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Marek Jarociński

Moldova in 1995–1999: Macroeconomic and Monetary Consequences of Fiscal Imbalances

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Marek Jarociński

Marek Jarociński, born 1974 in Warsaw, holds MA in Economics from the Warsaw University, "Program Columbia" (1998) and MSc in Economics from K.U.Leuven (Belgium) (1997). He participated in advisory missions of CASE in Georgia (1997–1998) and Moldova (1999–2000). His area of interest is macroeconomics.

Abstract

After stabilization in 1993 Moldova maintained an unsustainable macroeconomic policy mix. The key problem was a lack of a fiscal adjustment, which resulted in large budget deficits. At the same time, the National Bank of Moldova (NBM) attempted to conduct a tight monetary policy. As a result, the exchange rate was appreciating, domestic absorption increasingly exceeded income and the country has been running large Current Account deficits. Moldova had an access to international financial markets and its indebtedness vs. the rest of the world was growing year by year at an alarming rate. Finally, in late 1998 Moldova suffered a balance of payments crisis, directly triggered by developments in Russia. Moldovan leu was devalued by about 70% and the current account improved.

The paper concentrates on the empirical dimension of the Moldovan financial crisis. It provides a case study of a) detecting and interpreting macroeconomic anomalies and b) identification of early warning signals of policy unsustainability and imminent change of financial market sentiment.

The first part of the paper discusses domestic macroeconomic developments, which correspond with the current account evolution. It examines determinants of a steady growth of the share of consumption in GDP, and of developments in government and non-government disposable incomes. The turnaround of foreign balance had its counterpart in a significant reduction of the share of consumption and investments in GDP, although, given the economic outlook of Moldova, investments still remained surprisingly high. Macroeconomic anomalies in Moldova have their roots in both the fiscal disequilibrium and a too slow progress in enterprise restructuring.

The second part of the paper identifies monetary phenomena generated by macroeconomic imbalances. Initially, the tight monetary policy of the NBM, the resulting stable exchange rate and low inflation contributed to a gradual growth of demand for money and remonetization. However, growing imbalances in the Moldovan economy put sustainability of the exchange rate and price level under question. As a result, demand for lei started to shrink and remonetization reversed itself. Interest rates increased and the NBM foreign reserves started to fall. Because of the uncertainty about the future stability of the leu, people converted much of their deposits into dollars and the dollarization of deposits reached more than 50%.

The case of Moldova illustrates dangers faced by a country, which conducts a loose fiscal policy and relies on foreign capital inflows. Prior to the crisis, many macroeconomic indicators, especially in the monetary sphere, had been judged as appropriate. However, a hard monetary stance only postponed manifestation of problems caused by the fiscal imbalance and lack of structural reforms.

1. Introduction

After stabilization in 1993 Moldova maintained an unsustainable macroeconomic policy mix. The key problem was a lack of any fiscal adjustment, which resulted in large budget deficits. At the same time, the National Bank of Moldova (NBM) attempted to conduct a tight monetary policy. For much of the period it refused extending direct credits to the government and large deficits were covered by foreign and domestic borrowing. Inflation was curbed and the exchange rate was stable, but the lack of fiscal adjustment and slow structural reforms gave rise to a serious macroeconomic disequilibrium. Domestic absorption increasingly exceeded income and the country has been running large Current Account deficits. Moldova's indebtedness vs. the rest of the world was growing year by year at an alarming rate. Thus, in the longer term the hard monetary stance only postponed the manifestation of problems caused by the fiscal imbalance and lack of structural reforms.

A current account deficit would be a normal phenomenon in any transition country, which, like Moldova, needs large capital inflows to finance investments (which are necessarily associated with imports of capital goods). Such deficits are sustainable as long as the long term foreign capital flows in, optimally in the form of Foreign Direct Investments (FDI). However, in Moldova FDI inflows have been small in relation to the Current Account, and external deficits were financed by contracting a growing and increasingly short term foreign debt. While in the beginning Moldova borrowed money only from the IMF and other multilateral and bilateral creditors, in 1996 debt on commercial terms started exploding, including issuance of Eurobonds and a 40% foreign participation in the T-bills market in 1997 (see Radziwiłł et al., 1999, for a discussion). Lack of restructurization of the energy sector contributed to increasing arrears in payments for energy related imports.

