

Calculating the fiscal stance at the Magyar Nemzeti Bank

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1. Introduction

The Magyar Nemzeti Bank (MNB, the central bank of Hungary) has systematically analysed the fiscal stance since the mid-1990s. In a small open economy like Hungary, changes in the fiscal balance are likely to have somewhat greater impact on GDP and the external balance than on inflation, so the MNB's fiscal analysis initially focused on medium-term sustainability and the short-term demand impact of fiscal policies. However, with the adoption of an inflation targeting regime in June 2001, the assessment of the fiscal impact on aggregate demand has become increasingly important.

This paper presents the current status of the MNB's fiscal analysis. Section 2 describes various measures of the budget deficit used in Hungary and adjustments to these measures made by the MNB in order to calculate a first-round or "headline" indicator of the fiscal impact. Section 3 describes how this indicator is decomposed, ie, how the MNB accounts for different factors that determine the change in the budget balance. Sections 4 and 5 then describe approaches to assessing the macroeconomic impact of changes in the budget balance, first in a partial and then in a general equilibrium setting.

2. Measures of the budget deficit and the fiscal impact

Fiscal impact can in general be defined as the aggregate demand impact of a given change in the budget balance. The question is, of course, which definition of the budget balance is appropriate for assessing the fiscal impact. Hungary uses three different definitions of the general government deficit, shown in Table 1; see MNB (2002):

- The deficit based on the IMF's GFS86 methodology. This was the official definition of the deficit until 2002;
- The deficit based on the European Union's ESA95 methodology, which became the official definition of the deficit in Hungary starting in 2003; and
- The deficit based on an adjusted SNA93 methodology, used by the MNB for analytical purposes; see P. Kiss and Szapáry (2000) and MNB (1995).

Table 1

Budget deficit indicators for Hungary, 1997–2001

(as a percentage of GDP)

	1997	1998	1999	2000	2001
Official deficit (GFS approach)	4.7	4.8	3.7	3.7	3.0
ESA95 deficit (preliminary calculations)	6.8	8.0	5.5	3.0	4.1
SNA deficit (MNB-adjusted)	7.0	7.9	6.2	4.1	5.3

Source: MNB

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The MNB looks primarily at the SNA deficit, making various adjustments to arrive at a first-round or “headline” indicator of the fiscal impact. The adjustments are motivated by the need for flexibility in determining the proper classification of public sector activities and the proper time of recording of transactions. In particular:

- The activities included in public and private sectors should be homogeneous regarding their economic objectives and behaviour. The government’s major concern is not maximising profits but rather responding to public policy considerations. Corporations engaged in quasi-fiscal activities or the provision of non-market services are not enforced to respond quickly to market signals and should therefore be classified as parts of the government.
- Fiscal transactions should be classified as “above” and “below” the line on the basis of their effective economic impact, ie, on the basis of the expected behaviour of the recipient. For example, government “lending” may have the same effect as transfers if the recipients of loans can assume that the government will not in practice enforce its claims.
- Cash-based accounts appear to be adequate for recording most revenue and expenditure transactions. But in the case of interest expenses, VAT refunds and concession fee receipts, it seems sensible to follow the accrual basis of accounting (see Box 1).

Box 1

Accrual-based general government accounts

Since the category of accrual-based deficit was first introduced in the MNB’s 1996 *Annual Report*, the official cash flow-based deficit has been regularly corrected for accrual-based interest rates. Since the compilation of the September 1999 issue of the *Quarterly Report on Inflation*, corrections are also applied for certain items of the primary balance.

The need for corrections partly arises because of the need to apply the accrual concept to the VAT, in response to the occasional significant discrepancy arising between the accrual-based and the cash flow-based VAT figures, where even the sign of the discrepancy shows volatility. This is because the timing of the VAT refunds may vary within legally set limits. Furthermore, about half of gross receipts will be refunded. In recent years, the discrepancy between accrual-based figures (which reflect underlying processes more closely) and cash flow VAT figures has been fluctuating between –0.1% and +0.3% of GDP, depending on whether refunding is slower or faster than usual at year-end. This phenomenon was noted in the MNB’s 1996 and 1997 annual reports.

