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**Budget Deficit and Inflation in Transition
Economies¹**

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I. INTRODUCTION

Whatever the health of public finances just before the start of transition reforms, post-socialist economies tend to develop a fiscal problem, in some cases a fiscal crisis, in the course of transition. The causes of this tendency are reasonably well understood, and I shall discuss them only briefly. Less clear but vital for policy makers are the implications of a budget deficit for the inflation rate, given the ways of financing the deficit, the recession conditions, the servicing requirements of the accumulating public debt and the credit requirements of the economy. Knowing these implications, it is then very important to decide on deficit reducing policy responses to the budget deficit which would be sufficiently effective to keep the inflation rate on a downward path and which would minimize the social concerns of the population over tax increases and expenditure cuts.

The primary aims of this paper are (i) to propose a simple macroeconomic model for the purpose of computing inflationary implications of budget deficits, (ii) to report simulation results of the model in terms of the inflation-budget deficit relationship under assumptions pertaining to transition economies, and (iii) to discuss specific policy measures intended to reduce the budget deficit. To make the simulation results instructive, the specific initial conditions chosen are those of the Polish economy, end of September 1992. The model and its simulations may be used, were used in Poland in 1992 for the purpose of constructing the 1993 budget, to discover the ratio of the budget deficit to GDP that is consistent with an inflation path that is acceptable to the policy maker. Alternatively the model may be used to compute the inflation path which, given the assumptions, inevitably results from a given path of the deficit/GDP ratio.

In the first year of reform, the budget deficit was in Poland low, but the inflation rate was high, much of it due to corrective price increases. In the second and third years of reform, 1991 and 1992, the deficit/GDP ratio tended to increase sharply while the inflation rate tended to decline. This led some economists to suggest that the relationship between the inflation rate and the deficit rate is negative. However, this apparently paradoxical phenomenon was easy to explain by noting that the observed inflation rate was the joint outcome of the cost-push and demand-pull factors, and that the initially dominating cost-push contribution to inflation was declining rapidly. The concern was, however, that there may come a point when the deficit is large enough to arrest and then to reverse the downward trend of inflation. Of immediate interest to Polish policy makers in 1992 was to know that point for 1993.

II. THE CAUSES OF THE FISCAL PROBLEM

In Poland, fiscal developments in aggregate terms have been and are expected to be as shown in Table 1.

Indicator	Pre-reform				Transition			
	1987	1988	1989	1990	1991	1992 ¹	1993 ²	1993 ³
State Budget:								
Revenues	34.2	35.5	30.8	33.3	25.8	27.1	25.0	27.5
Expenditures ⁴	37.7	37.0	36.9	32.7	31.7	34.3	35.0	32.7
Balance ⁴	- 3.5	- 1.4	- 6.1	0.7	- 5.9	-7.2	-10.0	- 5.2
General Government:								
Revenues	47.0	48.0	42.4	47.9	41.6	41.3	41.0	42.6
Expenditures	47.8	48.0	48.8	44.8	47.2	48.2	51.0	47.2
Balance ⁴	- 0.8	0.0	- 7.4	3.1	- 5.6 ⁵	- 6.9	10.0	- 4.8

Notes:

1. Preliminary
2. Expected outcome in the absence of corrective measures, the author's estimates.
3. Expected outcome following the approval of corrective measures by Parliament.
4. On a commitment basis, except external interest which is on a cash basis.

Definitions: State budget is the budget of the central government. General government includes central government, local authorities and extra-budgetary funds.

Sources: IMF (September 3, 1993) for 1988-1993, and Polish Finance Ministry. The primary data are all provided by the Policy authorities.

Inspection of Table 1 shows that the share of general government expenditure in GDP has been reasonably stable. The primary cause of the newly-emerging fiscal gap has been on the revenue side. The central government was even able to reduce its expenditures by some 5 percent of GDP in 1991-92, compared to the levels in the years 1987-90. State revenues,

however, fell by about 10 percent of GDP in 1991 and have remained low. This fall can be traced mainly to the collapse of enterprise profits, but also in part to a fall in turnover taxes as industrial output fell much more than the GDP. This suggests that the primary remedy for the budget deficit problem must be found also on the revenue side, probably through an increase of indirect taxes.

However, the expenditure side is also interesting to look at because of large shifts in its composition. Perhaps the most reform-related expenditure items are subsidies. Their pre-reform composition — about two-thirds of the total going to the household sector and about one-third to the enterprise sector — has remained virtually unchanged. But their total sum has fallen dramatically, from about 16 percent of GDP in 1987-8 to 12.9 percent in 1989, 8.2 percent in 1990 and 4.8 percent in 1991. On the other hand, the budgetary transfer to pension funds and the Labor Fund increased from 4 percent of GDP in 1987 to about 8 percent in 1990-1. The cost of unemployment benefits is still a relatively minor burden, about 1 percent of GDP in 1991-2.

The main problem on the expenditure side has been the meteoric rise of expenditure on pensions and other social insurance items. This occasioned the need to transfer resources from the state budget to the main three extra budgetary Funds: FUS (mainly workers' pensions), KRUS (mainly farmers' pensions) and the Labor Fund (mainly unemployment benefits). Total expenditures of the three Funds increased from 11 percent of GDP in 1987 to 18 percent in 1991, and 21.6 percent in 1992. Pensions alone accounted for 6.6 percent of GDP in 1987, but 11.1 percent in 1991 and 13.5 percent in 1992. As subsidies to the household sector were reduced, the authorities apparently felt compelled to increase the ratio of the average pension to the average wage rate from about half before the reform to about two-thirds in 1992.

TABLE 2: TRANSFER TO SOCIAL INSURANCE FUNDS IN POLAND, 1988-92

	1988	1989	1990	1991	1992
To FUS:					
% of State Budget	2.0	4.2	4.5	10.5	15.8
% of FUS's Expenditures	8.0	12.5	16.3	19.2	26.2
To KRUS:					
% of State Budget	1.9	3.5	3.8	6.5	7.9
% of KRUS's Expenditures	75.0	99.7	96.8	87.3	94.2

Source: Polish Ministry of Finance.

A fortunate aspect of the Polish fiscal position so far has been the light burden, about 1 percent of GDP, of servicing the external debt. The agreement with the Paris Club of April 1991 on about \$30 billion of sovereign debt gave Poland 3 years during which 80 percent of interest payments due would be forgiven. Poland also continues not to service the bulk of the \$13 billion of commercial debt. It may therefore be expected that in 1994 and thereafter the burden of servicing the external debt will greatly increase, possibly to about 3 percent of GDP. This will still be lower than the Hungarian burden now which, at some 5 percent of GDP, is a major cause of the weak fiscal position in that country.

About 90-100 percent of the deficit, in Poland as well as in most other transition economies, is financed by the banking sector, and about one-third to two-thirds of this is financed by the central bank. The difficulties in reducing the budget deficit are related to recession and to insufficient political cooperation between the government and the parliament, the latter reflecting in part the rising national concern over social costs of the transition.

The situation has also arisen because of inadequate understanding of the reasons for a large budget improvement at the beginning of the reform, in the fourth quarter of 1989 and the first quarter of 1990. During that period of very high inflation, the nominal (zloty) value of

inventories of materials, semi-finished and finished goods, increased rapidly. In line with the Polish accounting system, the consequent capital gains were counted as profits. However, insofar as they did not reflect any change in the volume of these assets, the gains were "paper profits." The existence of these profits was well known in 1989-90, but their large impact on total profits and corporate taxes was never properly estimated. An attempt at such an estimate was made recently by Schaffer (1992) and, independently and less accurately, by Barbone(1992). It appears that these paper profits significantly exceeded "true profits" in the periods in question (fourth quarter of 1989 and first quarter of 1990), increasing the tax contribution of the enterprise sector by a factor of 2.

This automatic anti-inflationary stabilizer had already helped to eliminate the budget deficit in November and December 1989. It also accounts for the fact that, in 1990, corporate income tax and dividend tax represented about 16 percent of GDP and half of the total state budget expenditure, compared with about 11 percent in (say) 1985 and 7.8 percent in 1982, which was less than one-third of the total expenditure.

