Balázs Párkányi: Myths and Maths: Macroeconomic Effects of Fiscal Adjustments in Hungary

In the short term, the primary effects of a fiscal adjustment most frequently cause a downturn in economic output, although it may also produce stimulating, secondary effects, as well. In relation to this, with the help of an estimated model based on Hungarian data, we analysed how the macroeconomic effects of a fiscal adjustment depend on the type of measures and examined the Hungarian relevance of other effects not definable within the model. We established that in the short term the stimulating effects are not likely to fully compensate for the losses, yet their relevance may increase in the medium and long term. In most cases – depending on the structure of adjustment – the central bank has the option of loosening, but in certain cases, fiscal and monetary policies may be in conflict with each other, due to evolving inflationary pressure.

INTRODUCTION

In our study[1] we analysed fiscal policy, including the possible consequences of a fiscal adjustment. Beyond its significance from an economic policy point of view, the current relevance of the topic is prompted by the popular empirical research work conducted in recent years which has analysed the existence and preconditions of the stimulating economic effects of fiscal adjustment. The possibility of expansionary fiscal consolidation first arose in relation to the Irish (1987-1990) and Danish (1983-1986) cases, followed by numerous other case studies, such as analyses conducted among member states joining the euro zone.

Subsequently, many authors noted that, as indicated by the Irish and Danish cases, fiscal policy successfully coped with losses attributed to adjustment not on its own, but with the support of other exogenous factors or monetary policy. The debate has been going on ever since. Some argue that fiscal consolidation may be implemented without a growth sacrifice through so-called *non-Keynesian* effects, while supporters of the traditional theory claim that the above mentioned channels may moderate the losses of adjustment, but on the whole these are unable to compensate for losses.

The difference between the explanations is also attributed to the fact that the role of non-standard, stimulating effects in successful consolidation is difficult to prove on an empirical basis. This is firstly related to theoretical and econometric reasons, and secondly to statistical (measurement) problems.[2] This difficulty not only arises in the analysis of past adjustments, but also in relation to the analysis of the possible effects of consolidation in the current situation.

Due to the above difficulties, most studies dealing with *non-Keynesian* effects are limited to "the answer is in the question" type analyses, that is, the applied statistical data and the model framework significantly limit the range of concluded answers. For this reason, we used two approaches for analysing the Hungarian economy.

Firstly, with the help of simulations prepared with the bank's projection model[3], we determined the output and inflationary sacrifice of government consolidation based on various methods. Secondly, we stylised some features of the economy to determine the degree in which secondary channels, not contained in the traditional model framework, are capable of fully compensating for output losses appearing in the simulations.

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[1] Horváth Á., P. Kiss G., Jakab M. Z. and Párkányi B.: Myths and Maths: Macroeconomic Effects of Fiscal Adjustments in Hungary, *MNB Occasional Papers* 2006/52 (only in English).

[2] Among theoretical reasons, we could argue that certain behaviour of economic actors is difficult to formalise in a theory. The foresight of people is one such example. The non-Keynesian effects are often bound to the expectations of actors, the incorporation of which in the models is certainly imperfect. On the other hand, the positive effects of adjustment are often characterised by the increasing rate of economic growth, which could be misleading, since growth almost always increases (due to the low base) following an immediate and significant fall in production, even though output has not reached earlier levels. In econometric terms, the distinction of many simultaneous effects and thus the quantification of non-standard effects is what poses the difficulty. We discuss later on problems arising from the statistics used.

[3] The Quarterly Projection Model (NEM) is the forecasting model of the bank estimated on Hungarian data, characterised by sticky prices in the short term and a rigid supply curve in the long term, hence containing both neo-Keynesian and neo-classical features. Benk et al. (2006) provide a detailed description of the NEM model.

THEORETICAL BACKGROUND

In consideration of the fact that in the background to the debate over the existence or relevance of so-called *non-Keynesian* effects, two prominent theories (building on different assumptions and different conclusions) clash, we believe it is important to understand the terms and the historical-theoretical background.

It is necessary to define the term fiscal effect or fiscal multiplier. The fiscal multiplier shows the change in the gross domestic product (GDP) caused by changing a fiscal variable by one unit. If two variables move in the same direction (i.e. loosening is followed by an upturn), the multiplier is said to be positive. Effects whose short-term multiplier is negative are termed *non-Keynesian* effects.