Finally, in late 1998 Moldova suffered a balance of payments crisis, directly triggered by developments in Russia. As a result of the crisis, Moldovan leu was devalued by about 70%. Exports proved to be inelastic with respect to the exchange rate, at least in the short term, and in fact they even decreased. However, imports decreased more and the current account improved significantly. This turnaround had its counterpart in a significant reduction of the share of consumption and investments in GDP and other changes of macroeconomic outlook, which will be discussed here.

Foreign debt additionally increased in relation to GDP because of the leu devaluations. Growth of the domestic debt (consisting mainly of short term T-bills) provided an additional instability factor. It is obvious that by 1999 Moldova was unable to

Table 1. Fiscal and Monetary policy indicators (in lei mln, unless otherwise indicated)

	1993	1994	1995	1996	1997	1998	1999
Fiscal policy - Budget Deficit* (cash)	-137	-280	-374	-753	-667	-307	-368
- in % of GDP	-7.5%	-5.9%	-5.8%	-9.7%	-7.5%	-3.4%	-3.0%
- ch.in expenditure arrears (+ increase)	26	110	145	364	-290	510	7
- Budget Deficit (commitment)	-163	-390	-519	-1117	-377	-817	-375
- in % of GDP	-8.9%	-8.2%	-8.0%	-14.3%	-4.2%	-9.0%	-3.1%
Monetary policy - change in Monetary Base	191	307	232	67	276	-62	438
- change in MB / GDP	10.5%	6.5%	3.6%	0.9%	3.1%	-0.7%	3.6%
- MB (% growth)	389%	128%	42%	9%	33%	-6%	41%

*Budget deficit excluding grants
Source: MET, expenditure arrears – IMF

Table 2. Exports, Imports, Current Account (USD mln, % of GDP), MDL/USD exchange rate (period average)

	1993	1994	1995	1996	1997	1998	1999
Exports	395	565	746	795	874	632	471
	33%	49%	52%	47%	45%	37%	41%
Imports	530	669	841	1072	1171	1033	568
	44%	58%	58%	63%	60%	61%	50%
CA	-155	-97	-95	-198	-284	-347	-21
	-13%	-8%	-7%	-12%	-15%	-21%	-2%
MDL/USD pa	1.5	4.1	4.5	4.6	4.6	5.4	10.5

Source: MET, CA in 1999 – estimate

Table 3. Foreign and domestic debt 1993–1999

	1993	1994	1995	1996	1997	1998	1999
Foreign debt* USD mln	255	633	840	1070	1286	1390	1462
% GDP	21%	55%	58%	63%	66%	82%	129%
Internal debt MDL mln	105	270	477	737	971	1572	1910
% GDP	6%	6%	7%	9%	11%	17%	16%

*Including energy debt
Source: Ministry of Finance

service its obligations without a significant help and cooperation from creditors. However, the increasing unsustainability of the situation must have been visible already by 1997. Further in this paper, manifestation of this fact in monetary statistics will be discussed.

The background, course and aftermath of the Moldovan balance of payments crisis has been described in the IMF Country Report (1999) and in CISR Economic Surveys, No.2–4. Radziwiłł et al. (1999) also provide a broad discussion of the subject, especially comprehensively covering problems of fiscal policy conducted in Moldova. This paper complements their discussion by developing further two specific issues: evolution of macroeconomic imbalances in Moldova and a reversal of the initial remonetization process.

The remainder of this paper is organized as follows. The first part discusses domestic macroeconomic developments, which correspond with the current account deficit. Analysis of Saving-Investment balances of the whole economy, government and non-government sector provides a framework for this discussion.

The second part revolves around the issue of monetization of Moldovan economy. Initially, the tight monetary policy of the NBM, and the resulting stable exchange rate and low inflation, contributed to a gradual growth of demand for money and remonetization. Unfortunately, growing imbalances in the Moldovan economy put sustainability of the exchange rate and inflation under question. As a result, demand for lei started shrinking and remonetization reversed itself.

2. Analysis of Savings-Investment Balances in Moldova

Changes in external statistics have their counterparts in internal developments. The tool to follow the links between the Balance of Payments and domestic macroeconomic developments is the analysis of savings-investment balance. This analysis can be conducted for the whole economy and, separately, for the Government and the Non-government sector.

