclically adjusted balances tend to be overestimated during downturns and underestimated during expansions. According to their findings, the overall impact seems, however, to be counter-cyclical in general. In their opinion this result might signal a problem with the computation

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[3] According to Wyplosz (2002) this mildly stabilizing response (coefficients of 0.1-0.2 instead of around 0.5) could be an effect of the extension of the sample period to include the 1990s, an atypical period of low growth and closing down of the deficit to meet the Maastricht convergence criteria. It may also reflect the combination of the counter-cyclical automatic stabilizers, with an elasticity of 0.5, with discretionary pro-cyclical actions.

[4] Also Alberola et al. (2003) confirm this result.

of elasticities, which turn out to be too high; at the same time, the results could capture a systematic discretionary reaction of governments to developments in economic activity. But, as they state, it does not appear to be easy to disentangle the two possibilities from each other.

The approaches taken for investigating the cyclical-related impact of fiscal policies (from built-in stabilisers as well as from deliberate policy decision) are quite heterogenous. Some studies analyse overall changes in the budget balance (primary or total), without distinguishing between discretionary actions and automatic stabilisers (e.g. Mélitz (2000), Balassone and Francese (2004), Tujula and Wolswijk (2004), Lane (2003), Mayes and Viren (2004), Fatás and Mihov (2001)) whereas others analyse changes in the cyclically adjusted balances (e.g. Alberola et al. (2003), OECD (2003), Forni and Momigliani (2004)) or the impact on the level of cyclically adjusted primary balances (e.g. Gali and Perotti (2003)).

3   A stylised framework

Several techniques have been developed to estimate the variations of budget aggregates arising from the economic cycle.[5] The conventional approach (e.g. EC, OECD, IMF) to correct budget balances for fluctuations in economic activity starts from a notional decomposition of the observed budget balance b_t into two (unobserved) components: the cyclically adjusted budget balance bs_t, often called "structural" balance, and a cyclical component ba_t aimed at capturing the built-in stabilisers. To adequately estimate the cyclical component ba_t, various methods have been developed by international institutions such as the EC, the OECD, the IMF and the ECB. Within these approaches, the structural balance bs_t is defined as the difference between the observed and the cyclical balance,

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[5] However, all these techniques are subject to a number of methodological problems, notably defining trend/potential output – a shortcoming that unfortunately is also valid for our approach.

$bs_t = b_t - ba_t$. Obviously, any other dimension of fiscal policy, even if it is related with the cycle, shows up in the structural component.

However, if the focus is on the development of the underlying fiscal position (adjusted for all temporary impacts irrespective of whether they are "economy dependent or cyclically dependent" (Braconier and Forsfält, 2004, p.4)) a direct calculation of the structural balance as a "long-run component" via specific filtering techniques (see Brandner, Diebalek and Schuberth, 1998) may be more appropriate. If so, the effects of the built-in stabilisers as well as cyclically related discretionary measures are captured in the resulting "cyclical" component $ba_t = b_t - bs_t$.

To analyse the issues raised, we set up a framework that allows distinguishing between several dimensions of fiscal policy, short-run vs. long-run, and active vs. passive. We start with a quite general decomposition

(1) $$b_t = \boldsymbol{m}_t + ba_t + bd_t + \boldsymbol{e}_t$$

of the actual/observed balance b_t into the core balance $\boldsymbol{m}_t$, two cyclically related components - namely ba_t capturing the impact of the automatic stabilisers, and bd_t capturing the discretionary policy in response to the cycle - and a residual component $\boldsymbol{e}_t$ reflecting all remaining (temporary) effects ("fiscal noise"). To be more precise, we specify

(2.1) $$ba_t = \boldsymbol{a}_t \cdot I_t^a$$

(2.2) $$bd_t = \boldsymbol{g}_t \cdot I_t^d$$

I_t^a and I_t^d are indicators for the cyclical developments which will be specified later on, and $\boldsymbol{a}_t$ and $\boldsymbol{g}_t$ are the corresponding sensitivities/elasticities. The use of different indicators of the cyclical development is motivated by the fact that in general policy-makers do not necessarily respond to variables economists have in mind.