Let us now turn to the role of government in the economy and to the implied instruments at its disposal. Firstly, the government appears on the demand side of the commodity market, as government consumption and investment are directly reflected in the usage of the GDP. Secondly, it creates goods and services which it sells at a regulated price or provides to the citizens as contribution in kind. It is also present on the labour market by hiring government employees; and naturally, it also collects taxes and provides transfers.

At this point, we should note that in the absence of markets (and market prices), the contribution of the government to the production of the GDP cannot be measured; therefore, the statistics consider incurred costs as a basis.

It is also obvious that instruments vary in the way they produce effects; thus it is useful to separately examine partial effects realised through certain channels and the full effect, arising as the result of these. The calculation of the full effect is not possible, however, because in many instances this would assume that the model contains channels which are defined with conflicting theories. Before we discuss certain mechanisms in detail, let us summarise how certain theoretical trends approach fiscal policy.

The Keynesian model places emphasis on the role of government in aggregate demand and assigns significance to the secondary effect (so-called multiplier effect) arising through income. The new representatives of the theory modify the picture to the extent that they allow the slow adaptation of prices and wages (so-called sticky nominal variables); thus, the fiscal effect remains positive, but is less than one.

According to the classical school – which prefers to analyse the role of government in the production of GDP – the government sector is not efficient; it produces services with excessive costs and losses. Moreover, the facts (statistics) do not provide any help in resolving this dilemma because, as noted above, in the absence of adequate markets, most of the government's activities can only be measured indirectly, on the basis of costs or the price of similar services on the market. Furthermore, the transfers provided and the collected taxes produce only indirect effects, which are thereby even more uncertain.

Given the two different approaches, the consequences of cuts in government spending are also assessed differently. While the Keynesian theory argues that this causes a major downturn, in classical thought, this could improve efficiency or even increase output.

As a result of the technical (statistical) effect, however, a fiscal adjustment is directly reflected in government output and thus in GDP, even if the measure targeted the avoidance of losses and the improvement of efficiency. For the above reason, too, it is difficult to categorise fiscal effects, since the measurement error can even affect the sign of the multiplier.

Thus, it is not surprising that channels found in the research of *non-Keynesian* effects fit the classical approach. Advocates of *non-Keynesian* effects believe that these channels are strong enough to render the full effect negative; that is, directly following the fiscal package fiscal adjustment is followed by an upturn, while loosening is followed by a downturn.

Notwithstanding the fact that there is still no theory confirmed by data and with a consensus view of fiscal measures, the most widely accepted view argues that, in the short term, the economy functions in accordance with the Keynesian theory due to the slow adaptation of the nominal variables. In the long term, however, the markets are capable of adjusting perfectly, underlining the conclusions of the classical school.

Overall, while Keynesian theories argue that the government operates with market efficiency[4], thereby directly contributing to the performance of the economy, the classical approach claims that the government is less efficient, hence the larger the government, the smaller the output of the economy; in an extreme case, the government only produces losses, only negatively contributing to produc-

[4] Naturally, there are public goods produced by the government because the market could not produce them with a profit. There is no point in discussing inefficiency in relation to these.

tion. Most probably, the truth lies between the two extreme views. The problem is aggravated by the fact that cost-based statistics tend to strengthen the Keynesian approach. Therefore, theories representing other approaches are difficult to support with the given statistics.

With regard to the size of the effect of fiscal measures, it is important to note that in an environment of expanding international trade, the effectiveness of fiscal policy has been clearly reduced. Thus, in the past decades, only smaller fiscal effects were found relative to the greater-than-one multiplier, suggested by the Keynesian theory for a closed economy. The openness of an economy, therefore, reduces the effectiveness of fiscal policy, partly as a result of the import content of government consumption and investment, and partly by weakening (through imports) the secondary effect arising through household consumption. On the above grounds, without considering the openness of the economy, substantive conclusions may not be drawn as to the size of the full effect in relation to *non-Keynesian* channels.