It is now clear that the government made two major errors in the fiscal field: (1) it overestimated the size of the corporate and dividend taxes for 1991 by 6.5 percent of GDP, and (2) it failed to increase indirect taxes sufficiently to compensate quickly for the shortfall in the direct enterprise taxes. In view of the technical difficulties in introducing the VAT system, the government could have sharply increased the turnover tax by broadening its base and raising tax rates. The fiscal situation would also have been helped by a stricter wage policy. The wage excess tax was high and very progressive, but the instrument was ineffective due to the fact that, since the summer of 1990, the effective price indexation of wage norms was almost 100 per cent, irrespective of the growth in nominal wages. The excessive and financially unsustainable wage indexation of benefits was also in operation throughout the period 1990-92. A restrictive incomes policy would have increased profits and therefore budget revenue, and it would have reduced wages in the budget sphere as well as wage-indexed welfare benefits, and therefore budget expenditure. The imposition of such an incomes policy would have required, however, close cooperation between the government and parliament, and this was singularly lacking in 1991 and continued to be insufficient in 1992.

Cooperation was and continues to be vital in implementing a program of budget savings. These are necessary in view of the development portrayed in Table 2. Underlying that table are the data shown in Table 3. Inspection of these figures and of Table 2 above shows that the crisis of public finances may be viewed as being largely the result of a sharp increase in welfare expenditures. The cost of unemployment benefits is as yet insignificant compared with the cost of pensions, which is the result of a large increase in both the number of pensioners — the effect of recession and inherited legislation — and the real value of the average pension.

TABLE 3: BUDGETARY COSTS OF PENSIONS AND UNEMPLOYMENT BENEFITS, 1989-93

	1989	1990	1991	1992	1993
Pensions:					
No. (million)	6.8	7.4	8.0	8.5	8.9
Cost (% of GDP)	7.2	9.4	11.4	12.8	13.3
Unemployment Benefits:					
No. (million)	0.0	0.5	1.4	1.4	1.2
Cost (% of GDP)	0.0	0.5	1.0	1.1	1.0
Total cost (% of GDP)	7.2	9.9	12.4	13.8	14.3

Note: Cost is net of personal taxes; numbers are averages for the year. Pensions are of three categories: old age, early retirement and disability. The first two categories represent about 60 percent of the total. The average unemployment benefit is about 32 percent of the average wage and about 50 percent of the average pension, the latter now being equal to about 65 percent of the average wage.

Sources: Author's estimates based on Poland's Ministry of Finance data for 1989-92 and projections for 1993.

To conclude this discussion of public finances, it is worth noting two circumstances that are important and common to nearly all transition economies and that complicate the policy-maker's task of reducing the budget deficit. One is the poor quality of bank assets and the other is widespread private sector evasion of taxes.

The banking sector seeks to improve its portfolio of assets by lending more to the government and less to economic units. Given that, in Poland, about 50-60 percent of all enterprise debt is not being (properly) serviced, and that the government debt is fully serviced, the ability of the banking system to pay reasonable interest on deposits is enhanced with the persistence of a large budget deficit. The deficit is thus, apart from stimulating somewhat the real aggregate demand in the short-run, also a way of providing a safety net for the banking system in the long term. In the course of time, the poor quality debt will be a declining share

of all banking assets, and therefore significance of the budget deficit for the banking sector should also decline.

The tax collection problem is in turn inducing the members of parliament representing taxpayers (who are the majority of the electorate) to impose an inflation tax in preference to other taxes. The reason is that, because it is difficult to evade, inflation tax is paid also by those operating in the black economy.

III. THE MODEL

It may be useful to list four basic assumptions of the model:

Assumption I - All of the deficit is financed by bank credit from either commercial banks or the Central Bank.

In all transition economies, except Hungary and China, the sale of government paper to the public, domestic and foreign, is in its infancy. Given the low credibility of government policies and attractive alternative assets, these sales are likely to remain low.

Assumption II - Credit provided to the economy (enterprises and households) is to grow in real terms at a given rate.

This is a side condition which imposes a constraint on the size of the budget deficit. The given rate is a policy parameter. The crowding out of enterprise credit is admitted if the rate is set to be less than the growth rate of the economy. It is implicitly assumed that the demand for bank credit by enterprises and households is always sufficient to use up the credit supplied.

Assumption III - Real GDP grows at a constant rate and dollar reserves grow at another constant rate, both given parameters.

After two or three years of rapidly falling activity, output in transition economies tends to stabilize for a while at a low level and then begins to increase at a moderate growth rate. The model is applied at the point when this moderate growth begins to take place. Given that this is a medium-term analysis, the budget deficit path is assumed to have no impact on the growth path.

Assumption IV - The real exchange rate of the US dollar is constant.

The US dollar is taken to be the reserve currency. Dollar reserves are typically assumed to be proportional to imports, and these tend to grow somewhat faster than the real GDP.

Notation:

M_t broad money, end of period t ;

$K_{1,t}^G$ accumulated credit to government by the Central Bank, end of period t ;

$K_{2,t}^G$ accumulated credit to government by commercial banks, end of period t ;

$K_{2,t}^E$ accumulated credit to the economy by commercial banks, end of period t ;

R_t net international monetary reserves of the banking system, end of period t ;

e_t nominal exchange rate, average in period t ;

i_t inflation rate in period t ;

r_1 effective interest rate on government debt to the Central Bank;

r_2 interest rate on government debt to commercial banks;

d_t budget deficit as a ratio of nominal GDP in period t ;

x_t budget deficit ratio net of servicing the public debt as a ratio of nominal GDP in period t ;

v_t velocity of money circulation in period t .

Given our assumptions (i) to (iv), the first group of equations of the model is as follows:

$$Y_t = (1+g)Y_{t-1} \quad (1)$$

$$R_t = (1+g+\epsilon)R_{t-1} \quad (2)$$

$$v_t = (1+\gamma)v_{t-1} \quad (3)$$

$$e_t = (1+i_{t-1})e_{t-1} \quad (4)$$

$$K_{2,t}^E = (1+\alpha)(1+i_{t-1}) K_{2,t-1}^E \quad (5)$$

In the simulations of the model economy, the time unit chosen is one quarter of a year. The one-period lags in (4) and (5) are adopted to ease these simulations. Equations (1) and (2) are implied by assumption (iii), Eq. (4) by assumption (iv) and Eq. (5) by assumption (ii). According to (3), the velocity of monetary circulation is changing (falling if $\gamma < 0$)

exponentially. The behavior of v during transition is an interesting subject in its own right, and we shall discuss it later in the paper.

The second group of equations is as follows:

$$M_t = M_{t-1} + \Delta K_{1,t}^G + \Delta K_{2,t}^G + \Delta K_{2,t}^E + e_t \Delta R_t \quad (6)$$

$$\Delta K_{2,t}^E + \Delta K_{2,t}^G = \beta(\Delta K_{1,t}^G + e_t \Delta R_t) \quad (7)$$

$$\Delta K_{2,t}^G + \Delta K_{2,t}^G = r_{1,t}(K_{1,t-1}^G + K_{1,t}^G)/2 + r_{2,t}(K_{2,t-1}^G + K_{2,t}^G)/2 + x_t p_t Y_t \quad (8)$$

$$r_{1,t} = \mu r_{2,t} \quad \text{where } 0 < \mu \leq 1 \quad (9)$$

$$r_{2,t} = i_t + \delta \quad \text{where } \delta > 0 \quad (10)$$

$$M_t = p_t Y_t / v_t \quad (11)$$

$$p_t = (1 + i_t) p_{t-1} \quad (12)$$

$$d_t = (\Delta K_{1,t}^G + \Delta K_{2,t}^G) / p_t Y_t \quad (13)$$

By (6), components of the change in broad money are: new net credit to government by the banking system, new net credit to the economy by commercial banks and the value, in domestic currency, of a change in international reserves. This equation follows from the definition of broad money:

$$M_t = NDA_t + e_t R_t$$

where NDA, net domestic assets of the banking system, are: NDA = total accumulated credits + other net assets. The change in "other assets net" equals the valuation adjustment of the net international reserves, which is $-\Delta e_t R_t$. Hence

$$\begin{aligned} \Delta M_t &= \Delta(NDA_t) + \Delta(e_t R_t) \\ &= (\text{net new credits})_t - (\Delta e_t) R_t + (\Delta e_t) R_t + e_t \Delta R_t \\ &= (\text{net new credits})_t + e_t \Delta R_t, \end{aligned}$$

which is equation (6).