The general logic of the analysis is based on three rules of national accounting, which are a matter of definition and necessarily hold ex post:

1. Disposable Income is spent on Consumption and what is not consumed, is saved.

2. Savings finance Investment.

3. When Investment of a sector of the economy (or the whole country) exceeds the Savings, the difference is covered with Savings of another sector, or with foreign Savings.

2.1. Calculation of Macroeconomic Aggregates

… for the whole economy

Disposable Income of the whole economy is called Gross National Disposable Income (GNDI) and is calculated as:

$$GNDI = GDP + Y_f + TR_f \qquad (1)$$

where: Y_f – Net Factor Income from abroad (B.o.P.).
$\quad\quad\;\; TR_f$ – Net Current Transfers from abroad (B.o.P.).
Savings (*S*) are defined as the difference between the GNDI and total Consumption (*C*):

$$GNDI - C = S. \qquad (2)$$

Savings-Investment Balance of the whole economy is equal to the Current Account balance (CA) from the Balance of Payments:

$$S - I = CAB. \qquad (3)$$

The above definitions applied to the Moldovan data yield the results in the Table 4.

Saving-investment gap calculated in this way differs slightly from the Current Account Deficit reported in the Balance of Payments. The divergence can arise from minor differences in coverage, valuation and classification [1]. There are also statistical errors, e.g. the B.o.P. contains a large Errors And Omissions position, which occasionally reaches 30% of the current account (in 1998Q3). Even larger errors can reside in the National Accounts Statistics. In the case of data for Moldova the differences are rather small and do not change the overall picture in any period, except for the year 1999, for which only preliminary data is available. In order to restore consistency with the B.o.P. data, and retain the initial GDP figures, further on the discrepancy was distributed proportionally between Consumption and Investment. This resulted in a significant adjustment only in the case of the 1999 figures.

Further insights can be obtained by analyzing the savings-investment balance of the Government Non-Government sector separately. This allows to understand how changes in each of the sectors contributed to changes of the total.

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[1] See: Swiderski (1992), p.20 for a discussion.

Table 4. Macroeconomic indicators in Moldova in 1995–1999, current prices (lei mln)

Period	GDP	Y_f	TR_f	GNDI	C	S	I	S-I	CAB	Discrepancy
1995	6480	-81	249	6648	5371	1277	1612	-334	-427	-93
1996	7798	253	335	8386	7356	1030	1891	-861	-909	-49
1997	8917	363	353	9633	8692	941	2111	-1170	-1319	-150
1998	9122	157	459	9738	9203	535	2360	-1826	-1785	40
1999*	12204	342	1198	13744	10715	3029	2695	334	-199	-532

* Preliminary data for 1999.
Source: MET, own calculations

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… for the Government Sector

Government savings-investment gap is broadly equal to the fiscal deficit. In Moldova, the government has been running large expenditure arrears. Therefore, the deficit on commitment basis (which includes those arrears) was used. Disposable income of the government differs from the total revenue by the value of capital revenues, transfers and other payments including servicing of the government debt (because both interest rates paid by the government and transfers are a part of the disposable income of the recipients). In practice, there is no exact consistency between the National Accounts and Government Finance Statistics at the aggregation level available for the wide public [2], so certain choices regarding the source of the data had to be made. Figures in Table 5 have been obtained in the following way:

– Government Savings-Investment gap is taken to be equal to the public deficit on commitments basis – the difference between Total Revenues (excluding grants) and Total Expenditures [3] (MET), decreased by the growth of arrears (IMF);

– Government Savings are arrived at as the sum of the Government Investment (MET budget data) and the public deficit;

– Disposable Income of the Government was obtained as the sum of Government Consumption (MET, National Accounts data) and Government Savings;

– Total Government Revenue is the sum of Consolidated Budget revenues and Social Fund revenues (Ministry of Finance, data on Social Fund operations) less transfers from the budget to the Social Fund (MF, Social Fund data);

– Social Transfers are given after the MF data on Social Fund operations;

– Other Transfers and Payments are a residual category: difference between Total Government Revenue and Government Disposable Income, Social Transfers (MF, Social Fund data) and Debt Servicing costs (MET budget data).

