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Abstract

At the beginning of the transition period, the public debt in Romania was insignificant. However, during the following years, the accumulating process accelerated. Although the indebtedness degree continues to be smaller than registered levels in other European countries, more dangerous could be its accelerating trend in conditions of some not so very high-performing macroeconomic policy management. The present study attempts to answer certain problems related to the governing mechanism of the public debt accumulation. Particularly, it examines: a) some significant implications of the public sector deficits on the dynamics of the main macroeconomic indicators; b) certain factors having impact on sustainability degree; and c) possibilities for setting up fundamental parameters and a time horizon to stop the debt accumulation process. Certain plausible hypotheses will be selected and some likely evolutions will be simulated.

Keywords: public debt, sustainability function, primary deficit, interest rate
JEL classification: C15, C51, E44, F41, H68, O16, P27

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SUSTAINABILITY OF PUBLIC DEBT: A THEORETICAL AND EMPIRICAL INVESTIGATION

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1. INTRODUCTION

At the beginning of the transition period in 1990, the public debt in Romania was insignificant. During the following years, the accumulating process accelerated. By 1998, the domestic public debt, together with the country's external debt, have already increased up to near 40% of Gross Domestic Product. Although the indebtedness degree of the country continues to be smaller than levels registered in other European countries, more dangerous is its accelerating trend in conditions of some not so very high-performing macroeconomic policy management. Especially, under the impact of authorities' actions in order to join NATO and the European Union, of agreements with international financing institutions, such as the International Monetary Fund and the World Bank, the problems of public debt and budgetary deficits has become more and more sharp. The major difficulties proceed from the weak performance of the Romanian economy, doubled by the complex problems of the economic reform and restructuring, but also by a more and more restricted access to the external financing on international markets.

The present paper attempts to answer certain questions related to the governing mechanisms of the public debt accumulation. In particular, it examines: a) some of the most important implications of the public sector deficits on the dynamics of the main macroeconomic indicators; b) certain factors that impact on sustainability degree, and c) possibilities for setting up fundamental parameters and a time horizon to stop the debt accumulation process. Certain plausible hypotheses will be selected and some likely evolutions will be simulated.

2. THE DYNAMICS OF PUBLIC DEBT AFTER 1989

There are various approaches in the specialised literature regarding public debt and public sector. In most official publications referring to public debt, the public sector is considered as the "general government" or consolidated non-financial public sector, which consists of the central government, the local authorities and non-private social welfare and other organisations (and this is the definition also used in our paper). Others add certain public corporations, while in many cases, some special credit institutions are also included in the definition. Similarly, certain publications

refer to gross debt, others to net debt (i.e. gross debt net of public sector liquid assets); while in some cases more assets are netted out.

The exclusion of the state financial institutions from the conventional definition of the public sector creates some problems. This is particularly the case in Romania where the State is the majority shareholder of most of the domestic commercial banks, while two special credit institutions belong entirely to it. Almost all the domestic liabilities of public corporations and most of the domestic liabilities of the central government itself are assets of the banks and credit institutions, partially or wholly owned by the State. This implies: a) that the size of the public debt may be very sensitive to the definition of the public sector, and b) that the seignorage revenue, which is defined as the change in the monetary base in real terms, may accrue to the public sector, as it is conventionally defined here, in an indirect and mot easily detectable way.

A particular criticism of the conventional definitions of public debts and deficits is the asymmetry in the treatment between the private and the public sectors in the presentation of their accounts. It is argued that instead of public debt, the concept of public net worth should be used, while the annual public deficits should be split between consumption and investment deficits (Eisner, 1989; Stournaras, 1990). Although this criticism is correct, the data needed to evaluate public sector assets makes it an impossible task. However, the ratio between consumption and investment deficits has serious implications for the sustainability of an increasing public debt, the transfer of burden on future generations and the balance of resources in the economy. It also provides a proxy for the evolution of public sector's net worth (Odling-Smee and Riley, 1985). Therefore, it should be a necessary component in any study of public debts and deficits.

During the period after 1989, Romania faced more and more to public debt accumulation as a new matter of macroeconomic policy, in contrast to other Central and East-European countries such as Bulgaria, Czech Republic, Hungary or Poland. While the external debt of Romania was insignificantly in 1990 (US$230 million), the other Central and East-European countries were already confronted with debt amounts of many billions of USD (Hungary – US$21.3 billion, Bulgaria – US$10.9 billion, the Czech Rep. – US$4.4 billion). In the case of Poland, the figure was close to US$50 billion. Eight years later, in 1998, the external debt of Romania had already increased up to more than 9 billion USD, while the other countries (with the exception of the Czech Republic, where external debt was five times larger than in 1990) registered either a modest growth (e.g. the case of Hungary, with a growth of US$5.5 billion) or even a diminution (Poland, with more than US$6 billion, partially caused by cancellation of a proportion of its external debt, and in Bulgaria with close to one billion USD). One of the weakest performance of the Romanian economy after 1989 was the poor experience regarding the management of public debt and budget deficits.

The evolution of the external debt in Romania, as a share in GDP evaluated in US dollars and respectively in Lei, is shown in Figs 1 and 2. The statistical data on which graphs were based are presented in Appendix 1.

Contrary to the advanced countries, the external debt is in Romania the main component of the total debt. However, in later years one can see that accumulation of domestic public debt became a more important source to cover deficits. For instance, in 1998 it represented almost 8% of the GDP. This evolution is directly related to the

efforts meant to improve the management of domestic debt, especially by enacting a new rule in April 1997 regarding the development of a secondary market for state obligations, restricting access to the external sources of financing and taking over in public debt an important volume of non-efficient credits. For instance, the share of the state loans approved by special normative documents evolved as follows: in 1992 – 8.1%; in the 1993-1996 period – an average level of 5.7% (with a maximum share of 11.7% in 1995); and in 1998-1999 – more than 30%, during an accelerating restructuring process of the banking system.

It is remarkable to see that Romania has also begun to demonstrate the correlation between election cycles and the accumulation of public debt. We can observe on the presented graphs the jumps occurred in the electoral years, in 1992 and in 1996 respectively, followed by calm dept accumulation dynamics between the two elections moments. In the literature, there is a serious focus on evaluating the impact of the political environment's dynamics on the public debt accumulation. Some authors even sought to quantify this impact (Roubini and Sachs, 1989). One of the most important conclusions of such studies is that there is a direct correlation between the degree of homogeneity of the power coalitions and the dynamics of the public sector deficits. As a proven rule, when the leading political coalition has a large number of parties with various political orientations, as it was the situation in Romania between 1996 and 2000, then the budget policy loses its coherence and the deficits will increase. On the contrary, in countries where the political power is in the hands of a single strong party, the chance to apply an efficient management of public debt is greater.

The evolution of the gap between the share of debt in GDP evaluated in dollars and that expressed in Lei, shown on the graph in Fig. 3, reflects the impact of domestic currency depreciation (the value of external debt being converted by Lei/USD exchange rate at the end of each year). Moreover, the evolution during the 1990-1998 period in Romania demonstrates a strong reverse correlation between the change of the rate of the real GDP and the dynamics of the mentioned gap (see Fig. 4).

Another important aspect of the analyses regarding the evolution of public debt is represented by the distinction among the main institutional sectors. In Romania, as we have already mentioned, beside the conventional public debt owned by the so-called general government there is a part which corresponds to public corporations and special credit institutions. Figs. 5 and 6 present the evolution of the the three constitutive components of gross public debt, evaluated in dollars and respectively in Lei, computed with the exchange rate base registered at the end of each year.