Inserting (2.1) and (2.2) in (1) constitutes our unobserved component model specification, naturally cast as a state-space system. The measurement/signal equation

(3.1) $$b_t = m_t + a_t \cdot I_t^a + g_t \cdot I_t^d + e_t$$

links the observed balance to its components, while the state/transition equations

(3.2) $$m_{t+1} = m_t + h_{t+1} \qquad h_t \sim \text{iid N}(0, s_h)$$

(3.3) $$a_{t+1} = a_t + y_{t+1} \qquad y_t \sim \text{iid N}(0, s_y)$$

(3.4) $$g_{t+1} = g_t + z_{t+1} \qquad z_t \sim \text{iid N}(0, s_z)$$

describe the dynamics of the states. In the estimation, the log-likelihood is constructed using the Kalman filter.[6]

Equation (3.2) specifies the core balance as a random walk, the innovations h_t capturing fiscal shocks that have a permanent or enduring impact on the level of the budget balance. Similarly, equations (3.3) and (3.4) set up the automatic sensitivity of the budget balance a_t and the policy response g_t as random walks. While a positive (negative) sign of g_t typically indicates a counter-cyclical (pro-cyclical) reaction of discretionary fiscal policy, the sign is interpreted just the other way round in the case of expenditure variables. In principle, all three state equations could be generalised to include exogenous variables. We take (3.1)–(3.4) as a transparent, easy-to-use device to decompose budget balances.

In the general representation (3.2)–(3.4) the states – and hence budget components – are assumed to move stochastically. If the estimation yields very small variances, this is an indication that the corresponding component is rather deterministic. In such a case, the model can be simplified by a priorily setting disturbances to zero (the states would then enter (3.1) as recursive coefficients).

Since the focus of our interest lies primarily on the impact of the policy response to cyclical developments (rather than on the automatic stabilisers), we can estimate a smaller, "reduced model" for the structural balance bs_t consisting of the measurement equation

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[6] Estimations have been carried out with RATS v6.

(4) $$bs_t = \boldsymbol{m}_t + \boldsymbol{g}_t \cdot I_t^d + \boldsymbol{e}_t$$

and state equations (3.2) and (3.4).

By taking the cyclically adjusted (primary) budget balance $bs_t = b_t - ba_t$ as calculated by the European Commission as dependent variables[7], we refrain from estimating the cyclical component, which is thus $ba_t = \boldsymbol{a}_t \cdot I_t^a = \boldsymbol{a} \cdot GAP_t$.

If, however, the discretionary policy response component and the automatic stabiliser component respond to the same cyclical indicator I^c, general equation (3.1) is reduced to

(5.1) $$b_t = \boldsymbol{m}_t + (\boldsymbol{a} + \boldsymbol{g})_t \cdot I_t^c + \boldsymbol{e}_t \ ,$$

state equation (3.2) and

(5.2) $$(\boldsymbol{a} + \boldsymbol{g})_{t+1} = (\boldsymbol{a} + \boldsymbol{g})_t + \boldsymbol{x}_{t+1} \ . \qquad \boldsymbol{z}_t \sim \text{iid N}(0, \boldsymbol{s_z})$$

Whereas the actual budget balance is expressed as a ratio of nominal GDP, the core balance and the cyclically adjusted balances are expressed as ratios of nominal potential GDP (since cyclically adjusted balances should be interpreted as values of the deficits (surpluses) that would be observed if output were at some reference potential level). However, one should be aware of the fact that policy-makers, the public and international institutions such as the EC generally monitor the development of public finances relative to nominal GDP. Actual and cyclically adjusted budget balance figures as well as revenue and expenditure figures are taken from the AMECO data base.

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[7] The cyclically adjusted budget balance has been corrected for an estimated output gap (compositional effects are not taken into account), i.e. the budget balance figures are adjusted for a) the difference between actual output and estimated potential output (the output gap) and b) the difference between the actual unemployment rate and the estimated equilibrium unemployment rate (the unemployment gap).

The indicator I_t^a is always specified as the output gap. However, at the current stage of our research, the indicator I_t^d is specified as the output gap on the one hand and split up into I_t^{d+} and I_t^{d-} on the other hand in order to capture upturns and downturns.[8]
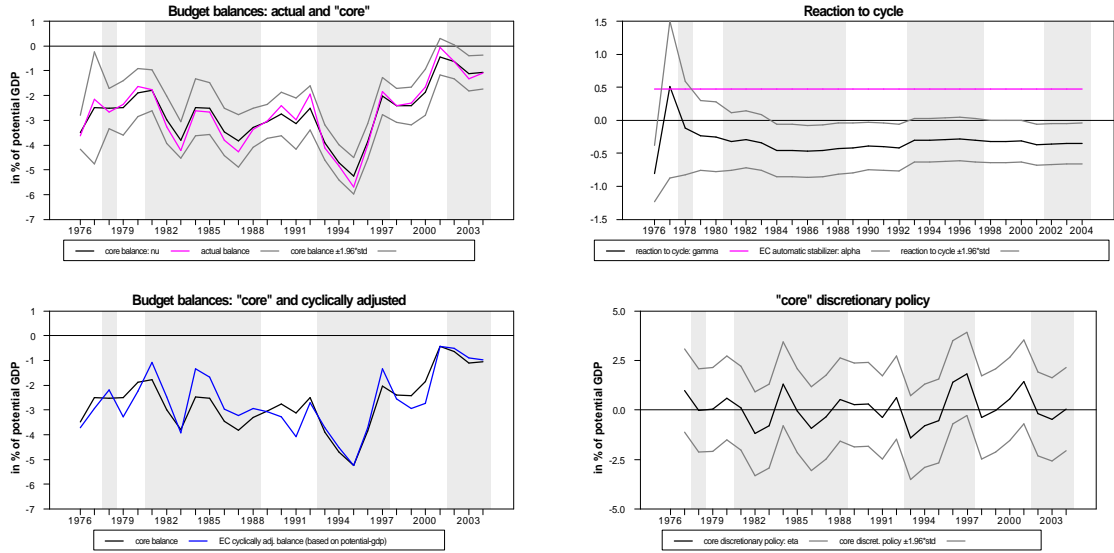
4 Results