In equation (7), new credit to the government by the Central Bank, $\Delta K_{1,t}^G$, and the value of a change in reserves, $e \Delta R$, are taken to be a proxy for a change in the base money of the banking system. The volume of new credit expansion by commercial banks is assumed to be proportional to the amount of that new base money.

These two equations, 6 and 7, may be solved in terms of ΔK_1^G and ΔK_2^G , giving this result:

$$\Delta K_{1,t}^G = \frac{1}{1+\beta} \Delta M_t - e_t \Delta R_t \quad (14)$$

$$\Delta K_{2,t}^G = \frac{\beta}{1+\beta} \Delta M_t - \Delta K_{2,t}^E \quad (15)$$

From (14) it follows that $1 + \beta$ is the money multiplier in this model. The LHS of (8) is the magnitude of the deficit financing required to pay for the cost of servicing the public debt and the purchase of goods and services, which is the RHS of (8). The operational deficit variables are d and x , the difference between them reflecting the cost of servicing the debt, as a proportion of GDP.

The effective budgetary cost of deficit financing by the Central Bank is, typically, only the resource cost of operating the Bank and printing the money. The Treasury may pay the Bank the same high interest as it does for commercial credit. Being a "budgetary unit," however, all its profits should be returned to the Government. In transition economies, some of the profits of the Central Bank may be used to subsidize some of the banks, e.g. those which fell victim of the deteriorating financial position of state enterprises or farmers. The interest rate r_1 would in this case incorporate also such hidden subsidies. This rate is still typically a small fraction of the commercial rate.

IV. Two Types of Simulations

In version A, inflation path i_t , $t = 1, 2, \dots$ is assumed to be given by the policy maker and the model may be used to compute the deficit paths for d_t and x_t . This is a situation where the policy maker has an a priori view about the speed at which he wishes to reduce the inflation rate, and all he wants to know is the size of the budget deficit in the course of time that is consistent with that view.

In version B, the policy maker has a view about the budget deficit path and seeks to discover the inflation path that would result.

Equations (1) to (5) are common in both versions. The forms and sequences of the remaining eight equations, (6) to (13), vary as between the version.

<u>Version A</u> inflation path given, deficit path implied	<u>Version B</u> deficit path given, inflation path implied
(6') $p_t = (1+i_t)p_{t-1}$	$M_t = \frac{1}{1-d_t v_t} [M_{t-1} + e_t \Delta R_t + \Delta K_{2,t}^E]$
(7') $M_t = p_t Y_t / v_t$	$p_t = v_t M_t / Y_t$
(8') $r_{2,t} = i_t + \delta$	$i_t = (p_t - p_{t-1}) / p_{t-1}$
(9') $r_{1,t} = \mu r_{2,t}$	$r_{2,t} = i_t + \delta$
(10') $\Delta K_{1,t}^G = \frac{1}{1+\beta} \Delta M_t - e_t \Delta R_t$	$r_{1,t} = \mu r_{2,t}$
(11') $\Delta K_{2,t}^G = \frac{\beta}{1+\beta} \Delta M_t - \Delta K_{2,t}^E$	$\Delta K_{1,t}^G = \frac{1}{1+\beta} \Delta M_t - e_t \Delta R_t$
(12') $d_t = (\Delta K_{1,t}^G + \Delta K_{2,t}^G) / p_t Y_t$	$\Delta K_{2,t}^G = \frac{\beta}{1+\beta} \Delta M_t - \Delta K_{2,t}^E$
(13') $x_t = d_t - \frac{r_{1,t}(K_{1,t-1}^G + K_{1,t}^G)}{2p_t Y_t} - \frac{r_{2,t}(K_{2,t-1}^G + K_{2,t}^G)}{2p_t Y_t}$	

These particular sequences of equations make clear the causality which operates in this model.

In Version A, the quantity of money supplied accommodates the given price path. This quantity poses a constraint, given changes in international reserves, on the amount of credit of the Central Bank to finance budget deficit. This quantity also limits, for a given amount of commercial credit to the economy, commercial financing for the budget. Available bank financing from both sources determine the size of the budget deficit.

In Version B, the targeted budget deficit determines the quantity of money required and supplied, given the changes in foreign reserves and the amount of new net credit to the economy. This quantity in turn determines the price path, as well as each of the two types of budgetary financing. The latter then determines the cost of servicing the public debt.

In both versions, interest rates are inflation-led. The relatively high velocity of money circulation observed in transition economies has the effect of magnifying the inflationary impact of a given budget deficit.

V. Simulation Results

As mentioned already, one quarter is taken to be the time unit. The simulations run for 40 quarters, and the starting conditions chosen are broadly those pertaining to Poland in or, when appropriate, at the end of, Quarter 3, 1992. The specific magnitudes of the parameters and the initial values of the variables are as follows:

$$\alpha = g = 0.008, \gamma = 0, \epsilon = 0.002, \delta = 0.02, \mu = 0.2, \beta = 5/3$$

$$Y_0 = 300, p_0 = 1, M_0 = 420, R_0 = 7, e_0 = 14,$$

$$K_{1,0}^G = 52, K_{2,0}^G = 30, K_{2,0}^E = 240$$

The important parameter specification is that $\alpha = g = 0.08$. It means that both the GDP and the real credit to the economy are assumed to grow at a common and constant rate of 0.8 percent per quarter (3.2 percent per year). It is also assumed, in all simulations presented in Figures 1 to 10, that the velocity of money circulation will be constant, as it apparently has been in Poland since mid-1991 (see Figures 11 and 12).

In all four simulations of Version A of the model, the quarterly inflation rate declines ultimately to 1 percent, but the starting rate varies from 7 percent in Fig. 1, 11 percent in Fig. 2, 16 percent in Fig. 3 to 21 percent in Fig. 4. The initial inflation rate is thus rather high, but the targeted rate of disinflation is assumed to be fairly rapid.

The implied pattern of the deficit path is seen to be similar to the pattern of the inflation path. It is interesting that the deficit rate of 8 to 10 percent of GDP is consistent only with the quarterly inflation rate of some 15 percent. If the deficit rate is held at 10 percent throughout (Figure 9), the inflation rate would stabilize at about 17 percent per quarter (about 87 percent per year). This balanced inflation rate is nearly proportional to the balanced deficit rate. This result rests on the stability of the velocity of money. When the deficit rate is held at 20 percent of GDP, the inflation rate stabilizes at about 35 percent per quarter (about 232 percent per year) (Fig. 10).

In Poland, the budget deficit of the general government already reached 5.6 percent of GDP in 1991 (Table 1). It was estimated that if no new fiscal and expenditure measures were taken, it would reach 8 percent of GDP in 1992 and about 10 percent in 1993. Based on the simulation results, Poland's economic authorities were advised that, again in the absence of new measures, the annual (December to December) inflation rate would progressively increase, assuming that the necessary monetary expansion by the Central Bank to finance the deficit would be forthcoming, from 45-50 percent in 1992 to about 50-60 percent in the first half of 1993 and to about 80-100 percent in the second half.

To maintain credibility of its macroeconomic policy, the Polish Government decided to set the size of the budget deficit in 1993 at a level which would ensure that, at least, the annual inflation rate does not increase above the 40 percent level. The level has thus obtained the significance of a critical policy choice.

Simulations of Version B of the model proved useful in discovering this critical size of the budget deficit. The results are displayed in Figures 5 to 8. In all four runs the deficit rate is assumed to decline in a step-wise manner to 0 percent, by 1 percent annually, starting from a level that varies from 3 percent to 9 percent of GDP. This exercise identified the critical size of the budget deficit in Poland, in the period from Q.4 1992 to Q.4 1993, to be about 5 percent of GDP. The 'new fiscal measures' were subsequently proposed to and approved by Parliament to ensure this outcome for 1993.

VI. THEORETICAL CONTROVERSIES

The re-emerging budget deficit problem and an on-going debate about best ways of responding to it have rekindled the earlier controversy about the causes of recessions in transition economies.