CERTAIN ECONOMIC CHARACTERISTICS OF HUNGARY

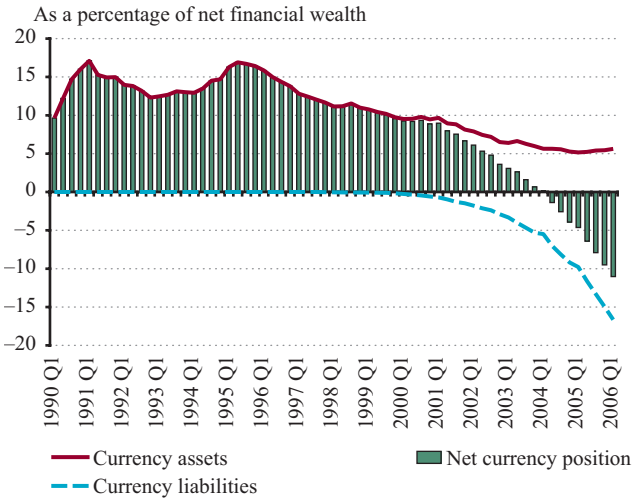
The majority of *non-Keynesian* effects cannot be defined and expressed in numbers within the framework of the traditional model. For this reason, we will provide a qualitative analysis on the domestic relevance of these channels in the next chapter, in parallel with standard effects. In this chapter, we will review the characteristics of the Hungarian economy which are relevant in relation to the above.

Trends of the past decade have, on the one hand, been characterised by a major influx of foreign capital and the deepening of the financial sector, and, in parallel, the expansion of consumer credits. On the other hand, we can also observe an increase in external and internal imbalances (balance of payments and government deficit). Accordingly, the assessment of the economy as a whole is not free from contradiction.

With the credit boom and the government housing subsidies, the proportion of private consumption to income increased to a high level on an international scale, while the rate of household savings fell dramatically at the same time.[5] This trend is increasingly observable in the foreign exchange denominated financial position, where households have become net borrowers from net savers.

Chart 1

Foreign exchange position of households



Although outstanding loans in other countries of the region also increased, Hungary is definitely ranked high when considering the rate of growth, albeit the outstanding loans lag considerably behind the figures of developed countries. For this reason, as well as intensifying competition in the financial sector, issuing of new credit is likely to further increase, but slowdown is also possible due to high instalment to income ratios.

The assessment of the above trend is also determined by the fact that a large share of households project expected income in the future only on the basis of past income. This is also reflected by the fact that the inflationary expectations of households were slow in conforming to the gradually decreasing rate of inflation witnessed in recent years, and that wage inflation followed falling inflation only with delay. In general terms, Hungarian wages are slower than prices in reacting to changes in the inflationary environment.

Up to now, the Hungarian labour market has been characterised by a rigid labour supply. This is attributed in the literature to mainly two factors. Firstly, existing qualifications have lost value with the transition to a market economy, and consequently a large proportion of the work force was forced off the labour market. Secondly, in correlation with the above development, education was incapable of adequately adapting to changing labour demand; thus the market could not immediately absorb new entrants on the labour market. In the recent period, however, the conflict between demand and supply is likely to have eased to a significant degree, owing to low employment and growing

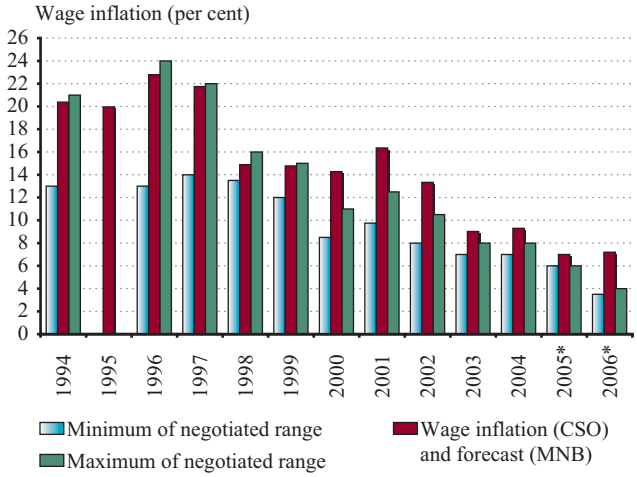
[5] This trend seems to be turning around in recent months, even though this does not essentially change the proportion of consumption and savings to income.

unemployment, but for the time being it is not possible to provide an accurate picture of the above trend.

Poor interest reconciliation also characterises the Hungarian labour market, as in recent years actual wage inflation did not reflect the results of wage agreements (Chart 2). International experience suggests, however, that in the event of a crisis or major fiscal tightening, possible welfare losses can be significantly reduced if the employers and employees manage to reach an agreement and do not leave it to the market to establish the new equilibrium.