Estimating the impact of the discretionary policy response to the cycle only (equation 4), i.e. taking the cyclically adjusted total balance in % of potential GDP as dependent variable and the output gap as explanatory variable, gives a negative parameter value for g of a size of about -0.35 (see graph 1, graph 2 and table 1). A negative value of this coefficient reveals a pro-cyclical impact of discretionary policy responses on cyclical developments.

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[8] We intend to broaden the analysis to include the period *t-1* expected real GDP growth rate of period *t* on which the respective budget draft in Austria is based. This projection is part of the regular economic outlook of the Austrian Institute of Economic Research (WIFO). Even though growth does not represent an adequate proxy for cyclical conditions one has to bear in mind that politicians may just look at growth rates when taking discretionary decisions. Using real-time growth data moves the focus on the intentions fiscal policy makers had, when deciding discretionary measures, whereas the use of ex post output gap allows the assessment of the actual (or ex post) counter-/pro-cyclicality of fiscal policies (Forni and Momigliano (2004)).
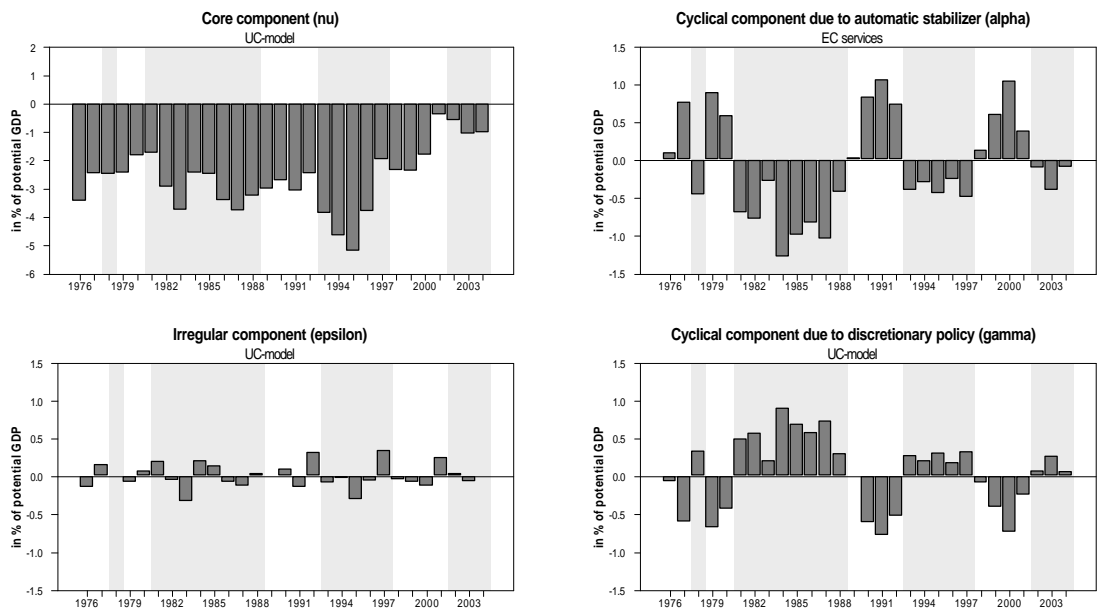
Graph 1

Results for the total balance

Budget balances: actual and "core"

core balance: nu — actual balance — core balance ±1.96*std —

Reaction to cycle

reaction to cycle: gamma — EC automatic stabilizer: alpha — reaction to cycle ±1.96*std —