Kornai (1993) calls the postcommunist recession a 'unique phenomenon: transformational recession' (p.2). He sums up the results of his research team in Hungary by saying that its six main causes 'reflect the fundamental changes required in attitudes and behavior to achieve an altered economic structure' (p.2). These causes are: shift from a sellers' to a buyers' market; contraction of investment; shift in the composition of output; shift in the composition of foreign trade; disruption of coordination; and enforcement of financial discipline. In his view: "restructuring the (post-communist) economy is not simply a Keynesian type problem, to be solved by boosting aggregate demand. It includes the Schumpeterian process of creative destruction. ... If the pace of creation is slower than the process of destruction, if new capacities satisfying new demands cannot counterbalance the rapid liquidation of obsolete capacities, the net result is recession" (p. 3).

With this diagnosis Kornai joins those economists who have argued all along that various transition-related shocks, in particular price liberalization and the collapse of intra CMEA trade, have sharply changed the product composition of demand, rendering a significant segment of the existing capacities not useful any more (Gomulka, 1989, 1991, 1992; Dąbrowski, 1992;

Kastberg, 1991; Lane, 1991; Siebert, 1991). Some of the capacities may become useful later, but this restructuring would require time, investment, financial resources and some re-training of the labor force. In the meantime the aggregate level of real demand, given free prices, falls automatically to the reduced level of real aggregate supply. Any attempt to reflate the economy, unless directed at specific sectors where there is a surplus capacity, would increase prices or imports rather than outputs.

A different view of the transformation recession, one inspired by the Keynesian-Kaleckian theory, is articulated well and in a spirited way, by Amit Bhaduri and Kazimierz Łaski (1992). They note that the "paradox of thrift" is nowadays often forgotten and that "some multilateral institutions recommend indiscriminately austerity, especially in government spending, both for developing countries in balance of payment difficulties and for the former command economies trying to make a transition to the market system." In their view "the economic disaster of pursuing the orthodox remedy of "austerity only" is now far too apparent in East Europe ... By restricting demand in almost every possible way — through an extremely tight money policy, reduced government expenditure in an attempt to reduce budget deficit and restraint on wage — these economies have been precipitated in an economic depression which can be compared only with the Great Depression of the 1930s in the capitalist world" (p.5). They continue to remind us that "several democracies could not survive that economic debacle," warn that "It will be unwarranted optimism to believe that all the fragile democracies of Eastern Europe can survive an economic depression of this magnitude, if it lasts much longer" and quote: "Those who do not remember history, are condemned to repeat it" (p.5).

In a recently published assessment (Portes, 1993), Mario Nuti and Richard Portes regard the fall in output as a big puzzle for which they themselves have no explanation. However, they reject the "J-curve hypothesis" and insist that we are not observing Schumpeterian "creative destruction" (too little innovation, investment and competition) and, instead of an J-curve, we observe an L-curve. They also argue that policies were too tight in (former) Czechoslovakia and, initially, in Poland. But they find it difficult to explain an equally deep recession in Hungary or much deeper recessions in Bulgaria, Romania and most republics of the Former Soviet Union where policies have not been tight. (This difficulty would also be encountered by Keynesians). They appear to be in favor of modest budget deficits but, in contrast to orthodox Keynesians, do recognize the existence of a widespread fiscal crisis and advocate strong actions to reduce large budget deficits.

In these discussions it is important not to overlook that during the Great Depression prices were falling, there were no dramatic shocks in the composition of demand nor in the institutional and ownership arrangements, and real interest rates were very high. Transition economies, apart from deep recession, experience also high inflation and low levels of savings and investment. In the circumstances the authorities should try their state budgets to be anti-inflationary, anti-recessionary and promoting long-term development. In Poland and the other transition countries, perhaps with the exception of Hungary, the high budget deficit is the main source of high inflation. Moreover, by keeping interest rates high, the deficit discourages private investment, particularly on housing, so to that extent it is pro-recessionary. It also

prompts authorities to reduce government expenditure on infrastructure, research, labor re-training and other development promoting activities, rather than current expenditure on public consumption.

VII. POLICY RESPONSES

The primary purpose of the fiscal policy should therefore be, I maintain, to achieve large and durable reduction in public dissaving, thereby controlling a major source of current inflation, reducing interest rate, freeing up the credit and saving required by enterprise sector growth, and protecting the external balance.

Given this purpose, two key questions for reform governments are the following: what specific measures to take to contain and reduce budget deficit and how to get approval of the measures in Parliaments as well as some support for them by the general public. Economic and social considerations influence the answer to the first question while political considerations the answer to the second question.

The package of measures which the Polish policy designers came up with in the later part of 1992, for implementation in 1993, represented some 6 percent of the GDP expected in 1993. The size of the package was the first crucial decision. This decision, as explained earlier in the paper, was motivated by the desire to keep the inflation rate below 40 percent, that is somewhat lower than in 1992. The second crucial decision concerned the composition of the package in terms of increased taxes and reduced expenditures. This composition was as follows (the effect of measure in terms of percent of GDP given in parentheses):

Revenue to be increased by 3.2 percent of GDP

- a. An increase in excise duties and the statutory turnover tax rates (1.5 percent);
- b. A temporary (two-year) import surcharge of 6 percent (0.9 percent);
- c. Freezing personal income tax brackets (0.5 percent);
- d. Freezing the depreciation allowance for investments made before 1990 (0.3 percent).

Expenditures to be reduced by about 2.5 to 3 percent of GDP

- a. Reducing the ratio of pensions to the average wage by 9 percent (1.5 percent on an annual basis, about 1 percent in 1993);
- b. Reducing wage bill allocations in real terms in the budgetary sphere (0.7 percent);
- c. Reducing current non-wage expenditure in the budgetary sphere (0.8 percent).

The package above was hitting everyone, but its composition was designed to distribute the pain in a manner that had a chance of being seen in Parliament and by the public as fair. There was also the question of opportunity costs, that is the costs associated with the inflation tax, higher interest rates, and lower attractiveness of Poland to foreign investors, that could have

been incurred in the absence of the package; or alternative costs if other measures were taken instead.

VIII. CONCLUDING REMARKS

In transition economies high budget deficits represent a double threat: they use scarce private savings to finance (public) consumption rather than (public or private) investment and they keep inflation and interest rates very high. They have also the ability to (re-)produce the situation of a (near) hyperinflation quite rapidly.

We have, in this paper, identified two major reasons behind the potentially large inflationary impact of a given budget deficit, both characteristic for most transition economies. They are: (1) that the deficit is financed almost exclusively by monetary expansion rather than external or internal borrowing, or the sale of state assets, and (2) that the velocity of money circulation is typically exceptionally high, translating a given monetary expansion into an unusually large price increase.

To reduce the threat of a public finance crisis, it is important to act quickly to reduce the dependence of the revenue side on enterprise profits. However, even more important is to reduce substantially subsidies to enterprises and ensure that various indexation rules do not lead to an unsustainable increase of pensions and other social benefits in relation to wages.

The simulation results of this paper depend on a number of parameters, some of them technical, others representing policy choices. The primary aim of the paper was to show that these results and the underlying model can be a useful tool to a policymaker who wishes to identify **medium term** implications of these policy choices, above all the choice of a budget deficit path, on inflation, public debt and interest rates.

IX. APPENDIX: THE VELOCITY OF MONEY CIRCULATION.

The movements of this key monetary variable in Poland are shown in Figures 11 and 12. There are, in fact, two velocities shown in that Figure, pertaining to two categories of money. Velocity denoted by v_1 pertains to domestic money, both currency and deposits, while v_2 is the velocity of total money, which includes in addition to domestic money, foreign currency deposits of households and enterprises held in banks operating in Poland .

To arrive at v_1 and v_2 for each month, first monthly nominal GDPs were estimated, and these were annualized by multiplying them by 12. Monthly nominal GDPs were estimated with the help of the assumption that the flow of real GDP had been constant within each year and the fact that the sum of nominal monthly GDPs for each year must equal the officially reported annual nominal GDP. The consumer price index was used as the GDP deflator.

Since January 1990 the official exchange rate is about the same as the market exchange rate, and this common rate was used to obtain the domestic value of foreign currency deposits. For the year 1989, the official exchange rate was used to evaluate only enterprise foreign deposits, while the much higher free market rate was used to value the households deposits.