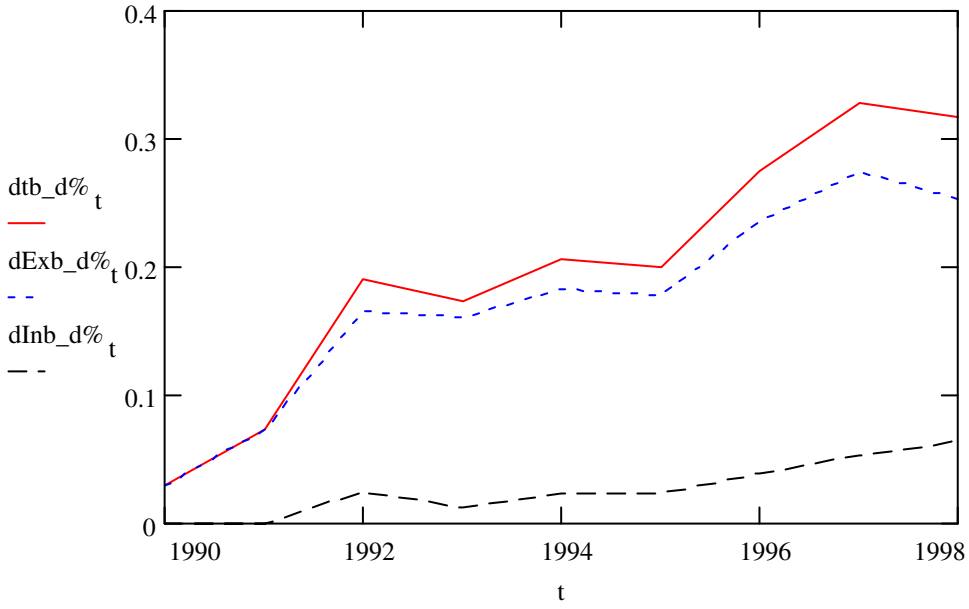
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Fig. 1

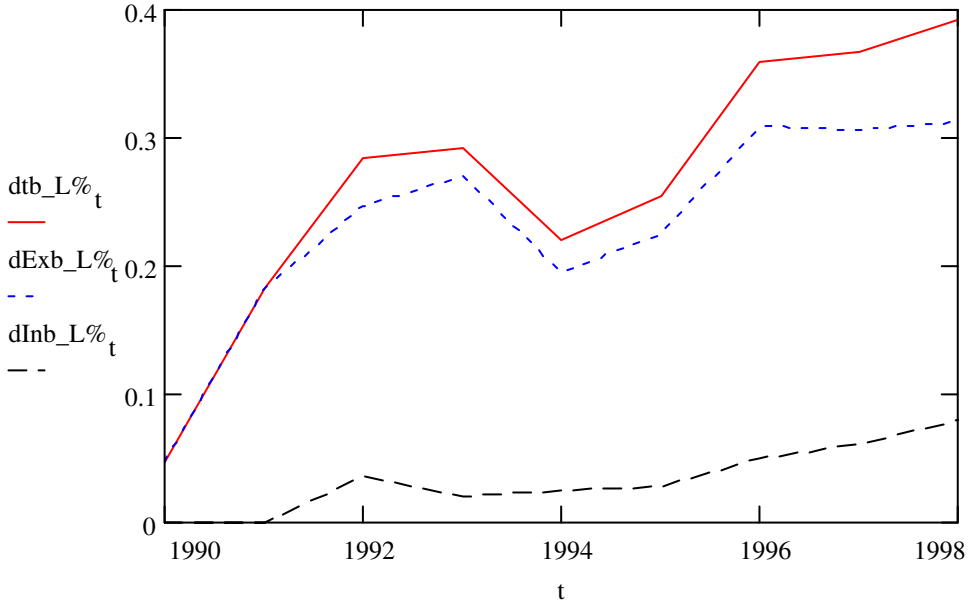
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Fig. 2

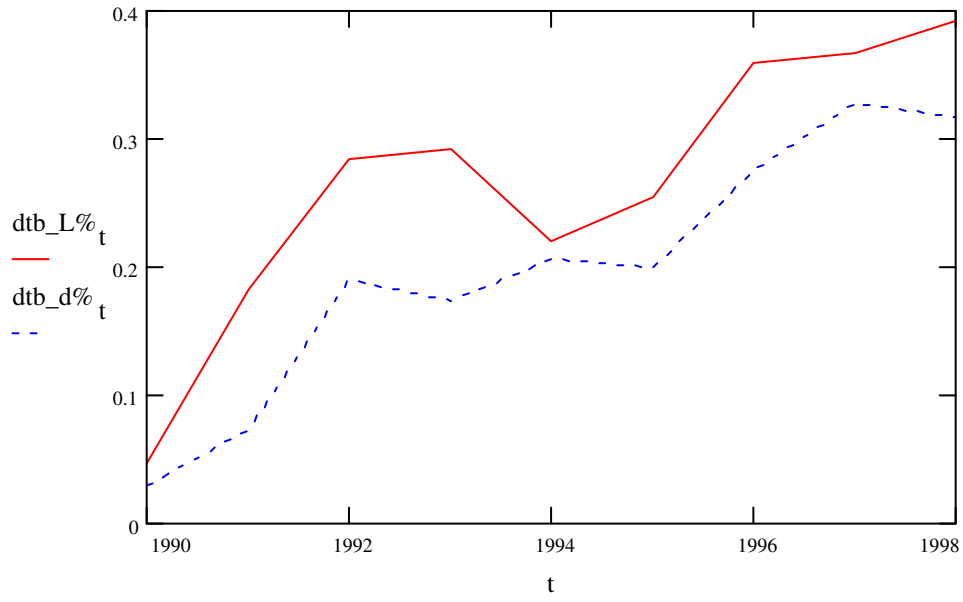
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Fig. 3

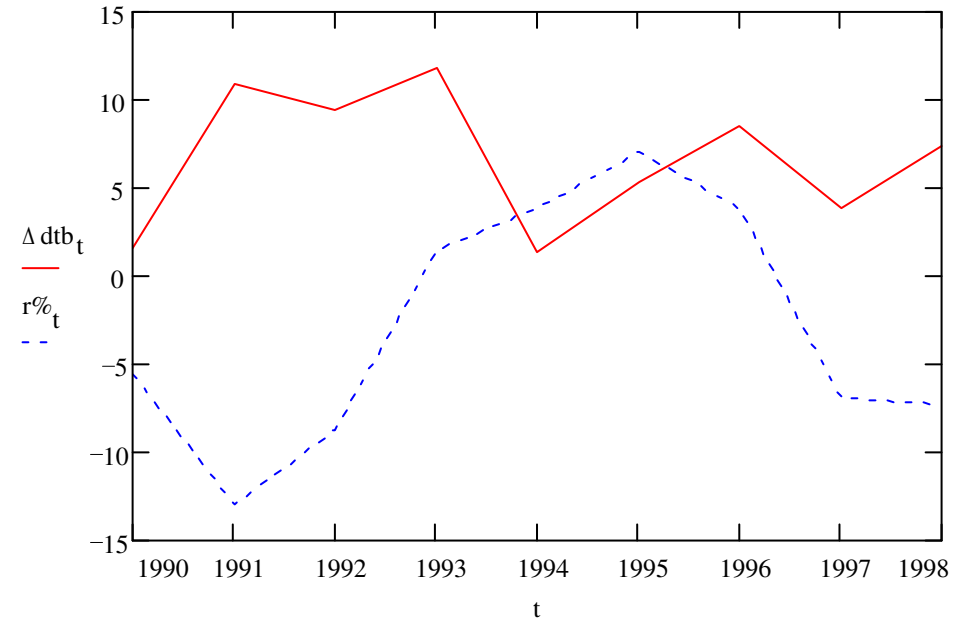
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Fig. 4

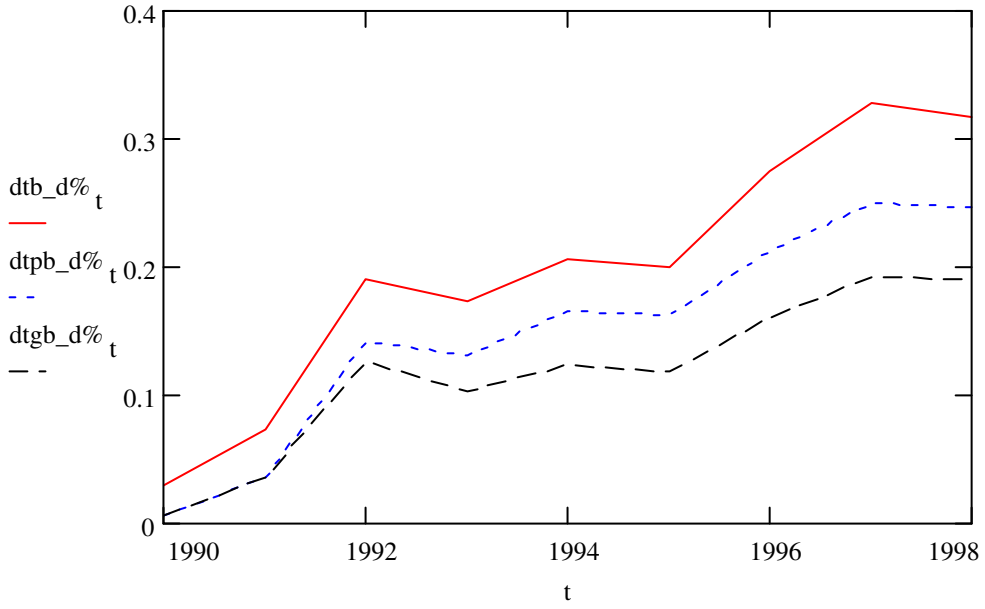
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Fig. 5