Budget balances: "core" and cyclically adjusted

core balance — EC cyclically adj. balance (based on potential-gdp) —

"core" discretionary policy

core discretionary policy: eta — core discret. policy ±1.96*std —

Graph 2

Decomposition of the total balance

Core component (nu)
UC-model

Cyclical component due to automatic stabilizer (alpha)
EC services

Irregular component (epsilon)
UC-model

Cyclical component due to discretionary policy (gamma)
UC-model

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Table 1: Estimation Results

dependent variable: cyclically adjusted balances (in percent of potential GDP)

Parameter:	total balance	primary balance	total revenues	primary expenditures	total balance	primary balance	total revenues	primary expenditures
var(e)	0,14	0,00	0,00	0,00	0,04	0,00	0,00	0,00
var($?$)	0,86	1,15	0,79	0,84	0,95	1,04	0,74	0,85
var($?$)	0,00	0,00	0,00	0,00	.	.	.	.
var($?^+$)	.	.	.	.	0,00	0,00	0,00	0,00
var($?^-$)	.	.	.	.	0,02	0,02	0,00	0,00
Final states:								
core balance (μ_T)	-1,06	1,88	48,72	46,84	-1,06	1,87	48,69	46,83
	(-0.35)	(-0.04)	(0.03)	(0.03)	(0.21)	(0.04)	(0.04)	(0.04)
automatic stabilizer a [*)]	0,47	0,47	0,43	-0,04	0,47	0,47	0,43	-0,04
(OECD/EC)								
discretionary policy ($?_T$)	-0,35	-0,37	-0,30	0,07	.	.	.	.
	(0.16)	(0.16)	(0.13)	(0.14)	.	.	.	.
in upturns ($?_T^+$)	.	.	.	.	-0,42	-0,40	-0,43	0,00
	.	.	.	.	(0.19)	(0.19)	(0.16)	(0.17)
in downturns ($?_T^-$)	.	.	.	.	-0,04	0,04	-0,11	0,12
	.	.	.	.	(0.42)	(0.44)	(0.23)	(0.15)

Sample period: 1976-2004; standard deviations in paranthesis
*) estimated by the OECD and used by the European Commission

The comparison of this coefficient with the size of the overall budget sensitivity as estimated by the OECD and used by the EC (+0.47) leads to the conclusion that the overall impact of fiscal policy (summing up the automatic and discretionary components) was slightly counter-cyclical in Austria in the past.[9] Taking into account the fact that the overall budget sensitivity for Austria as estimated by the OECD was lower in earlier publications, this could indicate a slightly stronger counter-cyclicality of overall fiscal policy for recent years.

Graph 1 also reveals that the core balance is slightly smoother than the cyclically adjusted budget balance. The driving forces of the core balance were major structural problems of the Austrian economy in the early 1980s; consolidation measures in the second half of the 1980s; a major income tax reform at the end of the 1980s; the implementation of long-term care benefits in 1993; the implementation of further consolidation packages between 1995 to 1997 in order to fulfil the Maastricht fiscal criteria in 1997; and another consolidation package in 2000/2001 to reach a balanced budget.

This first result is confirmed when we use the alternative specification (5.1) and look for the "overall" budget sensitivity to the output gap, i.e. estimating the automatic and the policy response components in one go. A positive coefficient of 0.15 signals a slightly counter-cyclical behaviour overall.[10] Repeating the estimations with the primary budget balance gives nearly identical coefficients (see graphs 1a and 2a).

This finding contrasts with Gali and Perotti's (2003) results. In their country estimates they find for the pre-Maastricht period a slightly counter-cyclical discretionary fiscal response

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[9] However, as stated by Alberola et al. (2003) (by means of a panel regression) such a result could also signal problems with the estimation of the budget elasticity. They actually find a negative and significant correlation between the output gap and the structural balance which they interpret as an overestimation of the cyclical component. Consequently, in downturns structural balances tend to be overestimated while they are underestimated in expansions.

[10] In order to filter out the effect of the interest expenditures we estimate the equations also with the cyclically adjusted and unadjusted primary balance as dependent variables.

for Austria, which got stronger in the after-Maastricht period (but the coefficients are not statistically different from zero).

This "pro-cyclical fiscal policy response" of the general government is not much of a surprise; on the one hand it can be explained by the federal structure of government in Austria, consisting of the federal government, the nine provinces and the local governments (municipalities). The provincial and local governments' fiscal policies have traditionally been aimed at balanced budgets – thus undermining the impact of the automatic stabilisers, in particular in downturns.[11] Thus, even if the federal government aims at counter-cyclical responses to cyclical developments, this ambition may be partly counteracted by the provincial and local governments' fiscal strategy.

Moreover, from the late 1970s to the end of the 1980s the federal government's strategy was influenced by a budget rule termed the "Seidel formula" (see Katterl and Koehler-Toeglhofer, 2005), which set a threshold for the cash deficit of the federal government at a level of 2.5% of GDP.

