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Highlights in this issue:

- Expansionary budgetary policies aiming at boosting economic activity are found to have a mixed impact on the Hungarian economy
- The corporate sector reacts negatively, the household sector positively to discretionary shifts in government expenditure

ECFIN COUNTRY FOCUS

The impact of fiscal policy in Hungary

By Julia Lendvai*

Summary

This Country Focus studies the impact of changes in government expenditure in Hungary over the period 1997Q1 to 2005Q4 using a structural vector-autoregressive model. The results suggest that discretionary shifts in government expenditure have a mixed impact on the economy. In particular, while households are found to respond positively to expansionary government spending leading to an increase in their income, our findings point to a negative reaction on the part of the corporate sector. Overall, increasing government expenditure is found to lead to a contraction in GDP. Private employment is also found to fall back.

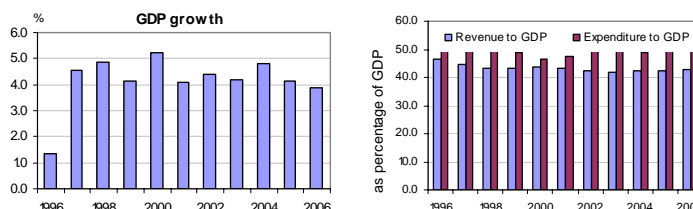
Brief history of public finances in Hungary

Public finance imbalances have been a recurrent problem in Hungary since the beginning of the transition process, with high general government deficits occurring despite the fact that the Hungarian tax wedge is among the largest in the OECD countries. Relatively big expenditure-to-GDP shares are further evidence supporting the notion that Hungary has maintained spending levels beyond its means.

An attempt to consolidate the Hungarian budget in the mid-1990s led to a 5 percentage point reduction in the government expenditure-to-GDP ratio to 46.5% in 2000. This was also accompanied by a reduction of the general government deficit from over 8% of GDP in 1994 to below 3% of GDP in 2000. However, increasingly expansionary policies also linked to strong electoral cycles led to a turnaround in these trends from the beginning of the new millennium. Measures increasing government expenditure and decreasing the tax burden were taken simultaneously with a view to boosting economic activity and raising welfare.

High budget deficits in Hungary have been coupled with a large tax burden and relatively high expenditure-to-GDP ratios

Figure 1: GDP Growth - Government Revenue and Expenditure



Source: Commission services

These policies resulted in an average budget deficit of close to 7% of GDP between 2001 and 2005, culminating in a deficit of 9.2% of GDP in 2006. Since Hungary joined the European Union in May 2004, it has been continuously under the excessive deficit procedure, with a general government deficit among the highest in the Union. Repeated Council recommendations have been issued urging Hungary to

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bring an end to this situation. In summer 2006, the Hungarian government adopted a new strategy to consolidate public finances along a multi-annual path for deficit reduction with deficit targets of 6.8% of GDP in 2007, 4.3% of GDP in 2008 and 3.2% of GDP in 2009. Both expenditure and revenue side measures have been taken since with further measures foreseen based on which the Commission services' autumn 2007 forecast expects a deficit outcome of 6.4% of GDP for this year with 4.2% and 3.8% of GDP for 2008 and 2009, respectively.

The impact of the conducted fiscal policy on the economy is not clear-cut. Real GDP growth has remained fairly stable at around 4.5% between 1997 and 2006. A simple inspection of the evolution of other economic aggregates such as households' consumption or corporate investment is not conclusive about the macroeconomic impact of government spending policies.

This Country Focus therefore undertakes to study the impact of government spending on the economy between 1997Q1 and 2005Q4 using a structural vector-autoregression (VAR).¹ This method allows the macroeconomic impact of unexpected changes in the fiscal policy to be isolated from other economic disturbances which may have contributed to the evolution of the business cycle. Our sample was restricted by data availability and also by the fact that a VAR cannot be estimated over periods with breaks in the conduct of policy such as the marked change in Hungarian fiscal policy in 2006, given that the policy in itself influences the reaction of economic agents.