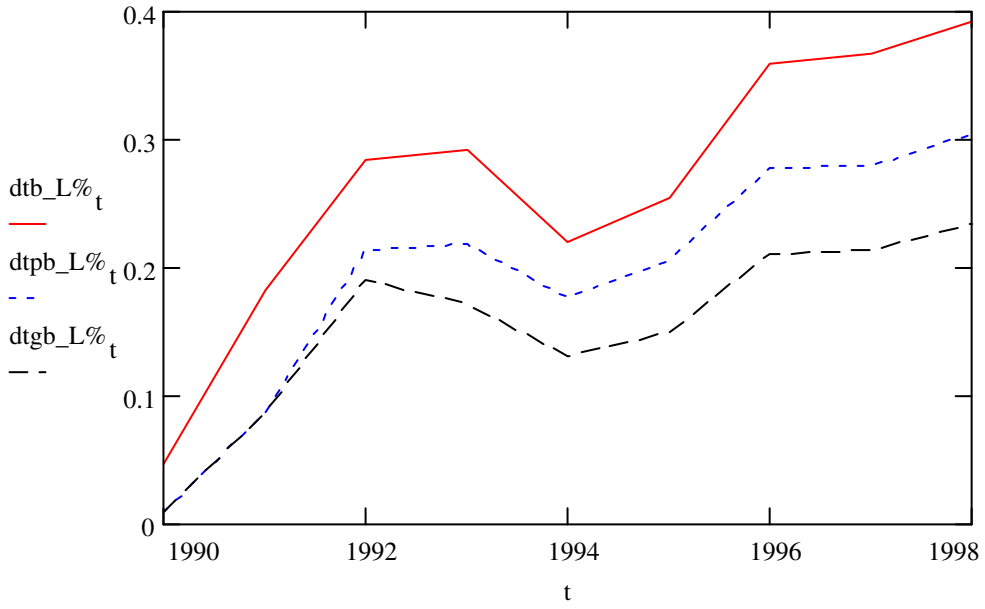
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Fig. 6

The first line at the bottom of the graphs represents the dynamics of governmental debt, the second line traces the evolution of the gross public debt, and the third one, at the top of the graphs, expresses the evolution of the country's gross debt. The difference between the middle and first curve could be interpreted as gross public corporation debt, but the gap between the curve placed on the top and middle of the graphs represents the share of the non-public sector. Moreover, during the considered period, one can see an amplification trend of the two gaps, which indicates a decrease in the share of the government-debt both in the gross public sector debt and in the gross county debt.

Despite Romania's classification by Word Bank in international statistics as "less indebted" country, together with Poland, Croatia, the Slovak Republic, the Czech Republic, Estonia, etc. (while Hungary is classified as "moderately indebted" and Bulgaria as "severely indebted"), some alarming signals were emitted by certain external financing institutions in the last years. With a background of continuing economic recession for consecutive three years, and a rapid external debt-service burden, certain international agencies specialised in country risk evaluation lowered Romania's score. One of the most important arguments was exactly the worsening of the sustainability indicators, in correlation with other negative occurrences, such as diminishing accumulation resources, decreasing domestic savings and investment rates, and increasing the risk for foreign investments, etc. [1]. The fact that more than 90% of the country's gross debt is external financed demonstrates the fragility of the national economy, and the high degree to which it depends on the external financing conditions for collecting new resources. In such circumstances, the sustainability problem, already intensively preoccupying Romania's external financing institutions, should have to give seriously incentives to those having an impact on macroeconomic policy decisions, especially to the government.

3. AN ESTIMATION OF THE PARAMETERS IN AN EQUATION OF PUBLIC DEBT DYNAMICS

Quantifying the dynamics of the public sector debt often starts from the well-known definition of the government's budget constraint. The change in the public sector debt D between two time periods (years) t and t –1, is given by the following equality:

$$D_t - D_{t-1} = i_t D_{t-1} + \Pi_t + a_t D_{t-1} - \Delta B_t \qquad (1)$$

where i is the average nominal interest rate on public sector debt, Π is the primary deficit (PSBR net of interest payments), a is the revaluation effect on existing debt (in Romania this is entirely due to the depreciation of the effective exchange rate of the Leu, since public debt is not sold, at least up to now, below or above its redemption value) and ΔB is the direct financing of the budget from the Central Bank [2].

Certain methodological remarks are due here. According to the Treasury's definition, the central government debt includes, among other liabilities, long-term

loans made available to the government by the National Bank of Romania as well as treasury bills sold to the latter. These long-term loans and treasury bills create debt service obligations for the central government. The implication is that ΔB in equation (1) is not the change in the monetary base, ΔM, but part of it, determined by changes in a special government account with the Bank. Another related point is the allocation of seignorage revenue. Although the NBR does not pay dividends to the Treasury, it subsidises the activities of various commercial banks and special credit institutions partly or wholly owned by the State, whose assets and liabilities are not included in the definition of public debt.

The direct financing of the budget from the NBR is the change, ΔB, in the outstanding balance of the government account with the Bank. When these accounts show a negative balance, this cannot exceed a certain limit set by the law. It is this (constrained) change in the balance of this account that constitutes direct financing of the PSBR by the NBR and is not considered by the Treasury as additional debt. It should be noted that the effective limit constraining the direct financing is lower than the one set by the law, because a (small) interest rate is charged on negative balances.

Finally, due to non-accurate primary statistical data, we used D, the public-sector gross debt (excluding government guaranteed debt), in order to evaluate the dynamics of the public sector debt, and obtained ΔB as the difference between the sum of the first three components of equation (1) and ΔD. Then, dividing both sides of equation (1) by the nominal GDP, Y_t , and manipulating we obtained:

$$d_t - d_{t-1} = (i_t + a_t - g_t)\,[d_{t-1}/(1 + g_t)] + \pi_t - b_t \qquad (2)$$

where d_t and d_{t-1} are the public sector debt to GDP ratio in two consecutive years, t and t –1, π is the primary public sector deficit as a percent of GDP, g is the nominal GDP growth rate between years t and t -1 and b is ΔB/Y. Alternatively we can approximate the nominal growth rate g as the sum of the change in the GDP deflator p and the real GDP growth rate q and rewrite equation (2) as:

$$d_t - d_{t-1} = (i^*_t - q_t)\,[d_{t-1}/(1 + g_t)] + \pi_t - b_t \qquad (3)$$

where i* is defined as the real effective average interest rate on public sector debt – it is equal to the average real interest rate, i-p, plus the revaluation effect, a. Because of the specific situation in Romania in this period, we considered the following two cases: 1) – including general government proceeds from privatisation and 2) – excluding them. Privatisation income contributed to the amelioration of the government budget for the considered period. However, viewing the dynamic equation of public debt in the long run, it would be excluded.

Applying equation (3) to explain the evolution of central government debt relative to GDP (for which data on interest payments is more reliable in comparison to that regarding the general government or total public sector debt), we obtain Table 1. The following conclusions can be drawn:

a) equation (3) predicts an acceptable evolution of the central government debt to GDP ratio for the whole period 1989-1998 (see the sum of the discrepancies and their average in column 5), but much better for sub-periods, although the year to year discrepancies appear to be significant for a number of years. This is mainly due to changing accounting practices regarding the treatment of capitalised interest

payments on central government debt sold to NBR, and to the use of the trade weighted – rather than debt weighted – effective exchange rate to estimate the revaluation effects owing to the depreciation of the Leu;

b) the main cause of the increase in the debt to GDP ratio is the aggregate represented by column 5, which includes the impact of the real effective average interest rate on public sector debt (i*) in correlation with real GDP growth rate (q) and inflation rate, by agency of nominal GDP growth rate (g). For a number of years, the main cause is the primary deficit to GDP ratios;

c) exclusion of income from privatisation produces a major impact both on primary deficit side (π) and on the direct financing from Central Bank (b). This must be an important signal for authorities at the moment when the privatisation process is finished;

d) after 1994, the dimension of parameter b became comparable with the average change in the monetary base relative to GDP (column 10).