In a next step we ask whether cyclically adjusted spending and revenues (as a share of nominal potential GDP) react in a specific pro- or counter-cyclical manner. Our estimation results indicate a relatively strong pro-cyclical discretionary response of the cyclically adjusted revenues to the cycle (see graphs 3 and 4). On the expenditure side, the relatively minor impact of the automatic stabilisers related to the unemployment transfers seems to be completely neutralised.[12] (See graphs 4 and 5).
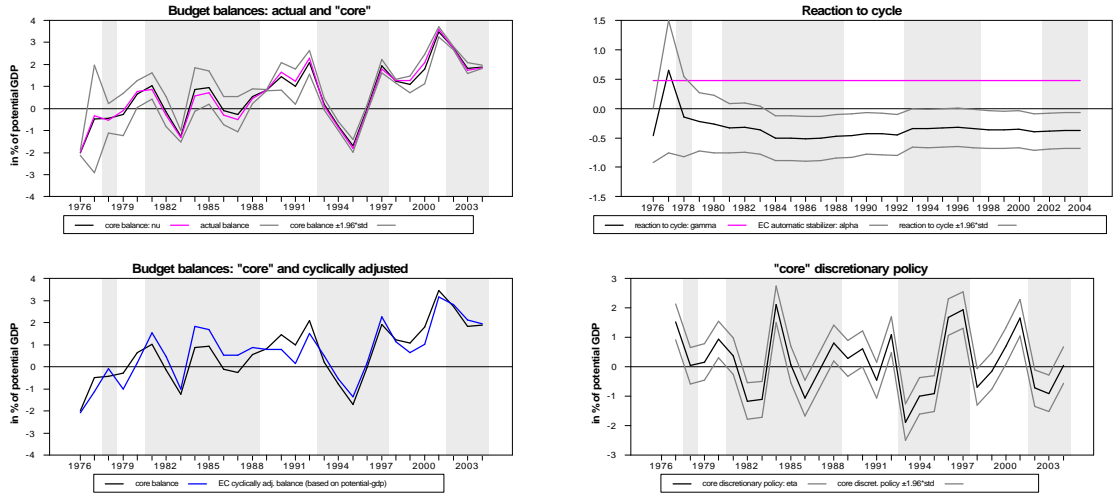
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[11] The resources of the provincial and local governments stem mainly from an elaborate tax sharing system and from federal transfers. The sub-levels mainly participate in cyclically sensitive tax revenues. Own sources of revenues are of less importance for the provincial governments, but of slightly more relevance for the local governments. Without any room for manoeuvre on the revenue side, the provincial and local governments in principle have to adjust their expenditures to the predetermined revenues (see Diebalek et al. (2005)).

[12] However, if the dependent variables are taken as ratios of the nominal GDP instead of potential nominal GDP we get a pronounced pro-cyclicality of the cyclically adjusted revenues and a pronounced counter-cyclicality of the cyclicality adjusted expenditures.
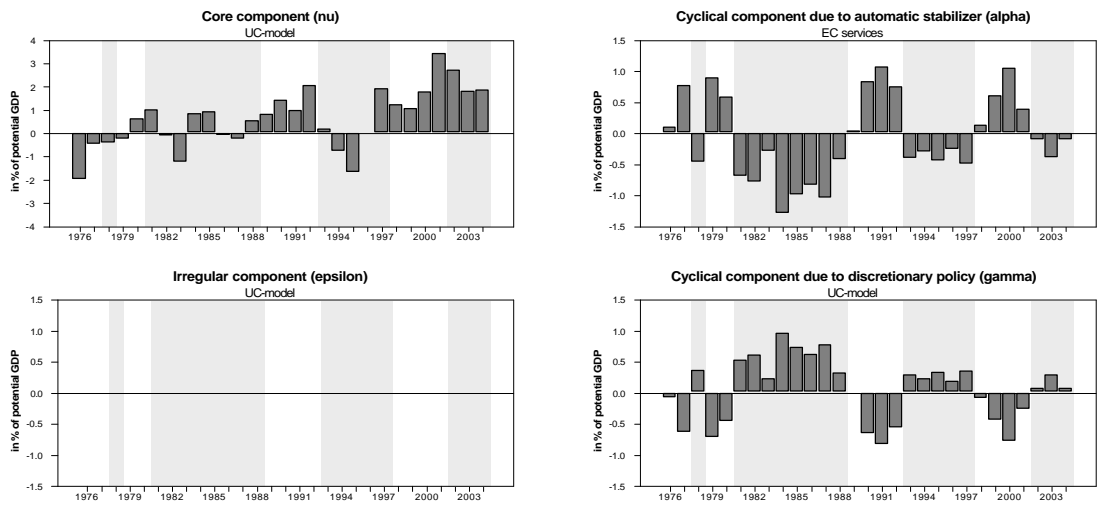
Results for the primary balance