The abnormally high market value of the dollar before the reform depressed velocity v_2 during that period. Velocity v_1 , although not affected by this abnormality, increased sharply during the period of very high inflation (five months before and several months after the big bang of January 2 1990). As inflation subsided, households have started to rebuild their depleted (in real terms) zloty deposits. This behavior tended to reduce the ratio of total cash to all deposits and, consequently, also the velocity of money circulation. However, the two velocities have been fairly stable since the middle of 1991. It is this stability which underlines my assumption in simulations A and B of the velocity remaining constant in the medium-term.

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Legend for Figs. 1 - 10:

- d_t , budget deficit (as proportion of GDP)
- x_t , net budget deficit (net of interest on public debt)
- . - . - . i_t , inflation rate per quarter

Quarterly simulations of the relationship between the quarterly inflation rate i_t and the deficit rate d_t

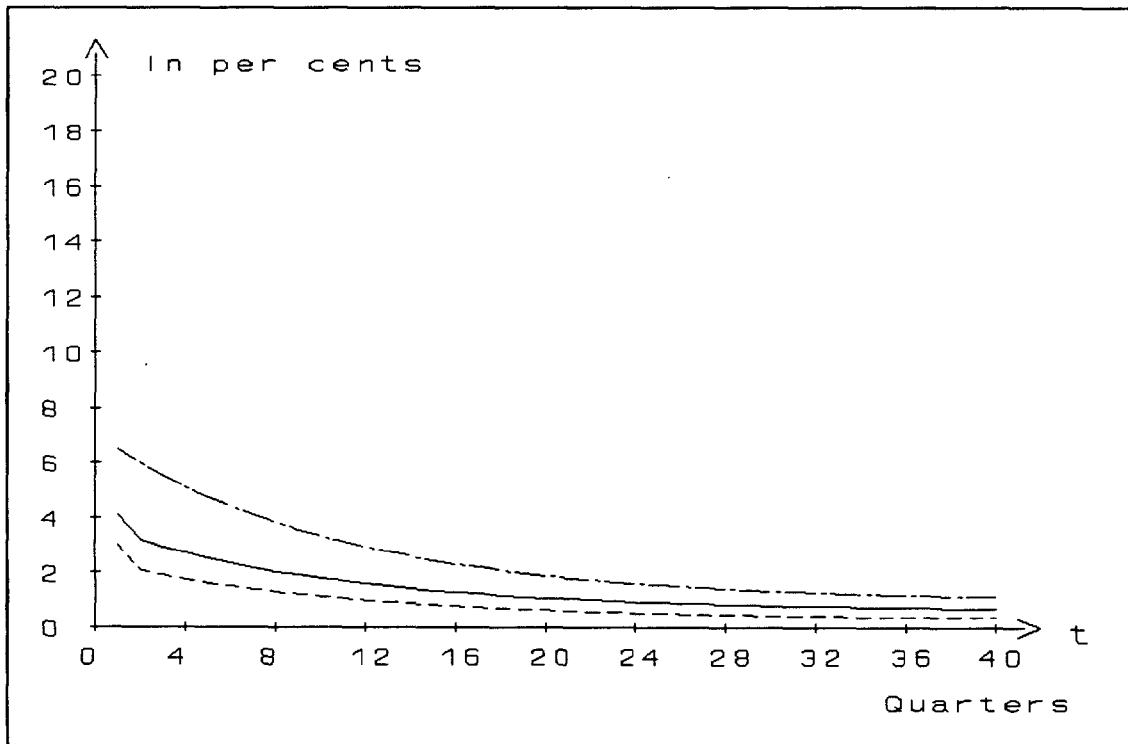


Figure 1. Assumed inflation path $i_t = 0.06(1.1)^{-t} + 0.01$

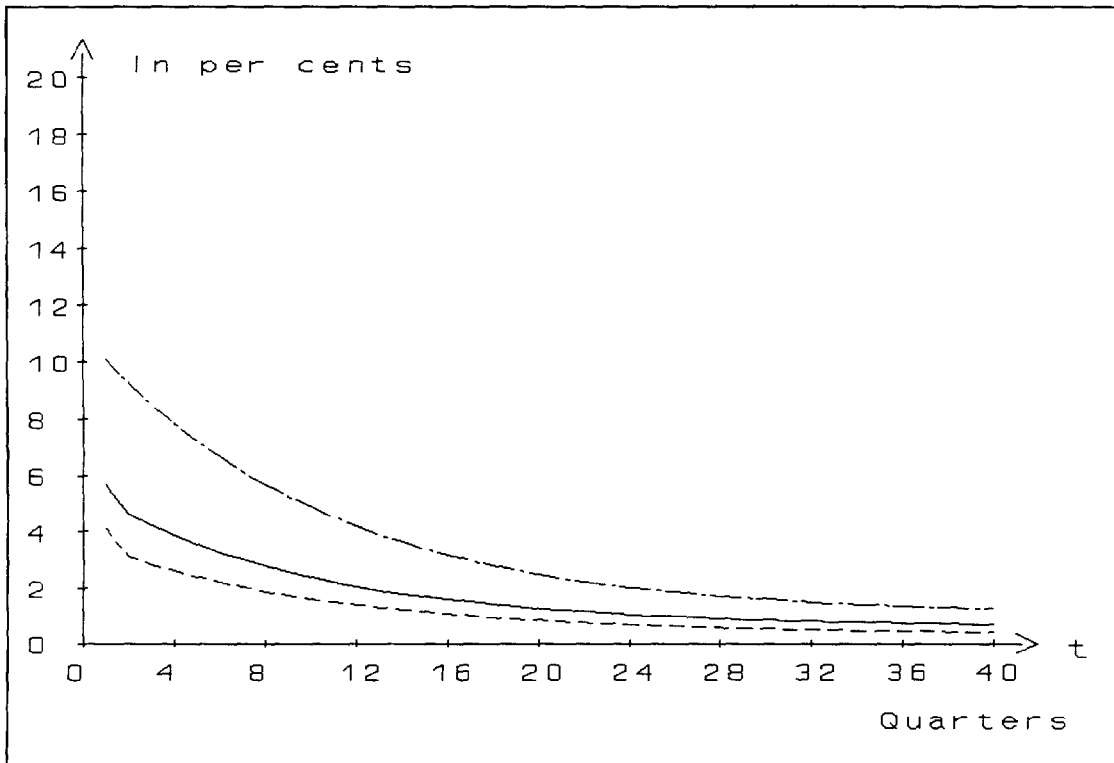


Figure 2. Assumed inflation path $i_t = 0.1(1.1)^{-t} + 0.01$

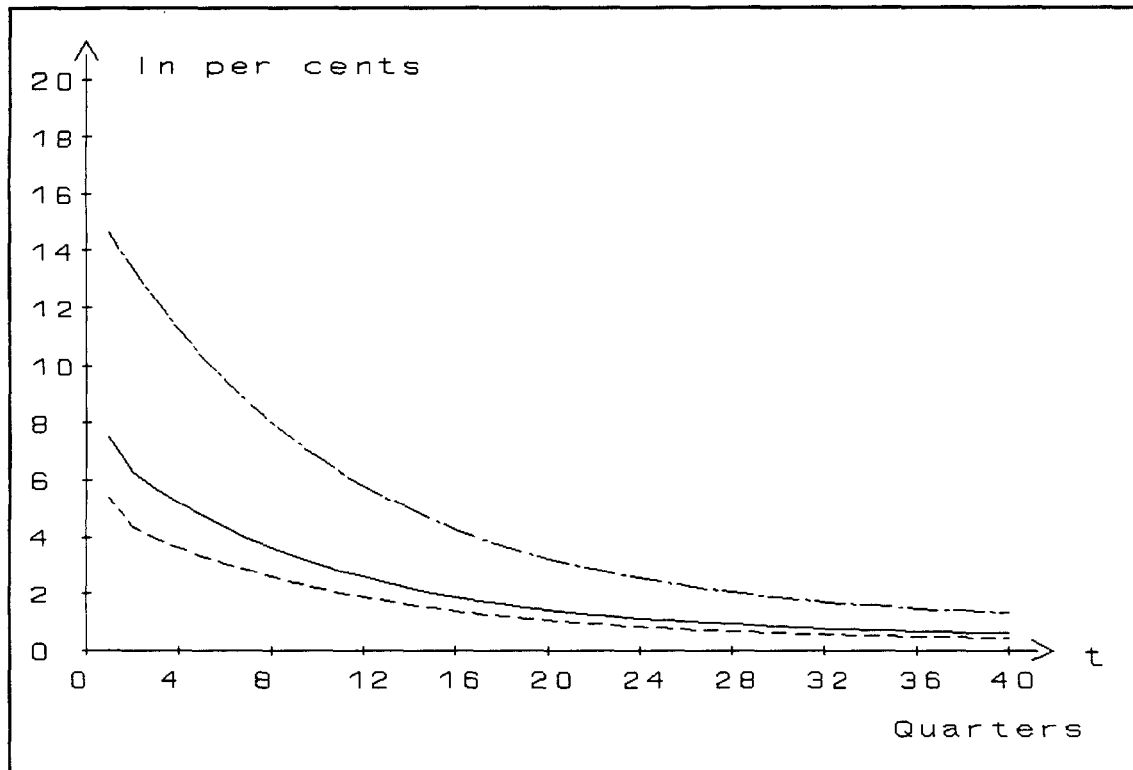


Figure 3. Assumed inflation path $i_t = 0.15(1.1)^{-t} + 0.01$

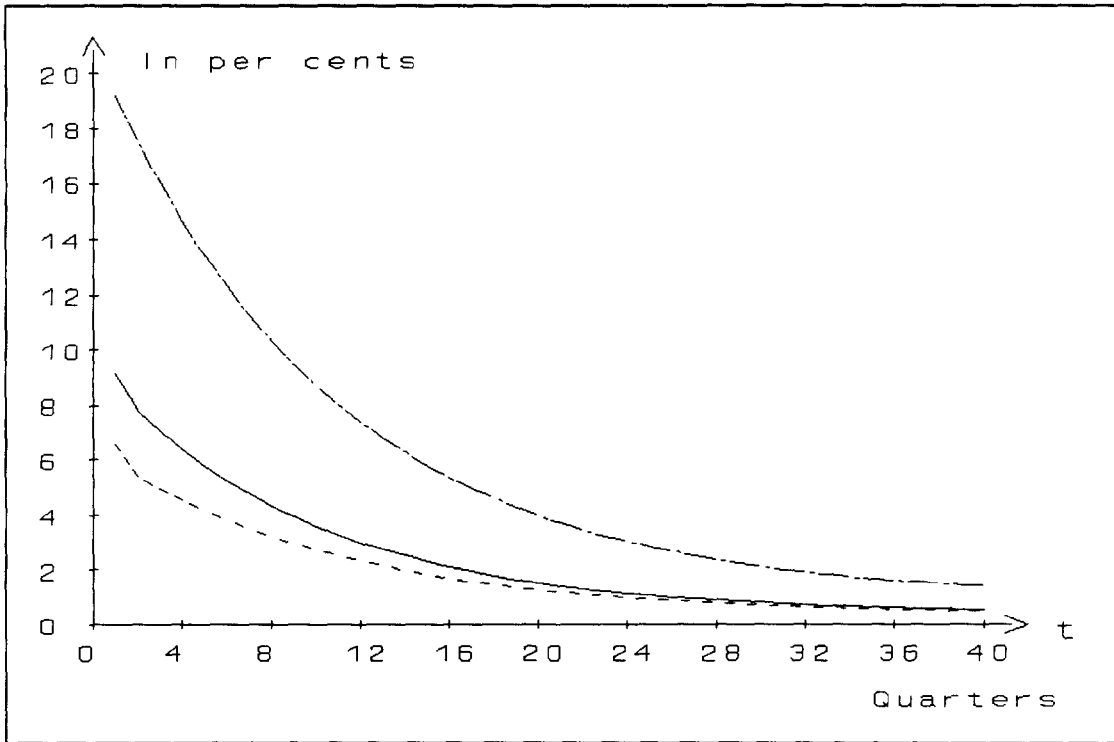


Figure 4. Assumed inflation path $i_t = 0.2(1.1)^{-t} + 0.01$

**Quarterly simulations of the impact
of a given budget deficit on inflation**

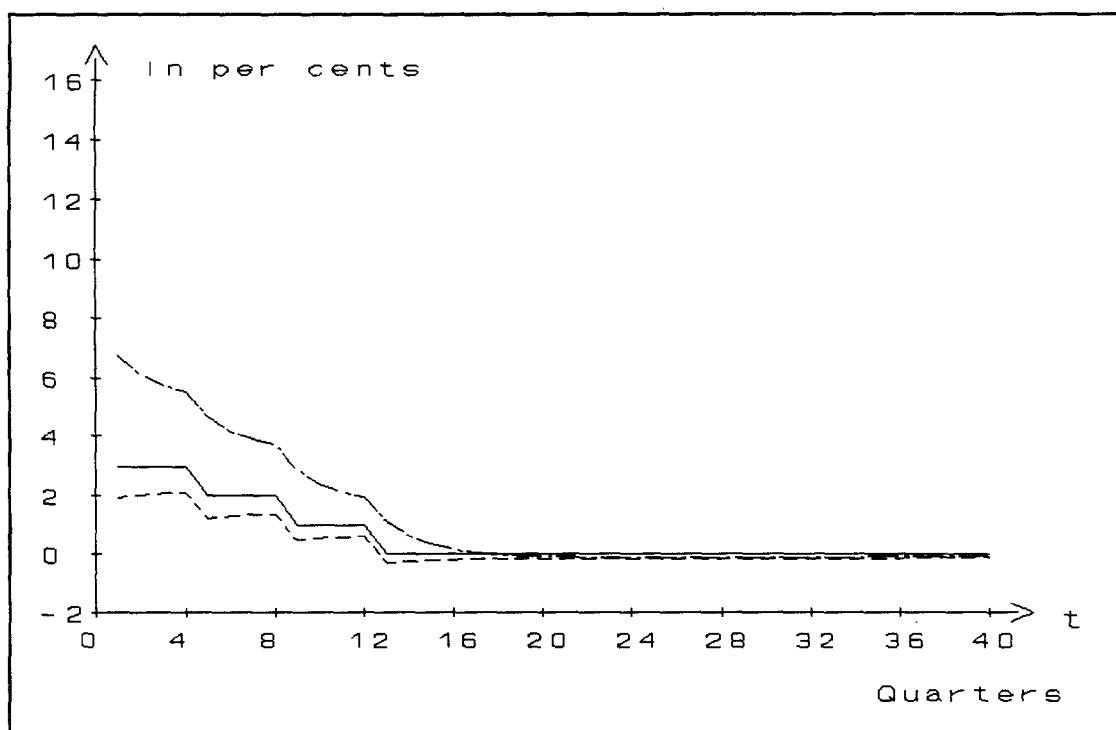


Figure 5. Assumed budget deficit path starting at 3% of GDP

Source: Author's own estimates

- Notes:**
1. The Figure 12 is an enlarged part of a section of the lower diagram shown in Figure 11.
 2. The Figures 11 and 12 take into account new (lower) estimates of nominal GDP in 1991 by Central Statistical Office and new definition of domestic money by the Polish National Bank.