Table 1

The Evolution of the Central Government Debt to GDP Ratio (percentage points)

	$d_t - d_{t-1}$	π_t	$\frac{(i^*_t - g^*_t)\, d_{t-1}}{1 + g_t}$	b_t	Discrepancy (2)+(3)-(4)-(1)	i - p	a_t	i^*_t	q_t	$\frac{\Delta M_t}{Y_t}$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1990	0.7	-1.0	0.5	-1.2	0.00	-13.6	301.3	287.7	-5.6	…
1991	7.9	-3.3	6.6	-4.5	-0.09	-186.1	2047	1861	-12.9	…
1992	10.2	4.4	5.5	0.3	-0.57	-184.4	347.6	163.1	-8.8	…
1993 1)	-1.8	-0.6	-0.9	0.1	+0.19	-207.4	192.4	-15.0	1.5	3.4
2)	-1.4	-0.2	-0.7	0.3	+0.19		196.9	-10.5		
1994 1)	-4.1	0.5	-4.5	-0.3	+0.38	-114.4	52.7	-61.7	3.9	3.9
2)	-3.8	1.2	-4.6	0.1	+0.38		53.9	-60.4		
1995 1)	1.9	1.2	2.5	1.6	+0.23	-17.5	52.1	34.6	7.1	2.0
2)	2.4	2.4	2.7	2.5	+0.24		53.6	36.1		
1996 1)	6.1	2.2	4.7	0.6	+0.18	-25.3	76.6	51.3	3.9	2.9
2)	6.5	3.8	5.1	2.1	+0.19		76.5	51.2		
1997 1)	0.4	0.1	1.5	2.1	-0.93	-107.2	116.5	9.3	-6.9	1.1
2)	-0.2	1.1	1.3	3.6	-1.00		113.2	6.0		
1998 1)	2.1	-2.1	4.7	1.0	-0.54	-17.5	39.6	22.1	-7.3	2.5
2)	3.4	0.2	5.2	2.6	-0.56		41.6	24.1		
Total 1)	23.3	1.4	20.5	-0.3	-1.1					
1989-98 2)	25.7	8.5	21.7	5.8	-1.2					
Average 1)	2.6	0.2	2.3	0.0	-0.1	-97.0	358.4	261.4	-2.8	2.6 [3]
1990-98 2)	2.9	0.9	2.4	0.6	-0.1	-97.0	359.1	262.0	-2.8	
Average 1)	6.3	0.0	4.2	-1.8	-0.2	-128.0	898.7	770.7	-9.1	…
1990-92 2)	6.3	0.0	4.2	-1.8	-0.2	-128.0	898.7	770.7	-9.1	
Average 1)	0.5	0.8	0.4	0.5	0.2	-91.1	93.4	2.3	4.1	3.1
1993-96 2)	0.9	1.8	0.6	1.3	0.3	-91.1	95.2	4.1	4.1	
Average 1)	1.2	-1.0	3.1	1.6	-0.7	-62.4	78.1	15.7	-7.1	1.8
1997-98 2)	1.6	0.7	3.2	3.1	-0.8	-62.4	77.4	15.0	-7.1	

1) including general government proceeds from privatisation

2) excluding general government proceeds from privatisation

3) 1993-98

4. IMPACT OF THE FISCAL POSITION ON DEBT SUSTAINABILITY

Another important determinant of the debt dynamics that appears in equation (1) is primary fiscal balance. A permanent increase in the fiscal primary surplus, would improve debt sustainability through: (i) reduce the real interest rate by crowding out reduction; (ii) increase income by increasing efficiencies in resource allocation and reduced interest rates; (iii) and increasing the demand for the money base as a result of reduced inflationary expectations (Garcia, 1998). Generally, large primary deficits are the story behind the accumulation of public debts and are in direct correlation with the development of conventional deficits.

Analysis of both financial position and public debt composition during 1990-99 is the first step towards finding an answer to the question whether fiscal policy can strike a balance by fending off debt accumulation, and the extent to which the current debt can be curtailed through the achievement of a surplus in the future. Conventional deficits of the central government were kept under control between 1990-98; Romania's performance in this area is better than that of Hungary or Bulgaria but worse than that of the Czech Republic, Croatia, Slovakia or Poland (as set out in the table of Appendix 2).

Moreover, conventional deficits of the non-financial consolidated public sector posted large swings on an annual basis – ranging from 0.4% to 4.6% of GDP – which may be regarded as moderate. Behind these developments stood the reform of the fiscal system that was aimed at alleviating imbalances. Its influence on the volume and composition of incomes and expenditures is highlighted by data in Table 2 (the yearly data are also presented in Appendix 3).

Figures show that, once primary adjustment has taken place, the imbalance can take on a life of its own due to large outstanding debts and high interest payments. In addition, an average decrease in tax revenue by 4.8 percentage point from 1990-1991 to 1997-1999 led to higher expenditures because government tried to cover generous social support programmes that replaced high proportions of lost earnings. The exclusion of more and more people from labour force generated by the restructuring process (unemployment rate increased to 11.3 in July 1999) means that fewer workers are supporting a growing number of unemployed and retirees through higher tax burdens. In 1998, the social welfare deficit balance increased to 0.9% of GDP. Because the change in the tax revenue and in government expenditure had different effects on the debt sustainability, the composition of fiscal adjustment is a critical variable.

During the transition period, the composition of incomes was affected by the following measures: abolishment of the previous confiscated profit transfer tax in 1990 and its replacement with a profit tax, which was reformed in 1991 and again in August 1994 (currently, the rate is 38 percent); replacement of the inefficient turnover tax with VAT in July 1993, initially with a single rate of 18 percent, followed by introduction of a minimum level of 9 percent in 1994 for certain food items and medicines, and its readjustment in February 1998 by increasing this level from 9 to 11%, and from 18 to 22%, replaced in 1999 by a unique level of 18%; replacement of the former wage tax based on the economy-wide gross average wage with an individual wage tax; broadening of the tax base by substantially reducing the number of exemptions; delay in enforcement during 1999 of some regulations on the

luncheon vouchers and of the tax incentives to strategic investors. Tax reforms, which have started in 1998, changed the structure of the taxes, the indirect taxes becoming majoritary. The top priority for the year 2000 will be to enforce the personal income tax that will encompass all sources of personal income.

On the expenditures' side, in the first years of transition a few major decisions were taken to formulate a public expenditure strategy. They included the increased routing of expenditures through newly-established extra-budgetary funds and accounts; improved transparency and accountability since 1993, when these special extra-budgetary funds were incorporated into the annual Budget Law; establishment of the Treasury Directorate and of a Public-Debt Directorate; control over expenditures in 1993-95 by freezing or approving some of them depending on the resources available, save expenditures on wages and salaries, pensions, benefits, welfare payments; the sharp cut in subsidies and transfers and their transparent incorporation into the government budget.

Therefore, during 1990-98, the revenues and expenditures as a percentage of GDP fluctuated within a margin of as much as 32% to 42%. The composition of expenditures shows the swift pace of self-sustaining public debt through ever-increasing costs incurred by public debt service, reaching 6.25% share-to-GDP ratio in the first half of 1999 from 0.2% in 1992. Transparent subsidies granted from the government budget to state-owned enterprises undergoing restructuring, and with the abolition of the window for financing the quasi-fiscal deficit through direct credits and interest-rate subsidies in 1992 to 1996, enabled the policy-makers to assess the real size of the economic imbalances and to implement several corrective measures.

Changing the structure of budget expenditures and revenues in Romania in the last years followed the new priorities of fiscal policy in the EU countries. The purpose of tax system reforms has mainly been to broaden the tax base, while at the same time lowering the marginal tax rates. The reforms concerning the expenditure side have consisted mostly of reducing the share of subsidies and transfer payments (Kosterna, 1997). The consolidated non-financial public sector deficits do not always show the whole picture because leave out quasi-fiscal operations that subsidise activities in the economy.

Table 2
Change in the Consolidated General Government Balance

	Average 1990-1991	Average 1992-1996	Change	Average 1997-1999	Change	Average 1990-1998
TOTAL REVENUE	40.8	33.1	-7.8	36.0	2.9	34.7
Current	39.2	32.8	-6.4	33.8	1.0	33.8
A. Tax	34.3	29.7	-4.6	31.8	2.1	30.6
A1. Direct tax	23.2	20.9	-2.3	19.6	-1.3	20.6
Profit tax	6.1	4.0	-2.0	3.8	-0.2	4.4
Tax on salaries	7.2	6.6	-0.5	6.0	-0.7	6.5
Social welfare contributions	8.9	8.6	-0.3	8.8	0.2	8.5
Other	1.0	1.6	0.6	1.0	-0.6	1.2
A2. Indirect tax out of which:	11.2	8.9	-2.3	12.3	3.4	10.0
Excises and oil tax	10.0	3.0	-7.0	2.5	-0.5	4.4
VAT	0.0	3.7	3.7	6.2	2.5	3.3
Customs tax	0.6	1.4	0.7	1.6	0.3	1.2
Other	0.5	0.9	0.4	1.9	1.1	1.1
B. Nontax	4.8	3.1	-1.8	2.0	-1.1	3.3
Capital	1.6	0.3	-1.4	2.1	1.8	0.9
Others	0.0	0.0	0.0	0.1	0.1	0.0
TOTAL EXPENDITURES	38.7	35.7	-3.0	39.5	3.8	36.5
Current	31.8	30.2	-1.5	35.3	5.1	30.9
Goods and services, out of which:	12.9	12.6	-0.4	13.3	0.7	12.5
Wages and salaries	7.4	6.7	-0.7	5.8	-0.9	6.5
Interest payments for public debt	0.0	1.1	1.1	5.0	3.9	1.6
Subsidies and transfers	20.7	18.8	-1.9	16.8	-2.0	18.4
Subsidies	10.0	8.7	-1.3	2.4	-6.3	7.5
Transfers	10.7	10.1	-0.6	14.4	4.3	10.9
Capital	6.9	4.9	-2.1	3.7	-1.2	5.2
Lending minus repayments	0.0	0.5	0.5	0.5	0.0	0.4
OVERALL BALANCE (cash-net of privatisation receipts)	2.1	-3.4	-5.6	-5.5	-2.1	-2.6
OVERALL BALANCE (cash- including privatisation receipts)	2.1	-2.7	-4.8	-3.5	-0.9	-1.8
PRIMARY Balance (including private)	2.2	-1.5	-3.7	1.6	3.1	-0.2
PRIMARY Balance (excluding private)	2.2	-2.3	-4.5	-0.4	2.0	-0.9