The other problem lies in the statistical accounting of lump sum concession payments. Receipts from concessions amounted to 35.3 billion forint in 1999, with substantial further payments projected for 2000. In terms of the SNA methodology, such concession fees should be accounted for in a similar manner to leases, where the use of the accrual concept is required. Accordingly, the accrual-based rent should be separated off for the entire period of the lease (concession); in other words, the deficit should be improved each year by the sum allocated to it, regardless of the timing of actual payments. Thus, it is not correct to regard lump sum concession fees as privatisation receipts and fully deduct them from the receipts. This is because privatisation means selling off financial assets (shares) for good, whereas concession only implies the transfer of a right for a limited duration, on the expiry of which the right reverts to the state. In principle, there would not be any difficulty so long as the concession fee were paid on an annual basis in accordance with the accrual concept. However, lump sum payments made in advance or in arrears constitute credit extended either by the party granting the concession or the recipient, and credit transactions should be removed from the general government deficit.

Source: Magyar Nemzeti Bank (1999), Box IV.1.

Based on this reasoning, the MNB adjusts three main categories of revenue and expenditure items.

First, the MNB includes quasi-fiscal activities and road construction financed by the Hungarian Development Bank as part of the government. As the MNB has only partial information about these activities (gathered, for example, from government resolutions, press releases and, in certain cases, through collection of regular data), it can only deal with estimates of the size of these expenditures.

Second, revenues reported by the Hungarian Privatisation and State Holding Company are reclassified in the below-the-line category “reductions in claims” (eg, repayment of debt, disposal of shares and off-budget use of privatisation receipts). Forecasting this item is relatively straightforward as there are estimates available in the Budget Act and performance of the Privatisation and State Holding Company can be monitored in the course of the year.

Third, VAT and concession fee revenues are adjusted on an accrual basis. Some of the items subject to adjustments cannot be observed directly. Consequently, not only the forecast, but also the actual performance against the forecast is based on estimates.² Estimates of concession fee revenue (which are paid in advance as a once-and-for-all payment) are available from the official budget data.

The MNB strives to keep its adjustments as simple as possible, focusing on the most relevant corrections. If the effect of adjustment is constant (ie, it has no trend or volatility) and/or is insignificant in size, no adjustment is necessary because it would not affect the estimated *change* in the deficit. Furthermore, when calculating the fiscal impact it is not necessary to analyse separately the balances of each subsector of the general government (see Box 2). Thus, one can concentrate on the change in adjusted SNA balance at the general government level.

Box 2

Fiscal impact of subsectors of the general government

Apart from local governments, it is becoming increasingly difficult to analyse the deficits incurred by the individual subsectors of general government. Extra-budgetary funds in Hungary underwent major changes in both 1996 and 1999, with all but two of them having been integrated into the central government budget. As a result, it is no longer possible to compare the time series data on deficits of the central government and extra-budgetary funds.

In the past, the social security administration had greater autonomy and only received earmarked transfers from the budget. In spite of this apparent autonomy, deficits of autonomous social security funds were on the whole financed from the central government budget. To resolve this contradiction, major changes were introduced in the management and supervision of the funds in 1998. The autonomous administration framework was wound up and management of the funds was transferred to the government. According to the law, the deficit of the social security funds is now managed by the central budget. As the size of non-earmarked transfers changes from year to year, the exact framework in which the central government deficit is realised has become a matter of choice – namely, non-earmarked transfers reduce the social security deficit but raise the central government deficit.

Source: Magyar Nemzeti Bank (1999), Box IV.2.

MNB also strives to keep its adjustments as transparent as possible. The methodology for adjustments is published and updated when changes are made, and the time series and forecasts are also made available; see MNB (2002). The description of the demand impact shows separately information that is publicly available (eg changes in the headline deficit) and the results of analytical SNA corrections.

Regarding other revenue and expenditure items, MNB's fiscal forecasts are prepared in a very detailed manner, with the budget outcome estimated line by line. The reason is that inflation projections cover the forthcoming six to eight quarters, and policy decisions focus on price developments expected to take place within the next four to six quarters. The fiscal forecast thus requires an approved or at least a draft budget. Without a detailed budget, there is no means of assessing the plausibility of revenue or expenditure estimates. The effective horizon for the fiscal forecast is thus two to five quarters, except for the years 2001–02, when a two-year budget was approved by the Hungarian parliament.