The results of this exercise need to be treated with caution considering the shortness and the quality of the available time series. Nevertheless, some of the results turn out to be relatively robust. In particular, the estimations over the given period confirm that discretionary increases in government expenditure are mainly deficit-financed and suggest a mixed impact of expansionary budgetary policies on private economic activity. Specifically, while households are found to respond positively to expansionary government spending leading to an increase in their income, our findings point to a negative reaction on the part of the corporate sector. Overall, increasing government expenditure is found to lead to a contraction in GDP and in private expenditures (GDP excluding government expenditure). Private employment is also found to fall back.

The economic impact of expansionary budgetary policies is estimated with a structural vector-autoregression

The impact of deficit-financed government expenditure – theory and international evidence

Standard Keynesian theory suggests that a deficit-financed increase in government expenditure has a substantial expansionary impact on demand and thereby on output. However, recent empirical evidence estimating the macroeconomic effects of government spending on the basis of VAR analysis (see box) has challenged these Keynesian conclusions. These studies find the expansionary impact of deficit-financed government expenditure on output to be small in general and in small open economies even less important than in big economies. Moreover, Perotti (2005) reports that the impact of shifts in government expenditure on GDP decreased over time and that the multiplier turned negative after 1980. In addition, various studies also report a significantly negative impact of an increase in government expenditure on private investment.

Other empirical studies on the economic impact of fiscal policy changes have also reported such 'non-Keynesian' effects.² The most prominent examples are the drastic fiscal stabilisation policies of Denmark and Ireland in the 1980s which were documented to have been accompanied by a vigorous economic expansion. In addition, it has been shown that fiscal policy changes – both contractions and expansions - can have non-Keynesian effects if they are sufficiently large and persistent.

Non-Keynesian effects are related to private agents' confidence and future expectations. In particular, current high deficits should lead to future tax increases once the accumulated debt has to be serviced. Anticipating this, households' might choose to react less than proportionally to the current increase in their disposable income; also, firms may choose to invest less expecting lower profits for the future both through the expected tax hikes and through an expected increase in real wages. Vice-versa, a fiscal consolidation, if credible, may eventually lead to an economic expansion in spite of the fiscal contraction through private agents' positive future expectations and increasing confidence in the business environment.

Fiscal consolidations may be accompanied by economic expansion if credible and durable

Box: A structural VAR to measure the impact of fiscal shocks

A structural VAR model is used to study the reaction of economic variables to discretionary shifts in government expenditure and in its separate items.

We use quarterly data over the period 1997Q1 to 2005Q4 (data sources: Hungarian National Bank Quarterly Projection Model database, Commission services, Eurostat). Government expenditure is defined as the sum of real government consumption and government investment. In order to isolate changes in government expenditure from automatic changes over the business cycle, we exclude social benefits other than in kind from government spending. We thus study the impact of *discretionary changes* in government expenditure on private expenditures (defined as total GDP minus government expenditure), household consumption, private investment, private employment, the GDP deflator and external variables. In addition, the impact of changes in various spending components (government investment, government consumption and wages) is also analysed.

Recently, some authors have analysed the effects of fiscal policy shocks using structural VARs; see e.g. Fatás & Mihov (2001), Mountford & Uhlig (2002), Perotti (2005), and Galí et al. (2007). The procedure is as follows. First, the model's reduced form is estimated by standard econometric methods. Then, the structural form is retrieved on the basis of identifying assumptions. Once the structural form is recovered, it is possible to estimate the impact of structural shocks on the economic aggregates included in the model.

The present analysis applies the same technique as Fatás & Mihov (2001) and Galí et al. (2007).³ It is important to note however that the time series available for Hungary are much shorter than those used in the quoted papers and their quality may be subject to both structural and methodological changes. While these considerations leave us cautious about the interpretation of our findings, the results described in this Country Focus appear to be quite robust.