Chart 2

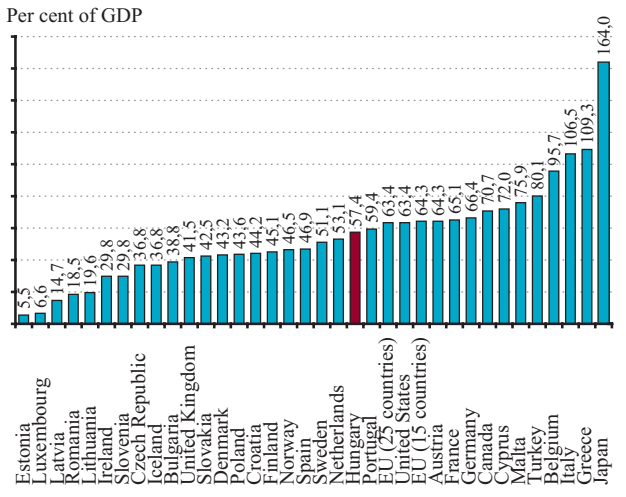
Wage increases determined in wage agreements and actual wage inflation



In addition to a vulnerable labour market, the size of the budget deficit and government debt adds to the uncertainty. Although the debt figure is not exceptionally high in the most recent international comparison, it is among the highest among the emerging economies. Similarly to households, in order to satisfy its growing financing needs, the general government has been increasingly relying on foreign exchange loans.

Chart 3

General government consolidated gross debt in 2004



Source: Eurostat.

As a result of the above developments, Hungary is characterised by a medium-high average risk premium which, of course, may change according to the risk appetite prevailing on the international money markets, thereby modifying the cost of financing the primary deficit, as well as the size and conditions of an occurring fiscal adjustment.

FISCAL MECHANISMS

As noted above, by virtue of its role in the economy, the government holds numerous instruments capable of affecting the condition of the economy. We discuss below how the economic effects of consolidation depend on the structure of consolidation. In the process, we will make use of the outlined characterisation of the Hungarian economy in the previous chapter to focus on the Hungarian relevance of *non-Keynesian* channels arising in relation to the given type of measure.

On the basis of our analyses, we may conclude that, although crucial differences may arise between fiscal effects, depending on the specific measure used for adjustment, no *non-Keynesian* effects are expected within one year following consolidation. In the middle and long term, however, upon changes in the expectations of economic actors and the credibility of fiscal policy, channels may significantly strengthen which promote renewed economic growth.

Non-Keynesian effects, in addition to significantly affecting the success of consolidation, may also reverse the appropriate reaction of the central bank if these appear within 2-3 years, the horizon relevant to monetary policy. In this case, it is possible that an adjustment also triggers unexpected inflationary pressure by promoting production, although given a Keynesian effect the GDP would probably fall, accompanied by disinflation.

We used the simulations, performed with the Quarterly Projection Model of the MNB, to illustrate the effects of adjustment implemented with various fiscal instruments. In addition to reliably presenting the effects of possible fiscal consolidation within standard economic concepts, this model is in disregard of numerous channels and theories due to unavoidable abstraction and simplification in the process of constructing the model. For this reason, with our second method, we also took those effects which cannot be

incorporated into our models, and attempted to rank these according to their relevance to the Hungarian economy.

The most direct channel through which adjustment may be implemented is government consumption and investment, since these comprise part of aggregate demand and are thereby part of the gross domestic product. Through a direct relationship – it is no coincidence that these two instruments incorporate fiscal policy in the Keynesian sense – these produce an immediate and major impact on GDP, although in the case of investment this effect may be somewhat smaller due to its higher import content. In the short term, however, their effect on prices is moderate and disinflationary due to the stickiness of the nominal variables, in accordance with the neo-Keynesian theory. Due to wage reactions being slower than price adjustments, the secondary (income) effect of initially rising real wages weakens the effect of these shocks on the real economy.

The model simulation is the most reliable in characterising the effects acting through the commodity market, due to its strong Keynesian nature; nevertheless, there may be other effects arising from the improving creditworthiness of fiscal policy, which may push the full effect into a *non-Keynesian* direction. With regard to the frequently expressed view that the curbing of government consumption is the most appropriate instrument for setting the government budget back on a sustainable path, an adjustment made through the commodity market channel would very likely lead to an improvement in the credibility of fiscal policy and the strengthening of the domestic currency. Given, however, the large (and growing) foreign exchange debt of Hungarian households, this would positively affect assets, accompanied by the unexpected fall in inflation due to decreasing import prices which, in turn, would induce growing consumption. Since the deepening of the financial sector and the expansion of consumer lending is still an ongoing process in Hungary, the *non-Keynesian* channel may arise even in the short term, although the effect of the initially strong Keynesian adjustment would probably suppress this effect.