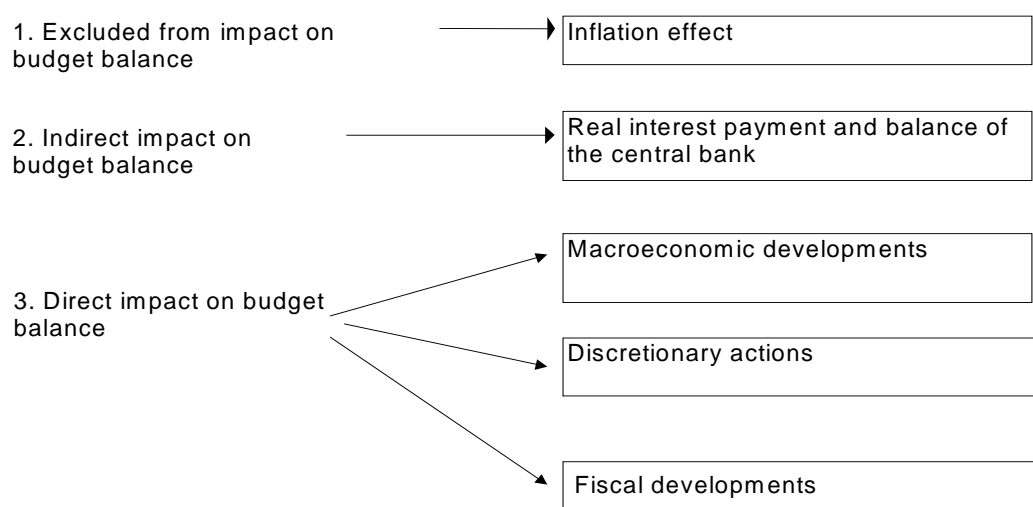
3. Factors determining the fiscal impact

The first step in assessing the impact of changes in the budget balance on aggregate demand is to consider which factors have led to a given change in the balance itself, ie, to decompose the fiscal impact by its determinants. For this purpose, the MNB distinguishes between indirect and direct determinants of the fiscal impact (Table 2). A preliminary step in this analysis is to exclude the effect of inflation on the change in the budget balance.

² To provide estimates of VAT revenue on an accrual basis, the MNB uses special software (SEATS/TRAMO) that eliminates discretionary effects in VAT refunds.

Table 2

Determinants of change in the budget balance



Since changes in interest rates and profits or losses of the central bank are generally beyond the control of fiscal policy, their impact on the budget balance is regarded as *indirect*. Estimating the indirect impact involves separating interest expenditure and including central bank profits or losses in the budget. One technical step in this analysis is to smooth the fluctuations in real interest rates.³

Direct impact on the budget balance – ie, the impact of factors over which fiscal policy has direct influence – is usually much larger. For forecasting and communication purposes, it is useful to decompose this impact in three categories; see MNB (2002):

- The first category includes the effects of *discretionary measures*, ie those fiscal policy measures that are linked to changes in the tax regime and the non-determined range of expenditure.
- The second category includes the effects of *macroeconomic developments*, such as tax receipts, employment benefits and pension expenses on account of the indexation system. The effects of macroeconomic developments on tax revenue can be calculated by deducting the discretionary components. This residual tax revenue excludes all effects of discretionary measures and includes all exogenous influences, such as effects of the business cycle and changes in inflation, oil prices and exchange rates.
- The third category, *fiscal developments*, is a general term including the effects of all factors other than those mentioned in the previous two categories. This residual item is sometimes referred to in the literature as the “policy slippage” or “over-performance”. It reflects the outcomes of the decisions taken by autonomous local authorities and budgetary units and so-called budget chapters. Such decentralised decisions may diverge from intentions of policy makers at the central level (the parliament and the central government). This category also reflects the effects on the budget of some exogenous factors, such as the number of persons eligible for family or health care allowances.

In practice it is difficult to fully separate the above categories. Discretionary measures affect macroeconomic developments, so there is always some overlap between the first two categories. The most obvious example is an increase in public sector wages. Taxes paid by the public sector and

³ The MNB uses a modified version of moving averages suggested by Blanchard (1990) for this purpose: instead of a three-year forward-looking average, the MNB uses a moving average that looks one year ahead and one year back.

public sector employees on these wages flow back automatically into general government revenue. In this case, it may be justified to account for the effect of discretionary measures on a net basis.

Knowing which factors determined a given budget outcome is important not only with regard to forecasting but also for communication. Differences between actual and budgeted revenues are often accumulated year after year as a result of problems with the macroeconomic assumptions of the budget. MNB's estimates of these differences provide an important link between private, government and central bank forecasts. They also help analysts to assess fiscal developments in the course of the year. Discrepancies between appropriations and actual spending are not so obvious during the year because many types of expenditure have no regular seasonal pattern. As a result, the effects of these discrepancies on the deficit are usually not estimated or published by the government or private analysts. Finally, MNB's estimates are useful for assessing the effects of adopted across-the-board discretionary measures.