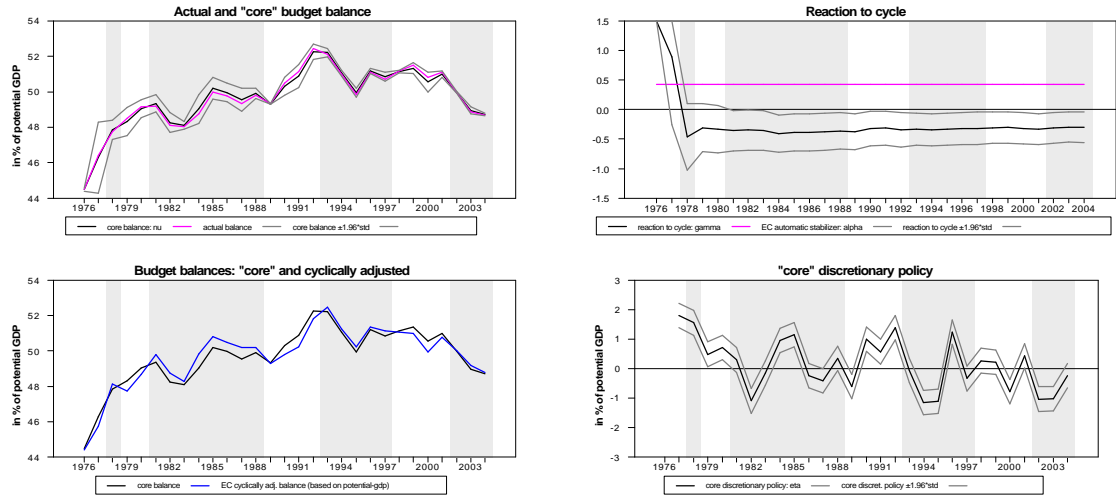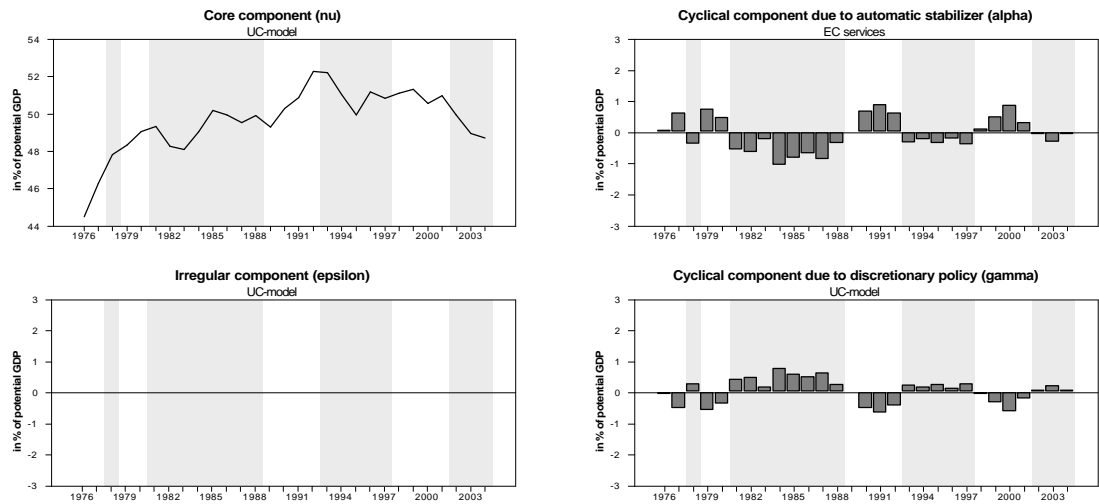# Decomposition of the primary balance

18

Graph 3

Results for the total revenues

Actual and "core" budget balance

Reaction to cycle

Budget balances: "core" and cyclically adjusted

"core" discretionary policy

Graph 4

Decomposition of the total revenues

Core component (nu)
UC-model

Cyclical component due to automatic stabilizer (alpha)
EC services

Irregular component (epsilon)
UC-model

Cyclical component due to discretionary policy (gamma)
UC-model

Graph 5

Results for the primary expenditures

Actual and "core" budget balance

core balance: nu — actual balance — core balance ±1.96*std —

Reaction to cycle

reaction to cycle: gamma — EC automatic stabilizer: alpha — reaction to cycle ±1.96*std —

Budget balances: "core" and cyclically adjusted

core balance — EC cyclically adj. balance (based on potential-gdp)