The impact of changes in government expenditure in Hungary

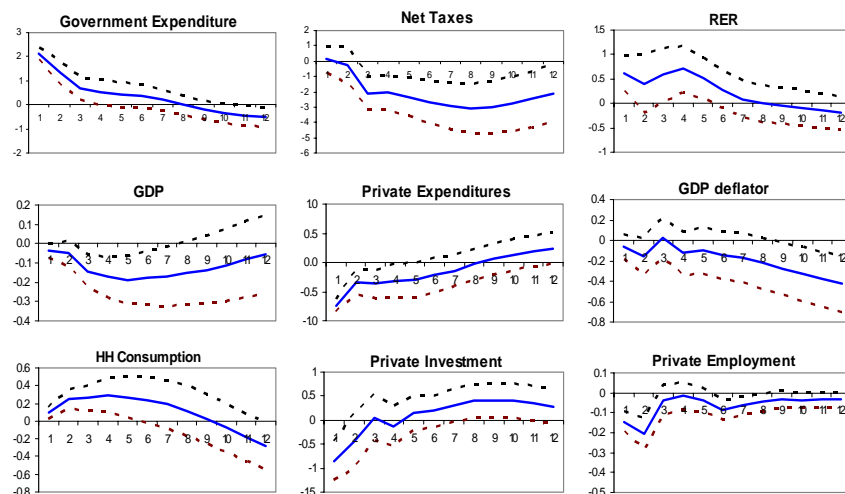
Below, we discuss the results of simulations produced with the structural VAR model estimated for the period of 1997Q1 to 2005Q4 (see Box). The simulations show the short-run reaction of economic variables to an unexpected transitory increase in a fiscal variable (in the literature referred to as a 'shock') assuming that no other disturbances occur. This experiment allows the macroeconomic impact of unexpected changes in the fiscal policy to be isolated from other factors which may have contributed to the evolution of the business cycle. The so-called 'impulse responses' capture the average impact of typical fiscal shocks estimated for our sample.

Simulation with a VAR: discerning the impact of a fiscal shock

Figure 2 displays the impulse responses to a government expenditure shock measured as percentage deviations from the baseline trajectories. The initial change is of 1 standard deviation size (about 2.2% of government expenditure).

As can be seen, the government expenditure shock is quite persistent: expenditures take several quarters to return to their initial level after the shock and usually lead to higher deficits: net taxes (total taxes net of transfers and interest payments) significantly drop in the years following the shock.

Figure 2: Shock to Government Expenditures



Source: Hungarian National Bank, Commission services, Eurostat
 Note: Impulse responses measured as percentage deviation from baseline trajectory. Solid lines: point estimates. Dashed lines: ±1 standard error bands.

The analysis suggests that expansionary government spending shocks have a mixed impact on the economy. In particular, private expenditures (GDP excluding government expenditure) and private employment are found to decrease after the

expansionary shock. Household consumption seems to increase persistently in the two years following the shock. Private investment drops markedly on impact before expanding in the second year following the shock. The trade balance does not seem to be significantly affected (not displayed).

The drop in *GDP* and in *private expenditures* after the expansionary expenditure shock is by no means an exception in cross-country comparison; see e.g. Perotti (2005) or Mountford & Uhlig (2002). The mixed reaction of *private investment* to the government expenditure shock is also in line with the related literature. It should be noted that in our estimations, the cumulative response of private investment over the 12 quarters following the shock turns out to be positive, albeit estimated with great uncertainty.

While the present analysis in itself does not give further insights into the underlying mechanisms, the small but significant reduction in *private sector employment* may plausibly be attributed to both demand and supply side effects. On one hand, a drop in private economic activity may have decreased the labour demand of private firms and on the other hand, an increase in public wages may have made public employment more appealing to workers than private employment. The rise in *households' consumption* expenditure following the expansion of government expenditure suggests that households do spend extra income on final consumption as opposed to saving more for the future. This is similar to findings for other countries.