… for the Non-Government Sector

Aggregates for the Non-Government sector are obtained residually, as the difference between the figures for the whole economy and for the Government sector. The results are reported in Table 6.

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[2] For a discussion see: Swiderski (1992), p.28-30; Ouanes and Thakur (1997), p.60.

[3] The consolidated budget published in MET excludes extrabudgetary funds (especially the Social Fund). However, since the deficit of the Social Fund is covered from the central budget, the deficit of the public sector is broadly correct.

Table 5. Total Revenue, Transfers, Debt Service, Disposable Income, Consumption, Savings, Investment, Deficit (cash), Change in Arrears and Deficit (commitment) of the Government, Moldova 1995–1999 (lei mln)

Period	Rev	SocTr	Other	DebtS	DI_g	C_g	S_g	I_g	S_g-I_g	arrears	S_g-I_g
1995	2621	617	519	116	1369	1755	-386	133	-374	145	-519
1996	2815	701	727	243	1144	2113	-968	149	-753	364	-1117
1997	3664	736	250	377	2301	2444	-143	234	-667	-290	-377
1998	3504	800	567	421	1715	2327	-612	206	-307	510	-817
1999	3826	784	119	867	2057	2324	-267	108	-368	7	-375

Source: MET, Ministry of Finance, IMF, own calculations

Table 6. Disposable Income, Consumption, Savings, Investment and deficit of the Non-government sector, Moldova 1995–1999 (lei mln)

Period	DI_{ng}	C_{ng}	S_{ng}	I_{ng}	S_{ng}-I_{ng}
1995	5187	3616	1571	1500	70
1996	7193	5243	1950	1752	198
1997	7182	6248	934	1906	-972
1998	8063	6876	1186	2146	-960
1999	11155	8391	2764	2694	70

Source: Own calculations

2.2. Resource Balances in Moldovan Economy

The Table 7 presents the summary of aggregates for the whole economy in percent of GDP:

Table 7. Gross National Disposable Income, Consumption, Savings, Investment and Current Account, Moldova 1998–1999, in % of GDP

Period	GNDI	C (adj)	S	I(adj)	S-I=CAB
1995	102.6	84.0	18.6	25.2	-6.6
1996	107.5	94.8	12.7	24.4	-11.7
1997	108.0	98.8	9.2	24.0	-14.8
1998	106.8	100.5	6.2	25.8	-19.6
1999	112.6	91.3	21.3	23.0	-1.6

Source: Own calculations on the basis of data from Table 4

In the years 1995–1998 current account deteriorated gradually from -6.6% to the startling -19.6% of GDP. The deep deterioration of savings resulted primarily from a steady growth in the share of consumption in GDP by 16.6 percentage points – from 84% in 1995 to 100.5% of GDP in 1998. In the meantime, investments remained relatively stable and high as a share of GDP.

In the last quarter of 1998 the exchange rate crisis exploded and, after a 70% devaluation, the current account deficit shrank rapidly to -1.6% of GDP in 1999 (estimate). In the domestic macroeconomic structure the adjustment came from all main aggregates. Firstly, the share of consumption in GDP was reduced by 9.3% of GDP. Secondly, the disposable income increased in relation to GDP by 6 percentage points. These two developments resulted in an improvement in aggregate savings in relation to GDP by 15 percentage points. Thirdly, the share of investments decreased by 2.8 percentage points. As a result, the savings-investment balance improved by almost 18 percentage points, from -19.6% to -1.6% of GDP.

Evolution of the Consumption Share in GDP

Among macroeconomic aggregates, consumption was the one, which underwent the most dramatic evolution. Rapid growth of the share of consumption in GDP was probably related to real appreciation of the currency and additionally to soft budget constraints in some sectors of the economy, especially in the energy sector. Thus, the underlying cause of the unsustainable path of consumption was the lack of fiscal adjustment and structural reforms.

Inflow of increasingly short term capital, used for covering reckless government spending, provided Moldovan market with foreign currency, which prevented depreciation of the leu. Real effective exchange rate (REER) appreciated by 25% between a low in 1995 and early 1998, which gave Moldova excessive purchasing power over foreign goods.