"core" discretionary policy

core discretionary policy: eta — core discret. policy ±1.96*std —

Graph 6

Decomposition of the primary expenditures

Core component (nu)
UC-model

Cyclical component due to automatic stabilizer (alpha)
EC services

Irregular component (epsilon)
UC-model

Cyclical component due to discretionary policy (gamma)
UC-model
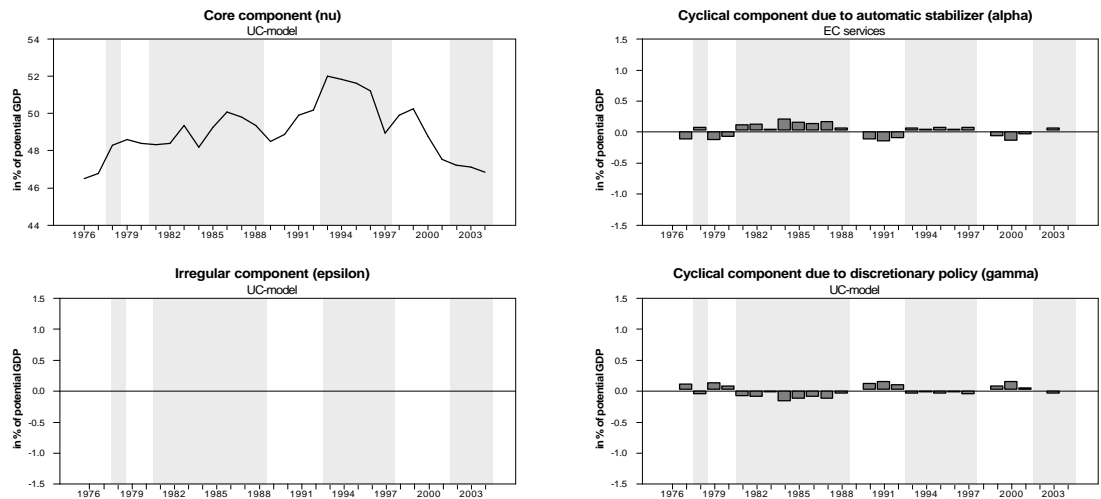
Next we check for an asymmetric cyclical behaviour in downturns and upturns, i.e. taking the cyclically adjusted (primary) budget balance as dependent variable and looking for the discretionary fiscal policy impact in upturns (periods in which the real growth rate is above the potential growth rate) and downturns (periods in which the real growth rate is below the potential growth rate). It appears that in upturns a strong pro-cyclical discretionary policy impact dominates (however, the g coefficient is slightly smaller than the overall budget sensitivity estimated by the OECD for Austria[13]), whereas the pro-cyclical impact in downturns turns out to be comparably smaller. Hence, we can conclude that in Austria overall fiscal policy in downturns is counter-cyclical, whereas in upturns the working of automatic stabilisers is neutralised (see graph 7). This is in principle in line with general findings based on panel regressions for OECD countries (such as those by OECD (2003), Balassone et al. (2004) or Forni and Momigliano (2004); these papers provide evidence for counter-cyclical behaviour in downturns and – at least the first two studies – pro-cyclicality in upturns.)

Graph 7

Results for the total balance

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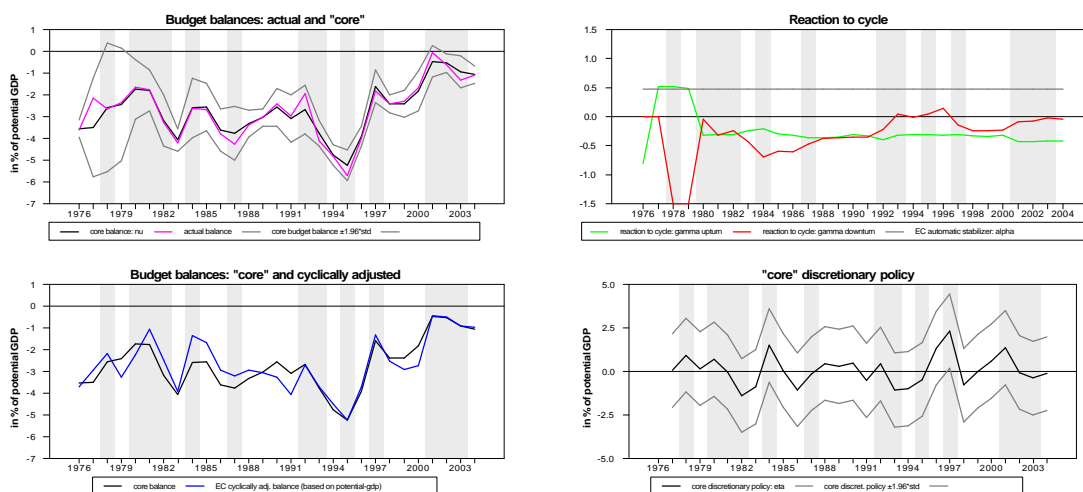
[13] However, the coefficient is of the same size as the overall budget sensitivity calculated by the OeNB. Taking the OeNB's value of the overall budget sensitivity would lead to the conclusion that the impact of the automatic stabilizers is completely neutralized in upturns.