The decrease in the *GDP deflator* after the expansionary government spending shock is somewhat puzzling but it might partially be attributed to the restrictive monetary policy stance as indicated by the slight appreciation of the real exchange rate (increase in the real exchange rate in the figure). Again, this finding is not exceptional in cross-country comparison.

Note also that the restrictive stance of monetary policy might be another factor contributing to the decrease in private expenditures in the aftermath of expansionary fiscal policy. In addition, as also discussed in Kovács & Moulin (2004), the poor coordination of fiscal and monetary policies over the period may *per se* have exacerbated the negative impact of the fiscal shock through confidence and expectational channels.

All in all, while some of these reactions, such as the drop in private expenditures, point to non-Keynesian effects of changes in government expenditure, the persistent increase in households' consumption seems to be in line with the traditional Keynesian view. The mixed reaction of private investment is not conclusive regarding the underlying mechanisms.

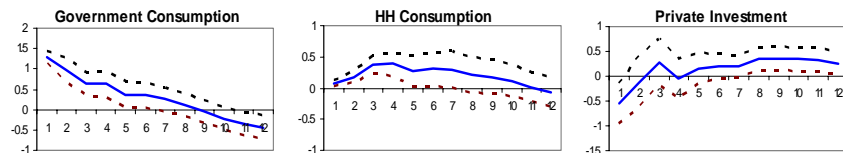
The role of a restrictive monetary policy: did it exacerbate the negative impact of the fiscal policy through expectations?



Spending items

A comparison of the economy's reaction to government consumption and government investment shocks (Figures 3 and 4, respectively) plausibly suggests a different reaction of the household and corporate sectors to budgetary expansion.

Figure 3: Shock to Government Consumption



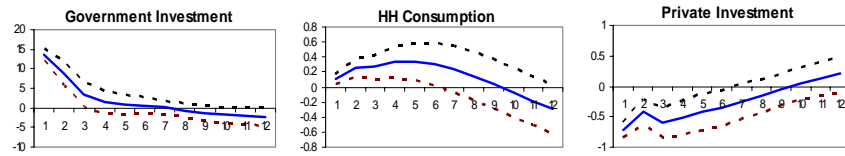
Source: Hungarian National Bank, Commission services, Eurostat
 Note: Impulse responses measured as percentage deviation from baseline trajectory. Solid lines: point estimates. Dashed lines: ± 1 standard error bands.

Different impact of government consumption and investment shocks is plausibly related to differences in household and corporate sectors' reactions

The more persistent increase in households' consumption and the smaller decline and subsequent increase in private investment after the *government consumption shock* may reflect households' positive response to the rise in their income encouraging them to increase both their consumption and their housing investment.⁴ The significant and persistent decline in private investment in the aftermath of the *government investment shock* is in turn likely to be driven by the corporate sector's negative reaction, given that this shock has a much less direct impact on households' disposable income.

The corporate sector's reaction may plausibly reflect the negative impact of government expenditure shocks on private agents' perception of the stability of the Hungarian business environment and their expectations about the future economic outlook, thereby discouraging private investment. Our estimations do not allow concluding on the role of monetary policy in driving these results.

Figure 4: Shock to Government Investment

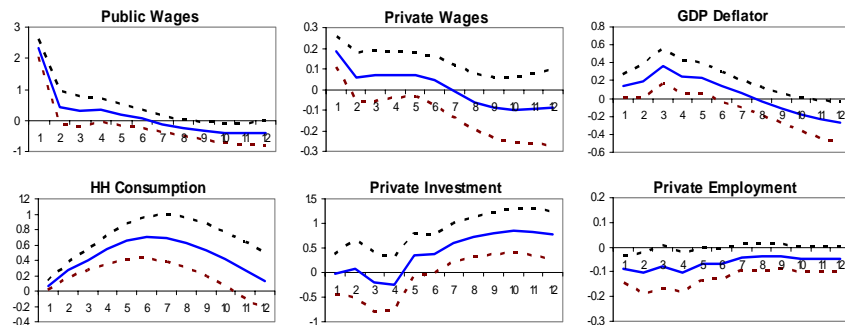


Source: Hungarian National Bank, Commission services, Eurostat
 Note: Impulse responses measured as percentage deviation from baseline trajectory. Solid lines: point estimates. Dashed lines: ± 1 standard error bands.