Appreciation of the Moldovan leu has been modest and not every appreciation leads to a balance of payments crisis anyway. An economy, which attracts FDI and enhances its productivity, could survive a stronger real appreciation without balance of payments pressures. However, appreciation must be accompanied by a compensating improvement of export competitiveness (both in terms of quality and prices). Moldova, however, attracted little FDI and underwent little restructurization, so its exports earnings were insufficient for the maintained volume of imports.

Figure 1. REER
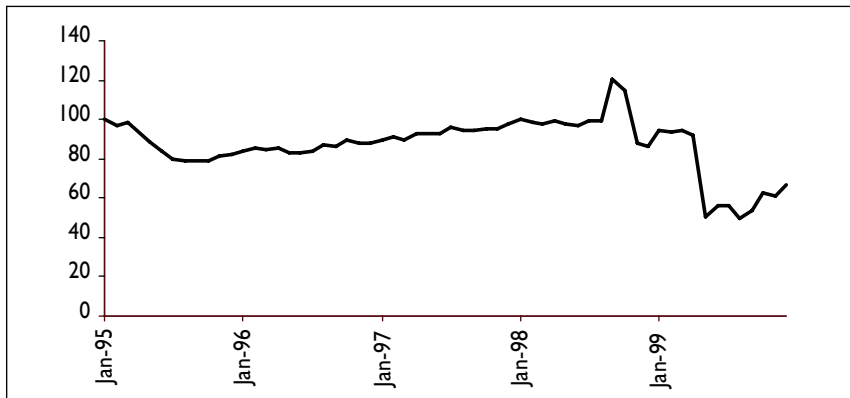
Source: MET

Lack of restructurization of the energy sector resulted in tolerating non-payment from customers. Mainly energy-related mineral resources come mostly from imports (they constituted 46% to 35% of imports in 1995–1997 – MET data). Gazprom and other partners tolerated payment arrears for political and strategic reasons. Ultimately, overdue payments become government liability. Claims can be swapped for fixed assets (like in the arrangement in which Gazprom took over MoldovaGaz), or can be forgiven in exchange for political favors. Thus, finally some price is paid. However, tolerance for customer non-payment in Moldova (and, additionally, lack of counters of water or heating) is equivalent to a situation of a

partially soft budget constraint, which creates wrong incentives and leads to an inefficient consumption [4].

Reduction of consumption after the 1998 crisis can be associated with the exchange rate devaluation. As a result of the devaluation, foreign goods became relatively more expensive. This switched the demand towards domestic products. However, domestic supply was not efficient and elastic enough to substitute for the reduced imports. The result was a growth of prices and a suppression of the overall level of consumption.

Non-government consumption share was growing steadily until reaching a peak of 75.0% of GDP in 1998. The crisis forced its reduction by 2.8 percentage points, to 72.2% of GDP. This is not much in proportion to GDP, but obviously the real decline in non-government consumption was large: the real GDP shrank by 6.5% in 1998 and further 4.4% in 1999. Government consumption was much more affected, it fell from 25.5% in 1998 to 19.0% in 1999.

Table 8. Total Consumption, Non-Government Consumption and Government Consumption, in % of GDP

Period	C	C_{ng}	C_g
1995	84.0	56.9	27.1
1996	94.8	67.7	27.1
1997	98.8	71.4	27.4
1998	100.5	75.0	25.5
1999	91.3	72.2	19.0

Source: National Account Statistics, after MET, adjusted

Disposable Incomes

In 1996–1998 the GNDI exceeded the GDP by 7.6% on average. Moldova was paying interest on its foreign debts, so its net capital income was negative. However, it is estimated that at least 100 thousand Moldovan citizens work abroad and send large part of their salaries back to their families. As a result, the net factor income from abroad is positive every year. Moldova is also a recipient of current transfers related to technical assistance and humanitarian aid.

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[4] For example, while most flats in Chisinau are hardly heated during winter, occasionally they 'enjoy' temperatures of over 26 degrees, so that it becomes necessary to open windows.