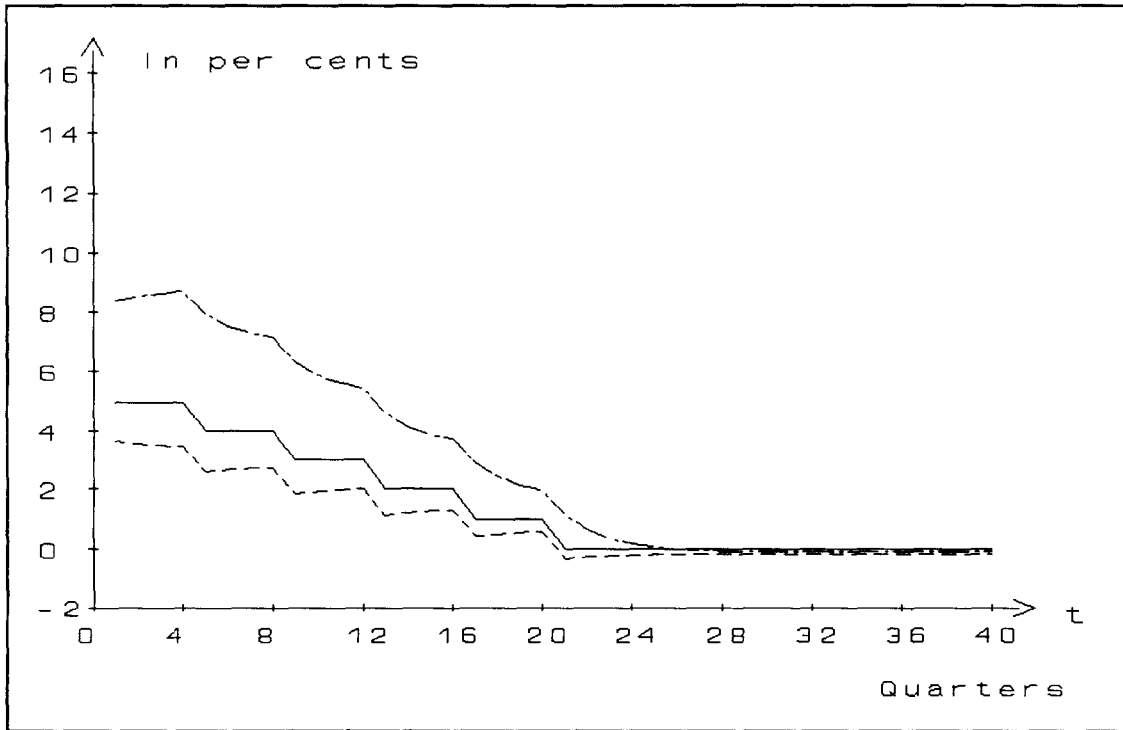


Figure 6. Assumed budget deficit path starting at 5% GDP

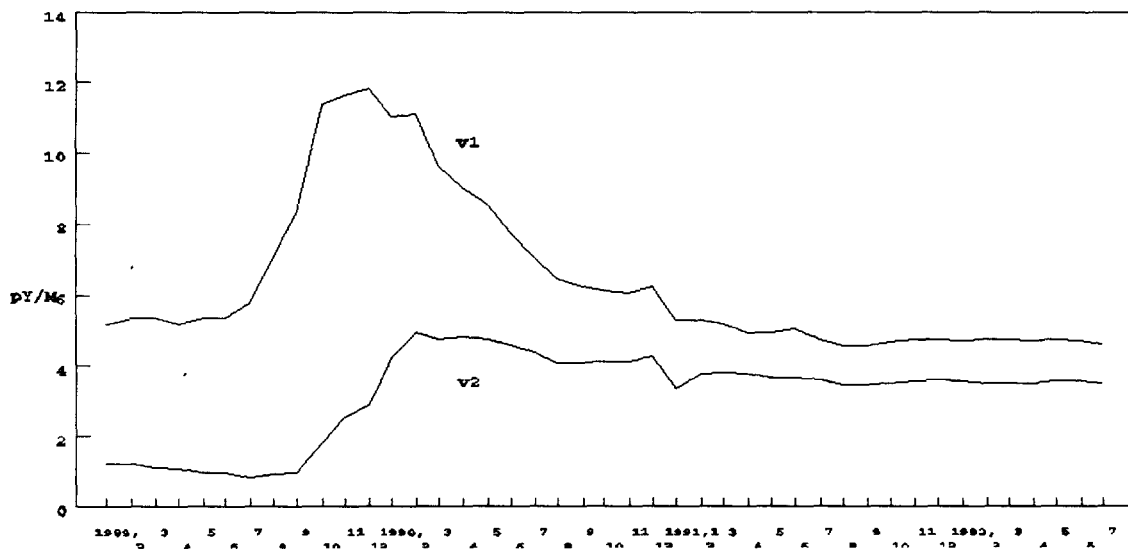


Figure 11. Poland's velocities of money circulation

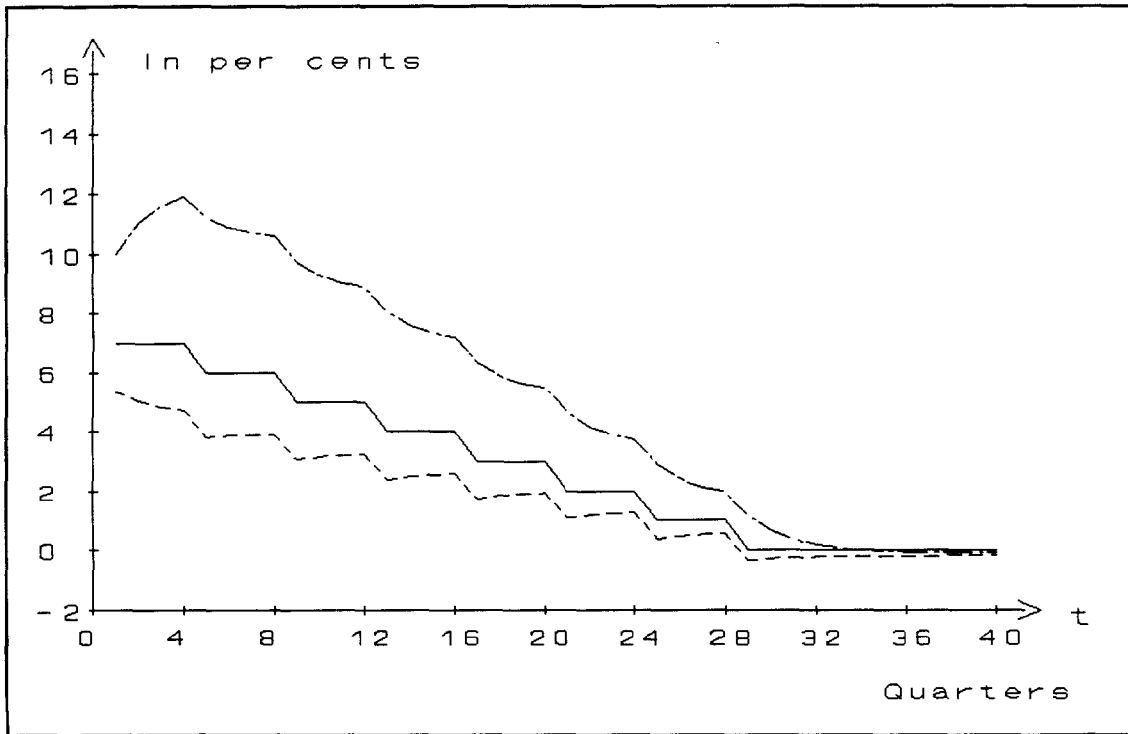


Figure 7. Assumed budget deficit starting at 5% GDP

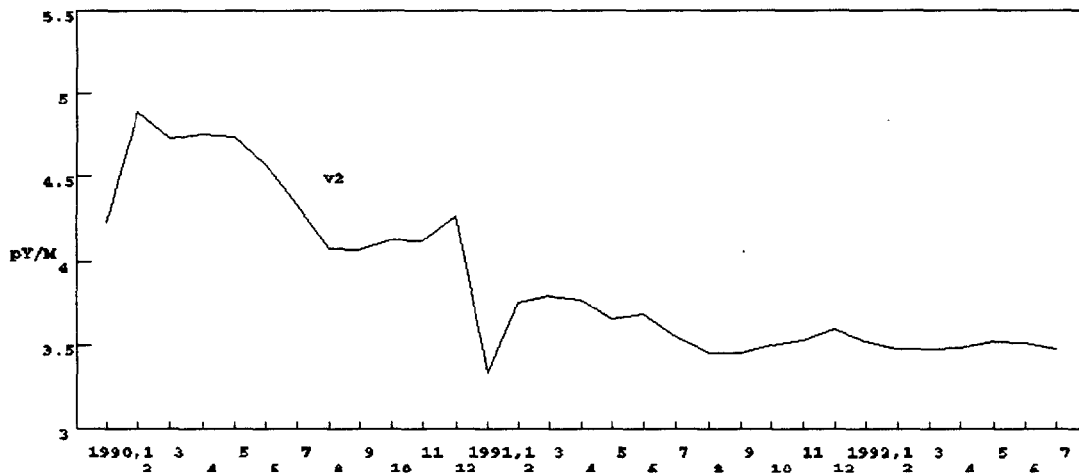


Figure 12. Poland's velocity of total money circulation in the post-reform period.