Public wage increases are found to be transmitted to the private economy

Finally, the impulse responses to an increase in *public wages*⁵ (Figure 5) support our previous reasoning regarding the mechanisms affecting the labour market. In particular, the increase in public wages is found to almost simultaneously be transmitted to the wages in the private sector and lead to a significant decrease in private employment in the six quarters following the shock. In addition, the impulse responses also seem to confirm the expansionary impact of increased income on households' consumption and the progressive increase in private investment most likely reflects an increase in households' housing investment once more. At the same time, the rise in private investment may also indicate a substitution between production factors in the private economy away from the more expensive labour input in favour of capital goods. Finally, it is worth mentioning that the increase in public wages is the only item which is found to have had a significant inflationary impact in spite of the (significantly) more restrictive monetary conditions following this shock.

Figure 5: Shock to Public Wages



Source: Hungarian National Bank, Commission services, Eurostat
 Note: Impulse responses measured as percentage deviation from baseline trajectory. Solid lines: point estimates. Dashed lines: ± 1 standard error bands.

Conclusion

This Country Focus studies the impact of changes in government spending in Hungary over the period of 1997 to 2005 using a structural VAR to identify discretionary fiscal shocks. The available time series are relatively short and may be subject to structural as well as methodological breaks; the results have therefore to be treated with caution. Nevertheless, the main findings turn out to be relatively robust.

The results confirm that an expansionary government spending shock typical for the period considered is largely deficit-financed and has a mixed impact on the private economy. While households are found to respond positively to expansionary government spending leading to an increase in their income, the drop in private investment and private employment plausibly reflect the discouraging impact of such policies on the corporate sector.

The marked change in Hungary's fiscal policy strategy in mid-2006 does not allow for a direct extrapolation of these findings to forecast the impact of the ongoing budgetary consolidation. Also, current policies include both expenditure and revenue

side measures while this study exclusively focused on the expenditure side. Nevertheless, our results are consistent with a possible economic expansion in the aftermath of the reduction in the government expenditure ratio recently undertaken by the Hungarian government; such an expansion would be predominantly driven by the corporate sector while households' consumption and investment might slow down. These predictions are roughly in line with the gradual recovery projected for 2008 and 2009 by the Commission services' autumn 2007 forecast following the temporary slowdown in 2007. At the same time, it should be emphasised that a potential future expansion crucially depends on the private sector's confidence in the durability of the fiscal adjustment. In this context, the planned reform of the fiscal governance should play an important role.

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¹ See also the Commission services' working document assessing Hungary's December 2006 convergence programme update, in which a first version of the findings in this Country Focus was presented.

² For a comprehensive overview see e.g. the European Commission's Public Finance Report (2003, Part IV); see also references therein.

³ Government expenditure shocks were identified by the ordering assumption that government expenditure is predetermined relative to macroeconomic variables and to tax policies. These assumptions are also supported by a somewhat different identification scheme used e.g. in Perotti (2005). For a detailed description see Fatás & Mihov (2001) and Galí et al. (2007).

⁴ Note that during the examined period, the State engaged in interest subsidies on house construction credit. However, these subsidies were not accounted as government consumption. For the impact of the interest subsidy scheme on private housing investment see e.g. Rózsavölgyi & Kovács (2005).

⁵ Labour cost index in the public sector, Eurostat.

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