Finally we focus on the evolution of the core balances. Compared to the cyclically adjusted budget balances the core balances exhibits slightly less variability. As mentioned in the introduction, the variability of these reflect discretionary measures not related to the cycle, such as permanent consolidation measures, measures aiming at distributional and allocative/structural goals or effects of macroeconomic shocks, demographic changes, etc. Thus graph 8 depicts major episodes of fiscal consolidation on the one hand and the introduction of expenditure measures aiming at further improving the Austrian welfare state on the other hand, as well as the impact of structural changes in the Austrian economy.

Graph 8

"core" discretionary policy

Legend: primary balance | total revenues | primary expenditures
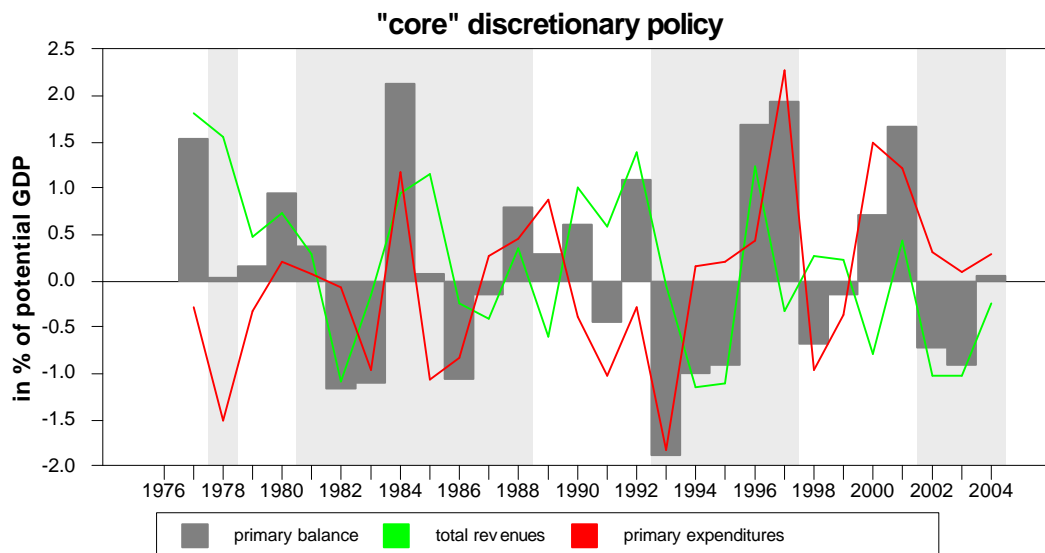
For example, in 1984 Austria implemented a sizeable consolidation package, including the increase of the VAT rate and other indirect taxes as well as the contribution rate of the unemployment insurance scheme. Another big consolidation package was implemented in 1996-1997 in order to fulfil the fiscal Maastricht criteria. A further comparatively huge consolidation package was launched in 2000/2001 with the goal of bringing the general government budget to a close to balance position. While these events resulted in an improvement of the core primary balances, they also show up in the core revenue or core

expenditure ratio, respectively, or in both, depending on the composition of the consolidation packages.

The tremendous structural crisis that Austria faced at the beginning of the 1980s is also reflected in the development of the core primary balance. The worsening of the primary balance at the beginning of the 1990s was, however, caused, by the implementation of social policy measures, i.e. by extending the entitlement period for maternity leave payments from one to two years and in addition by implementing long-term care benefits without adequate financing measures.

5   Conclusions

Our estimation results so far highlight that, first of all, the overall effect of fiscal policy in Austria has been slightly counter-cyclical. However, our estimates also indicate that discretionary policy in response to the business cycle has been pro-cyclical. Given the federal structure enabling the provincial and local governments to implement conflicting fiscal strategies, and given the fact that the central government budget was influenced (at least on average) by the rule that the cash deficit should not exceed the threshold of 2.5% of GDP, this result does not really come as a great surprise. Second, and more interestingly, there is the fact that the revenue side seems to be prone to pro-cyclical responses whereas the expenditure side shows opposite behavior. Finally – and this finding is generally in line with other studies – our estimates imply that during economic downturns the overall impact of fiscal policy seems to be counter-cyclical, whereas in periods of economic upturn the impact of automatic stabilisers is nearly neutralised.

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