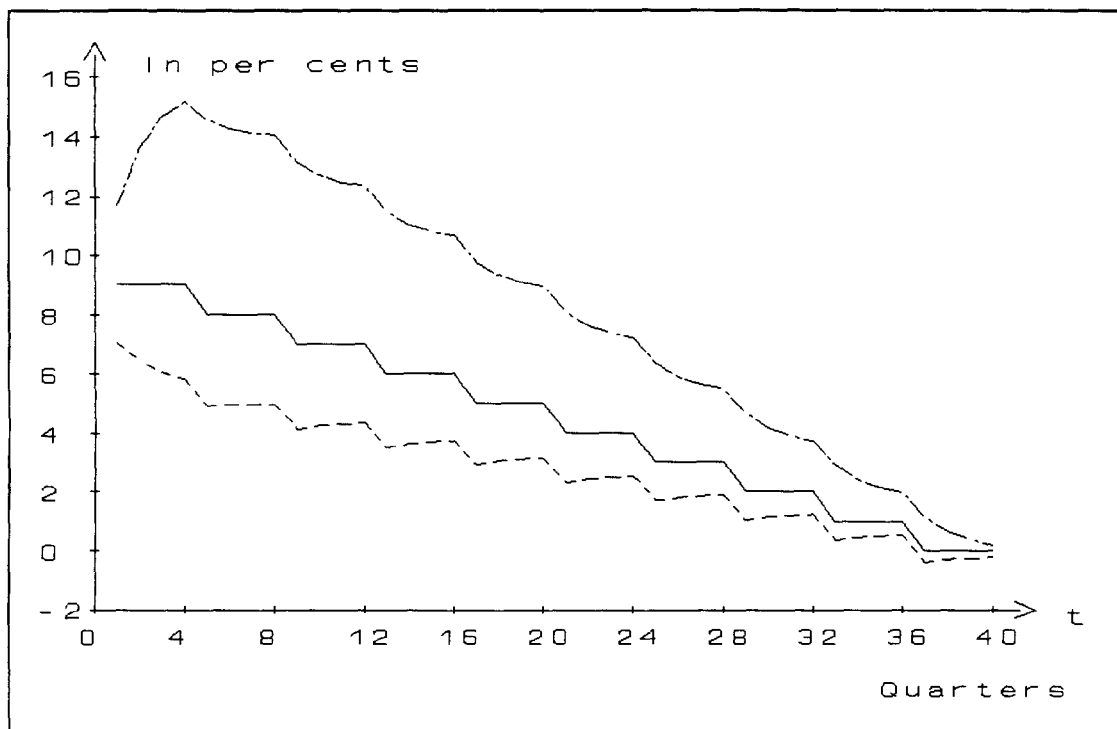


Figure 8. Assumed budget deficit starting at 9% GDP

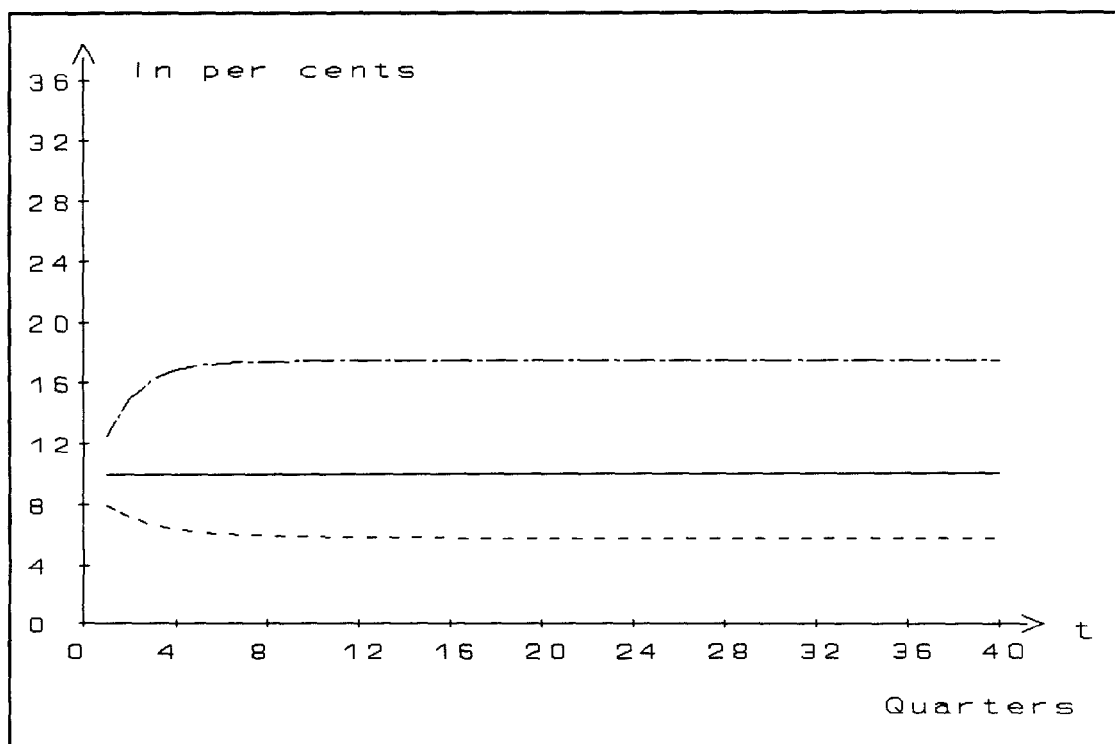


Figure 9. Assumed budget deficit constant at 10% GDP

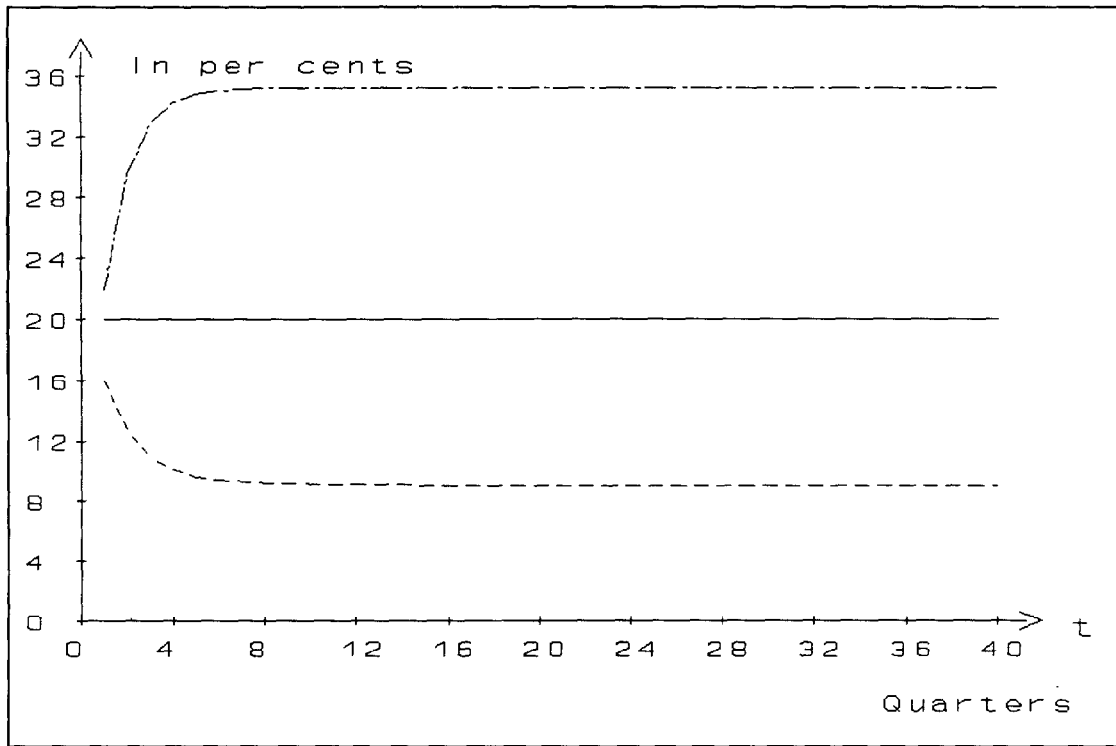


Figure 10. Assumed budget deficit constant at 20% GDP