The quasi-fiscal deficit was higher than the conventional one, ranging between 8.2% in 1992 and 1.6% in 1993, and was chiefly financed through money creation (Croitoru, 1995). During 1991 to 1994, the government was a net creditor of the financial sector, thus spurring both external financing of the public-sector deficit

and the external debt. On the other hand, 1996 saw an all-time high of the quasi-fiscal deficit, which widened to 6.5% on a cash basis and to 8.4% on an accrual basis (OECD Economic Survey, 1998).

There are also several options for measuring the deficit. The nominal cash approach which permits international comparisons of deficits across countries. Accrual–based deficits open the door to a whole set of unconventional measures based on the consideration of public net worth or intertemporal budget constraints, and are already used frequently in the specialised literature on debt sustainability.

Statistical data on government's operations generally have a track record of payments so that the fiscal position is usually assessed on a cash basis. This system has the advantage of an easier assessment of the impact of governmental operations on the monetary aggregates, but its main drawback is that it distorts the government's commitments related to use of financial resources. Calculations based on the two methods (accrual and cash) reveal that payments have been deferred since 1995, when the difference between the two assessment methods amounted to 0.4% of GDP. One year later, the figure edged up to a 1.9% share-to-GDP, highlighting the government's default as a result of the election and thereby providing an overall view of the volume of arrears. Total conventional deficit of the consolidated non-financial public sector reached only 3.9% of GDP on a cash basis at the end of the fiscal year, by carrying forward into 1997 some expenditures with the "thirteenth month" salary of public workers and some subsidies for farmers.

We can conclude that the fiscal variable can define not only the speed of transition, but can also help assess the sustainability of government deficit. Fast reformers imposed severe budget constraints, measured as a reduction in subsidies and direct taxation, while compensating the losers of adjustment through higher social expenditure.

5. ESTIMATION OF SEIGNIORAGE REVENUE CONTRIBUTION AND ITS LIMITS

In the first part of the paper, the problem of income from seignorage to cover a part of government's budget was eluded, and implicitly included in equations (1) through (3). In this part, we tray to present some possibilities for estimating the seignorage revenue.

The evolution of the current deficits in the transition period casts doubt on the seignorage's macroeconomic sustainability, allowing for the following possible options: (i) accommodation of expenditures with revenues; (ii) raising tax revenue from the public (iii) maintenance of the deficit and financing through money creation; and (iv) maintenance of the deficit and financing by means of borrowing from the domestic or foreign markets [3].

Deficit financing through money creation actually translates into financing through seignorage–for households, this means that the real value of money will down because of inflation. When it comes to assessing the change of the monetary base in real terms, the volume of seignorage that may be raised by the government from the households is conditional on the demand for money. This decreases against

the background of a high inflation rate, thereby containing the capacity for financing the deficit.

The revenue raised through the printing of money is called seignorage (Lienert et.all, 1997). Formally, seignorage (S) is given by:

$$S = \Delta Mt / P \tag{4}$$

or

$$S = \mu\, m \tag{5}$$

where $\mu = \Delta Mt / Mt$ (the percentage growth in the nominal money stock).

Thus, seignorage is defined as the change in the nominal money balance held by the public (ΔMt) expressed in terms of price level (P) or, equivalently, the percentage growth rate of nominal money stock (μ) times the real money stock: $m = M / P$. To have a meaningful quantitative assessment of seignorage, such an amount, St, is usually measured in terms of GDP. So, St is defined as:

$$St = \Delta Mt / GDPt \tag{6}$$

where GDTt is nominal GDP.

Seigniorage received by the government, Sg, will be much smaller and will only reflect the government issuance of reserve money or high-powered money (H):

$$Sg = \Delta H / P \tag{7}$$

or

$$Sg = \beta\, (H / P) \tag{8}$$

where $\beta = \Delta H / H$, that is percentage growth in reserve money.

Seignorage, Sg, can be decomposed into a "pure seignorage" component (h), that is desired by the public and an "inflation tax" component (π h), which, from the point of view of the public, is reduction of the real value of money due to inflation, given by:

$$Sg = h + \pi\, h \tag{9}$$

where $h = H / P$. The equivalent formula for expression (7) above is:

$$Sgt = \Delta ht + \Delta Pt / Pt*ht-1 \tag{10}$$

The expression (10) is also used in the measurement of nominal and real fiscal and quasi-fiscal deficits as net seignorage collected by the Central Bank – equal to seignorage (Sgt) less the interest paid on commercial bank reserves (Rocha and Saldanha, 1992). Croitoru (1995) measuring the fiscal and quasifiscal deficit in Romania during 1990-1995, used expression (10) but changed it as:

$$\Delta H / P = \Delta h + (\pi / 1+\pi) h\text{-}1 \qquad (11)$$

Because Romania is characterised by a high inflation rate, we used expression (10) in our work based on the monthly change in reserve money and a correction coefficient for inflation. The result for seignorage for the 1990-1994 period were similar with the figures obtained by Croitoru and they are presented in Table 3.

Table 3
Seignorage and Inflation Tax in Romania

Indicators	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999 H1**
Inflation rate (change Dec./Dec.)	199.2	295.5	61.7	27.8	56.9	151.4	40.6	30.8
Gross Seignorage (% of GDP)								
In nominal terms	7.7	8.2	4.3	3.4	1.8	4.9	1.3	10.3
In real terms	6.9	6.8	4.0	3.1	1.4	4.1	1.1	3.0
Gross Pure Seignorage (% of GDP)	-3.4	-2.4	1.0	1.5	-1.6	-0.4	-1.0	-1.6
Inflation Tax (% of GDP)	10.3	9.2	3.0	1.7	3.0	4.5	2.1	4.6
Broad Money (% of GDP)	30.8	22.3	21.4	25.3	27.9	24.8	27.3	21.7
GDP (bill. lei)	6029.2	2035.7	49773.2	72135.5	108919.6	250480.2	338670	474830

The presented data reveal that the government of Romania obtained a larger volume of seignorage for financing the deficit in the first years of transition to a market-oriented economy. The level of seignorage was much higher in the years with three-digit inflation rate, i.e. in 1992, 1993, and 1997. The sharp decline in seignorage in recent years [4] helped to circumscribe this indicator to the limits close to those recorded usually by the market economies, i.e. 1-1.5% (Coricelli, 1997). It should be pointed out that enforcement of Law No.101/1998 regarding independence of the Central Bank stipulates the price stability as the main goal of the latter. This had a sensible impact on containing the government's access to financing through seignorage. The upturn developed by this indicator in the first half of 1999 is undoubtedly linked to the pressing liquidity needs revealed by the banks undergoing restructuring (BANCOREX and Banca Agricola) and to the efforts made by the Central Bank to pre-empt a systemic crisis. The subsequent take-over to the public debt by issuing zero coupon bonds in the amount of ROL 6,617 billion and approximately USD 246 million helped to finance the deficit.

Additionally, during the tightening monetary policy the seignorage drooped off as a result of the lower economic growth that decelerated expansion of reserve money. That, in turn, means that a larger portion of the deficit must be financed by increased debt. The smaller the deficit that needs to be financed by debt, the more the monetary authorities are on the upward sloping portion of the Laffer curve and accept inflation. The question is who determines how large the seignorage must be.

In the Sargent-Wallace story, the issue is that the Central Bank must choose between fighting present inflation with "tight" monetary policy now or fighting future inflation with "easy" monetary policy now. (Dornbusch, 1996). In fact, that translates into a need for the co-ordination monetary policy with fiscal authority.