Table 9. Net Factor Income from abroad (Y_f) and Net Current Transfers (TR_f), Moldova (USD mln)

Period	Y_f	TR_f
1995	-18	56
1996	55	73
1997	47	76
1998	33	82
1999*	32	114

*Data for 1999 are an estimate
Source: Balance of Payments, National Bank of Moldova, http://www.bnm.org

The increase of the national disposable income from 107.6% of GDP on average in 1996–1998 to 112.6% of GDP in 1999 means that incomes and transfers from abroad increased relative to GDP. In USD terms, Net Factor income from abroad in fact shrank, especially in 1998, and did not fully recover. Interest payments abroad did not grow much (partly due to the increase of arrears), but compensation of Moldavian employees working abroad decreased due to the regional crisis [5]. Current Transfers increased noticeably. But more importantly, large devaluation of the exchange rate increased the value of foreign receipts in lei terms.

Table 10. Gross National Disposable Income, Disposable Income of the Government and Non-government Disposable Income (% of GDP)

Period	GNDI	DI_{ng}	DI_g
1995	102.6	81.5	21.1
1996	107.5	92.9	14.7
1997	108.0	82.2	25.8
1998	106.8	87.9	18.8
1999	112.6	95.8	16.9

Source: Tables 4, 5 and 6 above

The growth of disposable incomes was reflected in the non-government income. Government disposable income fell significantly. The reduction of the government disposable income resulted from two factors. First, there was a significant reduction of total public revenues in relation to GDP (from the peak of 41.1% in 1997 down to 31.1% in 1999). Second, debt service costs increased in % of GDP. Social transfers

[5] See: National Bank of Moldova, a comment on Current Account, internet site http://www.bnm.org

and other payments, which are excluded from government disposable income shrank, but their reduction did not compensate loss of revenues and growth of interest burden.

Table 11. Public revenues and interest payments, Moldova 1998–1999 (% of GDP)

Period	Public revenues	Social Transfers	other	Interest Payments	DI$_g$
1995	40.4	9.5	8.0	1.8	21.1
1996	36.1	9.0	9.3	3.1	14.7
1997	41.1	8.3	2.8	4.2	25.8
1998	38.4	8.8	6.2	4.6	18.8
1999	31.4	6.4	1.0	7.1	16.9

Source: Table 5 above

Developments in Savings

Year by year reduction of aggregate savings prior to the 1998 crisis was caused both by decreasing government and non-government savings. The main factor was the growth of consumption share, discussed earlier.

After the crisis, improvement in aggregate savings was attained by a steep reduction of both the non-government and public consumption. Non-government savings increased as a result of the increase of the non-government disposable income (related to growth of the relative size of incomes and transfers from abroad) and the contraction in consumption. Government savings improved thanks to a reduction in consumption, in spite of the further decline in the share of government disposable income.

Table 12. Total Savings, Non-government Savings and Government Savings, in % of GDP

Period	S	S$_{ng}$	S$_g$
1995	18.6	24.6	-6.0
1996	12.7	25.1	-12.4
1997	9.2	10.8	-1.6
1998	6.2	12.9	-6.7
1999	21.3	23.5	-2.2

Source: Tables 4, 5 and 6 above

Developments in Investments

Developments in investments are always carefully monitored, because they determine future production capacity of the economy and its growth potential. In Moldova, regardless of the dismal economic performance, the share of investments has been reasonably high in relation to GDP.

Table 13. Total Investments (I), Investment in fixed capital (I fix.), Non-government Inventory investments(I$_{ng}$ fix.), Non-government Investments in fixed capital (I$_{ng}$ fix.) and Government Investments (I$_g$), in % of GDP

Period	I	I fix.	I$_{ng}$ inv.	I$_{ng}$ fix.	I$_g$
1995	25.2	16.2	9.0	14.1	2.1
1996	24.4	19.9	4.5	17.9	1.9
1997	24.0	20.2	3.8	17.5	2.6
1998	25.8	22.0	3.8	19.7	2.3
1999	23.0	19.6	3.4	18.7	0.9

Source: Tables 4, 5 and 6 above, MET data

According to the International Financial Statistics, in 1997 the world non-weighted average share of Gross Fixed Capital Formation (GFCF) in GDP was about 22%. Moldova is not quite there, but in comparison with other FSU countries she is doing quite well. The phenomenon of relatively high and stable level of investment, given the bad overall economic outlook in Moldova, can raise suspicions about the quality of the national accounts statistics. A careful revision of the investment data could be recommended.