4. Assessing the fiscal impact, partial approach

To assess the impact of change in the general government balance on GDP, the external balance and inflation, the MNB considers separately elements of fiscal policy that influence two major components of aggregate demand: household consumption and government fixed investment.⁴

In particular, the MNB looks at how household consumption is affected by: (1) changes in transfers to households (mainly the increase in pensions and, to a lesser extent, changes in social and unemployment benefits); (2) changes in the public sector wage bill; and (3) changes in the tax rules (tax rates, tax brackets and allowances) that affect household disposable income. Regarding the impact of fiscal policy on public investment, the MNB augments public investment with investment decided by the government but financed off the budget. This approach is consistent with SNA methodology.

Only some elements of fiscal policy that influence household consumption can be measured on a monthly or quarterly basis (eg tax receipts). Many expenditure items do not exhibit regular time patterns within the year. This stems from the fact that the objectives and appropriations in the Budget Act are set for an entire year and no within-year scheduling is provided in the majority of cases. Therefore, the overall fiscal impact is always interpreted on an annual basis.

5. Assessing the fiscal impact, general equilibrium approach

Simulations using a computable general equilibrium model (NIGEM) complement the assessment of the fiscal impact on household consumption and government fixed investment.⁵ For the purpose of simulations, government expenditure is divided in four major categories: government consumption, government investment, household transfers and interest payments. Government consumption and investment are treated as exogenous policy variables, while transfers depend on nominal income and the unemployment rate. As far as the revenue side is concerned, there are three different tax accounts in the model: corporate and personal income taxes, which move with nominal GDP; and miscellaneous (mainly consumption taxes), which move with nominal consumption. More precisely, the personal income tax moves with nominal GDP if the budget balance is at its targeted path. But if the budget balance deviates from its target, the model assumes that the personal income tax is gradually adjusted to cover the difference. Interest payments by the government depend on the existing debt and long-term interest rates, assuming an average maturity of six years.

Simulations using the NIGEM provide useful information on the dynamics of macroeconomic adjustments and the effects of fiscal policy over time. Fiscal policy usually affects macroeconomic

⁴ For this exercise the MNB uses statistics released by the Central Statistical Office (CSO) on a monthly or quarterly basis. CSO statistics differ from government cash flow statistics on public sector wages and government investment because of the different time of recording and different definitions used.

⁵ NIGEM is a multi-country empirical model with a medium-sized government sector, originally developed in the United Kingdom and recently extended to Hungary (see Jakab and Kovács, 2002).

performance and the external balance in the short run. In addition, other macroeconomic variables, such as inflation, interest rates and exchange rates can be affected. The model estimates the time-varying response patterns of all these variables. The simulations can simultaneously capture not only the direct impact of fiscal policy on aggregate demand, but also the structural effects on private behaviour, expectations and private decision-making.

For instance, in assessing the fiscal impact for 2001, the MNB assumed that fiscal expansion would be implemented through investment activity, spending on goods and services and a reduction in consumption taxes. The NIGEM simulations showed that nearly half of this expansion passed through to GDP within a year, and that it led to an increase in the current account deficit. For 2002, the MNB assumed that fiscal expansion would be implemented through an increase in public wages and transfers to households. The NIGEM simulations showed that this kind of fiscal expansion affected GDP in an even shorter time, and had a relatively longer and stronger impact on external deficits; see MNB (2001).

Comparing preliminary data on budget outturns for 2001 and 2002 with the results of MNB simulations indicates that the actual effects on aggregate demand were smaller than indicated by the model. This is partly the result of deviations in fiscal policy from the model assumptions. For instance, capital expenditure failed to pick up speed at the expected rate in 2001, while it increased in 2002 at a rate much higher than assumed. By contrast, a portion of the increase in wages and household transfers assumed for 2002 was brought forward to 2001. As a result, the impact of fiscal expansion on GDP was much larger in 2002 than had been projected by the model in November 2001. The larger fiscal expansion led to higher public wages and thus an additional increase (rather than a moderation) in spending on goods and services. The updated simulations substantiated earlier calculations that fiscal expansion impairs the external balance but has a relatively moderate effect on inflation. However, due to the size of overall expansion in aggregate demand in 2001–03, inflation in 2003–04 could accelerate by more than 1 percentage point compared with previous projections; see MNB (2003).

6. Conclusion

This paper has outlined the current state of fiscal analysis at the MNB from the perspective of monetary policy. Many further analytical challenges lie ahead. A new general equilibrium model based on quarterly data is being developed to improve forecasting. This model should help to separate better the macroeconomic effects from the effects of discretionary measures. Greater transparency and better communication of the results of MNB analysis are also required. For example, MNB should explain why it employs the corrected SNA indicator instead of the official ESA95 indicator of the budget balance. Analysis of other aspects of fiscal policy, such as sustainability, should also receive more emphasis in the years ahead.

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