The drop in incomes from seignorage and inflation taxes points to the high level of demonetisations affecting the Romanian economy over the past few years. The slow process of re-monetisation and financial deepening in Romania lagged far behind those recorded by Poland, Slovak Republic, and Hungary. This leads us to the conclusion that the 3% deficit-to-GDP ratio laid down as a convergence criterion for integration with the European Union may prove inappropriate as the permissible level to maintain, as the monetary security appears to be much lower (Kosterna, 1997). Both households and companies grapple with rampant inflation after being freed from the illusion of money, so that the governments find themselves in the position of resorting to alternative financing sources, such as debt increases. However, as long as inflation sticks to moderate levels, resorting to the inflation tax should prevail over the debt increases. Dornbusch and Fisher claim that, in general, the cost of swiftly curbing inflation down to moderate levels (e.g. 20%) may exceed the benefits, particularly in such circumstances as financial instability (Coricelli, 1997, p. 46).

6. THE RELATIONSHIP BETWEEN THE PUBLIC SECTOR AND EXTERNAL DEFICITS

The impact of the public sector deficits on the balance of resources in a national economy is a central theme in the macroeconomic policy. Macroeconomic theory offers a rich menu of linkages between public sector deficits and the rest of the economy. As far as the linkages between the public sector and external deficits are concerned, we will only refer to two theories, which can be considered as being at the two opposite extremes, noting that intermediate, and rather more plausible, views may be considered as combinations of these two extremes. The purpose of this exercise is to examine whether the Romanian experience justifies either of them, and hence derive some clues for the future.

The first case goes back to Ricardo and has been revived recently by Barro (1988). According to this viewpoint, the changes in budget deficits cause offsetting the changes in private saving through anticipations of changes in future taxation. Therefore, they have no effect on national savings and, consequently, on the current external account. The second "extreme" view is the one related to the New Cambridge Group (Fetherston and Godley, 1978) and is derived from the UK empirical evidence. According to it, the private sector's (household and corporate sector) net acquisition of financial assets is zero. That is, the private disposable income is equal to the private consumption and investment expenditure. Therefore, the national income identity implies that a government budget deficit must be matched by an equal current account deficit (and a change in the government budget deficit by an equal change in the current account deficit). This view is also consistent with the Mundell-Fleming model under perfect capital mobility and a floating exchange rate.

We present in Appendix 4 the relevant evidence for Romania regarding the evolution of the general government financial balance, the current account balance, private savings, investment, etc., all relative to GDP and on a national accounts basis. Dividing the whole period 1990-1998 in three equal periods, that can be characterised as being relatively homogeneously, and taking the average ratios for the three periods, we obtained the tables 4a and 4b, which are different versions of the same identity.

Table 4a
The National Income Identity (I)

	GGFS	PS	PI	CAS	Discrepancy (1)+(2)-(3)-(4)
	(1)	(2)	(3)	(4)	(5)
1990-1998 average, % of GDP	-1.44	16.69	20.74	-5.82	0.32
1990-1992 average, % of GDP	0.87	17.27	23.90	-6.73	0.97
1993-1995 average, % of GDP	-1.63	19.00	21.00	-3.63	0.00
1996-1998 average, % of GDP	-3.57	13.80	17.33	-7.10	0.00
1993-95 / 1990-92 changes between averages, % of GDP	-2.50	1.73	-2.90	3.10	-0.97
1996-98 / 1993-95 changes between averages, % of GDP	-1.94	-5.20	-3.67	-3.47	0.00

Table 4a is based on a version of the national income identity, expressed by equation (12), which presents separately the general government financial surplus separately from the private savings (PS) and private investment (PI). GGFS includes the current and investment expenditures in the expenditure side. Such a presentation is helpful if the objective is to separate the budget deficit from the private sector's saving-investment gap:

$$GGFS + PS - PI = CAS, \qquad (12)$$

where CAS is the current account surplus on a national accounts basis ("net lending"). On the other hand, Table 4b is based on another version of the same identity:

$$NS - NI = CAS \qquad (13)$$

which presents the CAS as the difference between the national gross savings (NS) and investment (NI).

Despite the considered period being very short, we attempted to extract some conclusions. Data in Table 2a showed that although the average general government financial deficit (GGFS) has increased by 2.5 points and about 2 points between two consecutive three-year periods, the current account deficit (CAS) has changed in two different ways: in a contrary sense during 1993-95 and in the same sense during

1996-98. This implies that for the first period it seems that the "New Cambridge" hypothesis was in contrast to the Romanian experience, but for the next period (1996-98) it appeared to be more realistic.

On the other hand, the resulting data from Tables 4 showed that the average private saving ratio (PS) has increased little between the first two periods (1995-92/1992-90), but it was accompanied by a compensatory increase in government dissaving, implying a quasi-stagnation of the national gross saving ratio (+0.6 points). Between the last two considered periods (1996-98/1993-95) there was a general crisis in savings and investment, with both sectors registering significant decreases. However, the government savings fell more than the private savings. While the current account deficit has changed significantly (+3.1 points between the two first periods and about –3.5 points between the last two periods), the numbers do not agree with the neo-Ricardian conclusions. The transmission mechanism is also in contrast to the one underlying the neo-Ricardian theory. For instance, considering the changes between the two periods, in Romania it was private investment (PI), rather than private savings (PS) that adjusted to the government dissaving. As it is evident from Table 4a, the fall in private investment was almost three percentage points of GDP, while the increase in private savings was less than two points. In fact, the change in private savings was smaller and in investment larger. Nonetheless, there was quite a different situation between the last two periods, with negative changes both in private saving and private investment.

Table 4b
The National Income Identity (II)

	NS	NI	CAS	Discrepancy (1)-(2)-(3)
	(1)	(2)	(3)	(4)
1990-1998 average, % of GDP	19.62	25.89	-5.82	-0.44
1990-1992 average, % of GDP	22.17	29.87	-6.73	-0.97
1993-1995 average, % of GDP	22.77	26.00	-3.63	0.40
1996-1998 average, % of GDP	13.93	21.80	-7.10	-0.77
1993-95 / 1990-92 changes between averages, % of GDP	0.60	-3.87	3.10	1.37
1996-98 / 1993-95 changes between averages, % of GDP	-8.84	-4.20	-3.47	-1.17

We could generally classify the explanations for the decline in private investments during the whole transition period into three groups: 1) incomes policy combined with price and profit margins control and an appreciating real exchange rate; 2) structural constraints; and 3) a crowding-out mechanism. Referring to the first group of causes, many times during transition period the average pay in industry was rising faster than productivity, as encouraged by official guidelines. In contrast, the most advances Central-European countries were restricting the pay increases in correlation with the evolution of productivity. This phenomenon was reinforced after

the election of a socialist coalition government in 1992 that provided large increases in the minimum wages and made wage indexation its official policy. A similar kind of policy was also applied for a short period after the elections in 1996 and it has been resumed in 2000, after the election of a social-democratic government. Especially, during the first years of transition – but in certain measure up to now – the rather unorthodox and bureaucratic controls on prices, profit margins and house rents as well as an (ex-post) non-accommodating exchange rate policy caused a profit squeeze and a reduction in housing investment. For the second explanation, it can be mentioned that the removal of barriers protecting Romanian industry prior to Romanian's EU preparations and entry into CEFTA exposed the Romanian economy to world competition, which required rapid adjustment. The scarcity of managerial skills and qualified personnel, the inability of most of the Romanian firms to absorb technological advances beneficial to the quality of their products or to the cost of their production, bureaucratic impediments combined with a rather erratic industrial policy, and a financial system biased against the provision of venture capital resulted in the failure of Romanian industry to adjust to the new, more competitive environment. In relation to the third explanation, the presence of a growing public sector deficit, along with the fall in private investment, is sometimes used as an argument in favour of the operation of a crowding out mechanism through credit rationing because the lending interest rates were fixed by authorities at low levels up until 1995 (the real rates were negative many years after 1989). Although it is not an easy task to support the crowding out through credit rationing argument for the 1992-95 period, during which the private investment continued to fall, there is no doubt that the 1990-94 government guidelines on income policy, the rather old-fashioned prices and profit margin controls, along with the labour market rigidities were, on the whole, creating a crowding out mechanism. This view, which effectively suggests that it is the overall stance of the economic policy that matters, seems to be justified by the events in the following years, which witnessed the reversal of the macroeconomic policy. This was mainly measured by a more severe incomes policy, effectively based on a drastic reduction of the degree of wage indexation and a change of the exchange rate policy. Also, this was partly a result of an agreement with IMF signed in 1993-94, regarding macrostabilisation programme that had as main result a drastic diminution of the inflation rate.

Before we close this section, it is worth looking at the relationship between the external debt and the current account. The relationship between changes in the net external debt, the current account and net capital inflow (Dornbusch, 1987, p. 99) may be written as:

$$\Delta (NFB) = CAD - (NILTC + NISTPC) \qquad (14)$$

where Δ (NFB) is the change in net external debt, CAD is the current account deficit, NILTC is the net inflow of long term capital (direct and portfolio investment), while NISTPC is the net inflow of short-term private capital.