The next analysed fiscal mechanism originates from the redistribution role of the government. Consolidation may be implemented by redistribution between the income of current and future generations, that is, when the budget deficit is reduced with a tax increase. We presumed an increase in personal income tax to simulate an adjustment through the income channel. Similarly to the two previous channels, we found a relatively strong reaction in the real economy, but this arose as prolonged, due to the consumption smoothing behaviour of households.[6] This adjustment also reduced inflation.

Most models, and hence simulations, lack an element which would be capable of addressing the expectations of economic actors. However, one of the most frequently mentioned *non-Keynesian* channels acts through the expectations of forward-looking agents. According to the theory, consolidation projects a healthier budget, and this would necessitate lower tax revenue in the future. This, however, would mean a higher disposable income, some of which households would spend already in the present. Thus, according to the *non-Keynesian* theory, adjustment is followed by increasing consumption. The relevance of this plus effect with regard to Hungary is that it is not significant due to economic actors being predominantly backward-looking.

In addition to the fact that fiscal measures affecting income naturally also bear an adverse effect on labour supply, the government may affect the performance of the economy by regulating labour costs and with direct presence on the labour market. To illustrate this we prepared two additional simulations, in one of which the position of the budget is resolved through laying off government employees, while in the other through increasing the social security contribution. Naturally, the former – due to the rise in unemployment – also directly modifies household incomes, thereby producing a relatively fast impact on the commodity market, as well, while the latter primarily affects the equilibrium of the labour market. The development of inflation also varies in reaction to the two measures, for layoffs reduce prices through a fall in consumption. In contrast, the increase of labour costs propagates further through the production chain and exerts inflationary pressure in the long term as well.

These measures may in part or fully be offset by other effects. The propagation of the rise in labour costs and the commencement of a price-wage spiral can be prevented with a wage agreement concluded by social consensus. Most studies which managed to reveal non-Keynesian effects define such social consensus as the most important factor in offsetting the output costs of the adjustment. As noted in the previous chapter, the interest enforcement ability of the relevant organisations is insufficient to substantively affect wage processes. Thus, this non-

[6] According to theories on consumption, with the exception of low income levels, upon an unexpected and uncertain income surplus, the consumer does not consume the whole surplus, but only gradually raises actual consumption and sets aside (saves) the remaining part as he/she may not receive such extra income in the future.

Table 1

Possible non-Keynesian effects of a fiscal consolidation in Hungary

Model assumptions	Fiscal prerequisites/relevance for Hungary	Increase the probability of non-Keynesian effects
Exchange rate and credibility	Possible strengthening, but rate uncertain	Potentially, through consumption
Decreasing interest premium and credibility	Medium-high government debt, relatively , high interest premium	Slightly, through fiscal interest payments
Social consensus, effective wage agreements	Poor interest reconciliation	Not likely
Widespread consumer lending, forward-looking households, decreasing future taxes	Less forward-looking households, but expanding lending	Slightly
Favourable profit prospects	Few forward-looking companies	Potentially, through foreign investments

Keynesian channel, extremely strong in other countries (e.g. Ireland), would presumably not be able to actually moderate the effects of adjustment.

In addition to social consensus, structural reforms on the supply side arise frequently in *non-Keynesian* literature, as the token of successful consolidation. These reforms are meant to enhance the flexibility of the labour market, which would, for example, assist laid off public administration workers in quickly finding jobs in the private sector, thereby significantly moderating the negative effects of adjustment. The reshaping of the education and labour market regulations would most likely improve the otherwise inflexible domestic labour supply, thereby significantly reducing the burden of the consolidation implemented through reduction in government staff. Nevertheless, such a reform probably would not produce a beneficial impact in the short term; therefore, we attribute relevance to this non-Keynesian channel only in the longer term.

Finally, by setting the price for government services and distorting market prices, the government is also capable of indirectly affecting the performance of the economy. We simulated fiscal adjustments through prices with an increase of regulated prices and value added tax. Of course, in relation to these measures the price-increasing effect was decisive – only a secondary and more moderate effect was typical for output.