The net inflow of private capital traditionally covers part of the current account deficit (Table 5), with the net inflow of long term capital being the dominant item (direct and residential investment).

Up to 1995, the prevailing negative interest rates along with an underdeveloped financial market were discouraging the short-term capital inflow.

During periods of crisis the domestic capital was also fleeing abroad, avoiding the existing exchange controls in various ways. Although the data on capital flight were not available, the sign of the balancing item in the balance of payment accounts was sometimes used by the non-technical press as an indicator of such movements. The reversal of the macroeconomic policy in 1993-1995 and in 1997-1998 with the application of stabilisation programme in according with IMF standby agreement caused an increase in the net capital inflow (both long-term and short-term) and, apparently, a reversal of the capital flight. The authorities' change of attitude toward foreign capital (the relevant law was modified in favour of the direct investment, while the implementation of a gradual deregulation of financial and product market started immediately) the overall stance of the economic policy and the 1998 programme caused an increase in the private long term capital inflow. In addition, the increase in the real interest rates and the gradual deregulation of the financial markets, along with the creation of new opportunities for short-term investment, attracted short-term capital.

Table 5
Romanian Balance of Payments

bill. $ -

	1990	1991	1992	1993	1994	1995	1996	1997	1998
CAB	-1.80	-1.29	-1.46	-1.23	-0.52	-1.77	-2.57	-2.14	-3.01
Net inflow of private capital	0.14	-0.91	-0.50	0.37	-0.77	0.21	1.33	-1.11	2.11
Balance item	n.a.	0.14	0.40	0.15	0.94	0.46	0.36	1.10	0.38
Balance of payment before official borrowing	-1.83	-2.42	-3.28	-2.31	-1.67	-3.18	-3.99	-4.52	-4.61

7. CAN THE PUBLIC SECTOR DEFICITS BE SUSTAINED?

As we have seen, the persistent public sector primary deficits (excluding income from privatisation) during 1992-98 (with a small exception in 1993) have caused a new record increase in the public sector debt. In addition, they have reduced the country's national saving ratio to very small levels in comparison to the previous periods and the international standards, reduced the public sector's net worth since they are due to consumption and not public investment deficits and were crowding out private investment. In fact, it is national investment – private and public investment – that has been crowded-out by government current dissaving, as Appendix 4 and Table 4b show. They have failed to boost the economy, casting doubt on whether a small, open economy like Romania's, suffering from structural impediments, can use an expansionary fiscal policy to boost output – especially during a period in which its trade partners are following restrictive policies.

Very few would now object to the view that the current fiscal situation in Romania is unsustainable, especially if we consider the quite recent external debt-service burden crisis. It is so because the persistent primary deficits (generated indeed during some extraordinary – still, too much prolonged – circumstances of transition, but not, however, like during a wartime period) combined with rising real interest rates may, at some point in the future, crack the public's confidence, and

hence create a crisis with unforeseen consequences in the government's ability to generate primary surpluses to repay the existing debt (e.g. a capital flight) (Spaventa, 1988).

To see what the dynamics of debt accumulation involve, we can solve equation (3) recursively to obtain

$$d_T = d_0 \, v^T + \Sigma (\pi^m - b_m) \, v^{T-m} \qquad (m = 1, 2, \ldots, T) \qquad (15)$$

where: $v = (1 + i^* + p) / (1 + q + p)$, while it has been assumed, in order to simplify calculations, that the real effective interest rate, i*, the real growth rate, q, and the change in the GDP deflator, p, are constant: $i^*_t = i^*$, $q_t = q$, $p_t = p$. Using equation (15) we can predict the debt to GDP ratio for some future moment T, making assumptions about the relevant parameters. A high real growth rate relative to the effective real interest rate tends to reduce the debt to GDP ratio, d, while persistent primary deficits net of (real) Central Bank financing tends to increase it. We consider it useful to simulate the evolution of the public sector debt for the next ten years using past parameter values that conform to the data in Table 1. The simulation output is presented in Table 6.

Romania's determination to reduce its inflation rate in order to stabilise its economy and achieve the conditions to be accepted at some time in the future into the EU, restricts its ability to increase the direct financing of the budget deficits by NBR (as we already analysed in this paper), and also implies that the (real) interest rates will have to tend to the European levels. A rather safe and helpful assumption to make is that the growth rate q will be equal to the average effective real interest rate i* on public debt, although it seems to be in contrast to the past experience. We can see from Table 1 that only in 1997 i* was small, 6%, which is already plausible for the growth rate. This assumption can be justified only when the following events happen: a rapid increase in marginal real interest rates on government borrowing with short-term new government borrowing and high real interest rates prevailing world-wide. It also has a theoretical appeal – it corresponds to the "golden rule of accumulation" of the optimum growth theory [5]. Under the assumption q = i*, equation (15) becomes:

$$d_T = d_0 + \Sigma (\pi^m - b_m). \qquad (16)$$

If, for instance, the 1990-1998 average π-b, which was equal to 0.3%, is assumed to prevail during the next decade, then taking into account that $d_0 = d_{1999} = 1$, the corresponding ratio at the end of the next decade will be only 1.03. Another example: if the 1996 average π-b, which was equal to 1.7%, is assumed to prevail during the next decade, then the corresponding ratio at the end of the next decade will be only 1.17. That is, the debt to GDP ratio will be 17% higher than it is today. Similarly, the corresponding ratio, d_T, for a very large T will tend to infinity. In fact, d_T will always tend to infinity for a very large T, unless the "average" future primary deficit is zero. An interesting, and empirically appealing case arises when the primary deficit is positive but declining. It can be shown (using the so-called d'Alambert's theorem on the convergence of infinite series) that d_T will converge to an infinite limit for a very large T, if the primary deficit, π-b, is declining at a constant rate. If $q > i^*$, it can be shown from equation (15) that d_T will always be

bounded, provided that the primary deficits remain bounded. In the special case where the primary deficit, π-b, is constant, d_T will converge to $(\pi\text{-b}) / (1\text{-v})$ for a very large T. It should be noted, however, that this limit will be a very large one (and may not be practically sustained). For instance, if π-b remains at the 1996 level, for reasonable values of q and i* (7.1% for q, as it was in 1996, and 6.0% for i*, as it was in 1997), d_T will be closed to 4.00, which is a very high debt to GDP ratio – either by historical or by international standards. Finally, if $q < i^*$ the debt to GDP ratio increases without limit [6].

Table 6
The Simulation of Debt Evolution for Ten Years

The value of parameters as in the year*):	Value of indicator v**)	Time horizon ($d_0 = 100$)	
		5 years	10 years
1995	1.204	239	585
1996	1.317	388	1519
1997	1.054	111	124
1998	1.227	258	695

*) See Table 1 (excluding general government proceeds from privatisation)
**) See equation (15)

7. CONCLUSIONS

The main conclusions of the paper are the following:

1) The record increase in the public debt to GDP ratio of the transition period is due to a very large increase of the social consumption expenditure without a parallel increase in the tax revenue;

2) Record primary deficits occurred during the analysed election years (1992 and 1996) indicate the presence of a political business cycle;

3) Real average effective interest rates on central government debt were negative for some years (1993 and 1994), but are increasing and then probably stabilising;

4) There were many oscillations in the evolution of the current account deficit relative to GDP and in the of public sector deficits, on the background of a severe decrease in saving and investment (both private and governmental). Many times they were non-correlated through the operation of various crowding-out mechanisms;

5) The high public sector consumption deficits should not continue. The country's saving ratio is now the lowest in the European area despite a relatively constant household saving ratio, while a rapidly growing public debt may crack the public confidence and lead to capital flight;

6) A better correlation between some fundamental macroeconomic indicators and including pressures that come from the international financing institutions, as appears to be the trend in the recent years, will be necessary in order to ensure the sustainability of the public sector debt and the credibility of the Romanian economy for the future.

APPENDIX 1

t	dtb_d%$_t \cdot 100$	dExb_d%$_t \cdot 100$	dInb_d%$_t \cdot 100$	dtb_L%$_t \cdot 100$	dExb_L%$_t \cdot 100$	dInb_L%$_t \cdot 100$
1990	3	3	0	4.6	4.6	0
1991	7.4	7.4	0	18.3	18.3	0
1992	19	16.5	2.4	28.4	24.7	3.7
1993	17.4	16.1	1.3	29.2	27.1	2.1
1994	20.6	18.2	2.4	22	19.5	2.5
1995	20	17.8	2.3	25.4	22.5	2.9
1996	27.4	23.6	3.8	35.9	30.9	5
1997	32.8	27.4	5.4	36.7	30.7	6
1998	31.8	25.4	6.4	39.2	31.3	7.9

dtb_d is gross country's debt to GDP ratio, in USD
dExb_d – gross external debt to GDP ratio, in USD
dInb_d – gross internal public debt to GDP ratio, in USD
dtb_L – gross country's debt to GDP ratio, in Lei
dExb_L – gross external debt to GDP ratio, in Lei
dInb_L – gross internal public debt to GDP ratio, in Lei

APPENDIX 2

The Fiscal Position of Selected Transition Countries, 1990-1998

			Bulgaria	Czech Rep.	Croatia	Poland	Romania	Russian Feder.	Slovak Rep.	Slovenia	Hungary
BUDGET	Government budget as deficit-to-GDP %	1990	–8.5	–0.2	...	3.1	0.3	...	–0.2	–0.3	0.4
		1991	–3.8	–2.1	...	–3.8	–1.9	–13.9	–3.8	2.6	–4.9
		1992	–5.8	–0.2	...	–6.0	–4.4	–5.5	–2.8	0.3	–6.7
		1993	–11.0	0.1	0.2	–2.8	–2.6	–9.9	–6.2	0.3	–5.6
		1994	–6.5	0.9	0.6	–2.7	–4.2	–11.4	–5.2	–0.2	–7.4
		1995	–6.6	0.5	–0.8	–2.6	–4.1	–5.5	–1.6	0.0	–2.4
		1996	–10.9	–0.1	–0.1	–2.5	–4.9	–8.1	–4.4	0.3	–1.9
		1997	–3.7	–1.0	–0.9	–1.3	–3.6	–7.3	–5.7	–1.1	–4.0
		1998	1.3	–1.6	0.9	–2.5	–3.1	–5.0	–2.7	–0.6	–5.4

Source: NBR data, Annual Report for 1998, p. 28.

APPENDIX 3

Consolidated General Government (IMF adjustments)
(in percent of GDP)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999 half
TOTAL REVENUE	39.8	41.9	37.4	33.9	32.1	32.1	29.9	30.6	35.0	42.3
Current	39.5	38.9	36.6	33.6	31.9	32.0	29.8	29.4	32.6	39.4
A. Tax	35.5	33.2	33.5	31.3	28.2	28.8	26.9	26.7	30.9	37.9
A1. Direct tax	22.7	23.7	25.0	21.6	20.1	19.6	17.9	16.9	17.8	23.9
Profit tax	7.1	5.1	5.3	3.8	3.8	3.9	3.3	4.3	3.3	3.9
Tax on salaries	6.8	7.6	7.6	6.6	6.5	6.4	6.1	5.6	5.5	6.8
Social welfare contributions	7.9	10.0	10.3	9.3	7.9	7.9	7.5	6.6	8.7	11.0
Other	1.0	1.1	1.8	2.0	1.9	1.4	1.0	0.4	0.4	2.2
A2. Indirect tax, out of which:	12.8	9.5	8.5	9.7	8.1	9.3	8.9	9.8	13.1	13.9
Excises and oil tax	11.8	8.3	6.9	3.7	1.6	1.5	1.4	1.7	2.5	3.4
V.A.T.	0.0	0.0	0.0	3.6	4.6	5.2	4.9	4.7	6.6	7.2
Customs tax	0.2	1.1	1.3	1.3	1.1	1.4	1.5	1.3	1.7	1.9
Other	0.8	0.1	0.2	1.0	0.8	1.1	1.1	2.1	2.3	1.4
B. Nontax	4.0	5.7	3.1	2.3	3.7	3.2	2.9	2.7	1.7	1.6
Capital	0.3	3.0	0.7	0.2	0.1	0.1	0.1	1.2	2.4	2.6
Others	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
TOTAL EXPENDITURES	38.7	38.7	42.0	34.2	33.9	34.7	33.8	34.2	38.3	46.1
Current	30.8	32.7	36.7	29.3	28.1	28.8	28.2	28.8	34.3	42.7
Goods and services, out of which:	12.3	13.6	14.1	12.0	12.4	12.6	11.8	10.7	12.9	16.3
Wages and salaries	7.2	7.7	7.5	6.8	6.7	6.5	6.0	4.9	5.5	7.0
Interest payments for public debt	0.0	0.0	0.2	0.9	1.4	1.4	1.7	3.4	5.4	6.1
Subsidies and transfers	19.8	21.6	25.9	18.1	16.3	17.4	16.5	14.1	16.0	20.4
Subsidies	8.3	11.7	16.5	8.6	5.8	6.6	6.1	2.5	1.7	3.1
Transfers	11.6	9.9	9.4	9.5	10.5	10.8	10.4	11.6	14.4	17.3
Capital	7.9	6.0	4.1	4.3	5.5	5.3	5.2	4.8	3.3	3.1
Lending minus repayments	0.0	0.0	1.1	0.5	0.2	0.6	0.3	0.6	0.6	0.3
OVERALL BALANCE (cash net of privatisation receipts)	1.0	3.2	-4.6	-0.8	-2.5	-3.8	-5.5	-4.6	-5.6	-6.3
OVERALL BALANCE (cash- including privatisation receipts)	1.0	3.2	-4.6	-0.4	-1.9	-2.6	-3.8	-3.6	-3.3	-3.8
PRIMARY Balance (including private)	1.0	3.3	-4.4	0.6	-0.5	-1.2	-2.2	-0.1	2.1	2.8
PRIMARY Balance (excluding private)	1.0	3.3	-4.4	0.2	-1.2	-2.4	-3.8	-1.1	-0.2	0.2

APPENDIX 4

Gross Savings

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999 half
Real GDP (%)	-5.6	-12.9	-8.8	1.5	3.9	7.1	3.9	-6.9	-7.3	-3.9
Current Account Balance	-8.7	-3.5	-8.0	-4.5	-1.4	-5.0	-7.3	-6.1	-7.9	-6.0
(CAS=GGFS + PS – PI)	1.03	3.25	-4.61	-0.37	-2.40	-2.92	-4.05	-3.91		
General Government Balance (GGFS)	1.0	3.2	-4.6	-0.4	-1.9	-2.6	-3.8	-3.6	-3.3	-3.8
General Government Balance on Current Transaction (GGFSCT)	8.6	6.2	-0.1	4.4	3.9	3.2	1.6	0.7	-1.8	-1.9
Private sector gross saving (PS)	12.6	15.3	23.9	20.6	19.8	16.6	17.2	14.4	9.8	6.2
(PS=NS-GGFSCT)			26.5	22.8	23.3	18.7	20.6		9.8	
National Gross Saving (NS) (NS=PS+GGFCT)	21.2	21.5	23.8	24.9	23.6	19.8	18.8	15.0	8.0	4.3
E=(Pib-Cf)/PIB	20.8	24.1	23.0	24.0	22.7	18.7	17.4	14.7	9.2	4.2
Gross household saving (GHS)		1.6	3.4	4.0	7.3	7.6	5.5	…	…	
Private gross investment (PI)	22.3	22.1	27.3	24.7	19.3	19.0	20.6	17.0	14.4	7.7
Gross state investment (GST)	7.9	6.0	4.1	4.3	5.5	5.3	5.2	4.8	3.3	2.6
Gross National Investment(NI)	30.2	28.0	31.4	28.9	24.8	24.3	25.9	21.8	17.7	10.3

NOTES

[1] In a recent paper published by STANDARD&POOR'S it was shown that various factors have eroded the advantages of Romania's moderate debt burden: high political risk; policy slippage, and a rapid rising external debt-service burden because of continued borrowing to finance budget deficits and the loss-making, state-owned enterprises and banks (Standard and Poor's, 1999).

[2] To estimate parameters i and a in equations (1)-(3), we used the following relations:

$$i_t = Db_t / D_{t-1}$$

where Db is general government interest, and respectively

$$a_t = (D_t / D_{t-1}) [1 - (CS_{t-1} / CS_t)]$$

CS being exchange rate (Lei/USD) at the end of the year.

[3] Bernard Laurens and Enrique G. de la Piedra (1998) point to three possibilities to secure government borrowing: voluntary private sector purchases of government debt in the domestic market, foreign borrowing and forced placement of government debt, such as the creation of a "captive" market for government securities by forcing institutions to invest a certain share of their portfolios in such securities.

[4] It is noteworthy that the differences between the size of this indicator after using this assessment method do not affect the conclusions of our analysis. Thus, consistent with calculations made by Nina Budina (1998), gross seignorage in Romania equalled 7.8% in 1992, 7.4% in 1993, 9.8% in 1994, 2.9% in 1995, and 5.25% in 1996.

[5] Approaches to the problem of debt accumulation using differential equations end up with an indeterminacy in the case where g = i, while the present method, starting from equation (3) and solving it recursively to obtain equation (15), avoids it (OECD, 1989).

[6] This is the so-called Domar's law.

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