The vast majority of *non-Keynesian* effects produce an impact through the credibility of economic policy and the expectations of economic actors (Table 1). Among these, we have mentioned the appreciation of the domestic currency in reaction to an adjustment, and future tax cuts. Additional, non-standard effects, relevant with regard to the Hungarian economy, may originate from risk premium decreasing in reaction to the improved assessment of fiscal policy and the possible increase in the influx of foreign capital resulting from improving profit prospects.

The fall in the interest premium may exercise a positive effect through several channels. Firstly, it reduces the debt service; secondly, lower interest rates stimulate investment and also positively affect consumption due to higher discounted asset values. Considering the current size of the risk premium and its beneficial effect in several directions, this is the channel through which *non-Keynesian* effects can show up even in the short term.

Although the identification of various effects is not easy, experience related to the 1995-1996 adjustment suggests that, in addition to effects bound to the risk premium in Hungary, the stimulating effect of the foreign direct investment could also be considerable.

With regard to monetary policy, it is important to note that it greatly depends on the structure of fiscal consolidation. As discussed above, simulations, which basically ignore *non-Keynesian* effects, imply that in all cases the adjustment leads to falling production, and in most cases a fall in inflation. However, in cases where the measures directly increased labour costs (social security contribution) or prices (regulated prices),[7] output and inflation moved in opposite directions.

The above description of fiscal instruments and mechanisms clearly implies that a correct monetary policy reaction can not be derived solely from the fact of adjustment. The structure of consolidation, that is the instruments to be used and the strength of the secondary channels, must be considered when taking the appropriate steps.

In view of the simulations, in the most common cases, when both the real economy and inflation are slowing

[7] The increase of value added tax prompts a rise in inflation only temporarily, and in the system of inflation targeting it does not lead to monetary policy measures.

down, a monetary loosening may reduce losses threatening to meet the inflation target. However, in cases where the adjustment produces an inflationary effect, the central bank must take into account that a more stringent monetary policy, required for curbing inflation, will result in a further GDP sacrifice.

As noted above, in the *non-Keynesian* case, when the fiscal multiplier is already negative in the short term, the fiscal adjustment would most probably be accompanied by monetary tightening. Since, however, monetary policy can only affect the economy in the medium term (due to inflexible monetary variables), it should only react to fiscal measures relevant over such a time horizon, that is those affecting potential output.

CONCLUSION

In our study, we analysed the possible instruments of fiscal adjustment and their effect on the real economy and inflation. The issue is of relevance in part because many case studies argue that consolidation may have a non-Keynesian effect, contrary to the traditional theory. Moreover, due to the effect exercised on prices, it is essentially important to understand the mechanisms of the various fiscal instruments for devising an appropriate monetary policy.

We based our conclusions on simulations consistent with standard theories, supplementing these with a stylising analysis of the Hungarian economy, which helped us in understanding the importance of secondary channels.

As described above, the success of consolidation and its macroeconomic effects depend on the fiscal instrument, thus the fact of adjustment, or its size, is insufficient for deducing the appropriate monetary policy.

On the whole, the dominance of *non-Keynesian* effects, which are most often related to fiscal credibility and the expectations of the private sector, is not likely in the short term, but the medium and long-term role of these secondary effects may be considerable.

In summary, we discussed three significantly different courses of fiscal adjustment. The first of these is consolidation through the commodity market. In this case, the majority of measures directly affect the expenditure side of the budget and the disposable income of households. The fiscal effect is large and direct on GDP and relatively small on nominal variables.

Such an adjustment would very likely contribute to the strong improvement of the credibility of fiscal policy which, in turn, would lead to appreciation of the domestic currency and a decrease in risk premium. The former increases consumption, due to the foreign exchange position of households and falling imported inflation, while the latter increases the influx of foreign capital and investments through favourable profit prospects and falling interest rates.

According to the second scenario, consolidation is primarily performed through labour market channels. The immediate effect of fiscal policy, arising indirectly through the labour market, is smaller than in the previous case, but the losses may be significant in the longer term.

If these measures are accompanied by structural reform and wage agreements based on social consensus, the prospects are much better for quickly eliminating the losses. However, the implementation of structural reforms linked to the labour market requires time, therefore a negative fiscal multiplier will not arise in the short term.

Finally, the third category could be consolidation performed through prices. In this case, the effect on the real economy is negligible compared to the pressure on inflation.

In this third case, the primary objective of the central bank could be endangered, leading to stringency measures, in contrast to the most common case in which a more loose monetary policy can also moderate the losses of the adjustment.

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