In addition to the relatively high level, investments in Moldova have been remarkably stable in spite of the 1998 crisis. Usually, households smooth their consumption and the level of investments is much more volatile, absorbing most of the shocks to income. In Moldova consumption took much of the impact of the shocks: in 1999 non-government consumption shrank by 2.8% while investment by 1.4% of GDP (as follows from preliminary data adjusted to consistency with the most recent estimates of the current account).

The stability of investments in 1999 has been reinforced by the adjustment made here for the sake of conformity between national accounts and balance of payments. However, the raw national accounts data give total fixed capital investments at 18.8% of GDP in 1999, or only 0.8% less than in Table 13.

An alternative explanation of the fact that investment fell so little after the 1998 crisis

Table 14. Gross Fixed Capital Formation (GFCF) / GDP, Transition Economies, in 1997

Country	GFCF/GDP
Bulgaria	0.113
Kyrgyz Republic	0.140
Armenia	0.163
Ukraine	0.184
Russia	0.188
Moldova	**0.198**
Poland	0.212
Romania	0.221
Slovenia	0.235
Belarus	0.250
Czech Republic	0.307
China	0.338
Slovak Republic	0.386

Source: International Financial Statistics

and deep real GDP reduction, could lie in the depth of social inequalities in Moldova. According to this version, there would be a deep separation between the group of agents who do have excess resources and invest them and the ones who do not. The devaluation was largely expected [6] and the group of the households that invest could insulate themselves from the effect of devaluation (by holding foreign currency or fixed assets). Most of the burden of the devaluation and the economic decline fell on the remaining poorer households, which do not invest anyway and do not have any stake in investing enterprises, so the only way they could accommodate was to reduce their consumption.

The reported high and stable level of investment in Moldova has very little impact on the economic performance. If the data are true, it could mean that some wrong incentives operate and outlays classified as investments do not in fact enhance productivity as they would be expected to.

There exist also two alternative datasets on investments, produced by the Statistics Department, Section For Investment Statistics. The first of them (published in January), includes only larger enterprises and government agencies. The second one (published in March/April) includes all enterprises that report to the Statistics

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[6] For a more detailed discussion of devaluation expectations in Moldova see part 3.

Department, including those who do it only once a year. National accounts include, in addition to that, estimates of household and other unreported investments, including those in the shadow economy. The relationship between all these investment data series is reasonably stable. Although, because of differences of coverage, their level is different, they convey a similar message about the dynamics of investment activity.

Table 15. Investment data: January dataset (lei mln), ratio of January dataset to NAS GFCF (%), March dataset (lei mln), ratio of the March dataset to NAS GFCF (%), NAS GFCF data (lei mln)

Period	January data (J)	J/GFCF	March data (M)	M/GFCF	NAS GFCF
1995	572	55%	845	82%	1034
1996	650	42%	987	64%	1540
1997	799	45%	1202	68%	1774
1998	900	45%	1444	72%	2012
1999	1026	45%	-	-	2296

Source: Statistics Department: (J) – Investment reports, (M) – Republic of Moldova in Figures – Statistical Pocketbook, Chisinau 1999, National Accounts GFCF – after MET

Part of the explanation of the apparent high level of investment may lie in a different dynamics of prices of capital goods and the overall level of prices. Although in the period 1995–1998 the share of investment in GDP was growing, capital investments in constant

Table 16. Capital investments in constant prices (% of the previous year), GDP in constant prices (% of the previous year), Price index in capital construction (without imported equipment) (avg. per year, in % to the previous year), GDP deflator (in % to the previous year)

Period	Capital investment	GDP	Price index of capital	GDP deflator
1995	84	98.6	141	139
1996	92	94.1	126	128
1997	92	101.6	133	113
1998	110	93.5	109	109

Source: Statistics Department, Republic of Moldova in Figures – Statistical Pocketbook, Chisinau 1999, deflator – own calculation

prices were falling much faster than GDP in constant prices. Thus, the growing share of investments resulted from a rise of the relative price of investment goods. The available data on the dynamics of the price index for capital goods and the GDP deflator are not quite consistent with the figures in constant prices, but they also suggest a growth of the relative price of investments in the examined period.

Saving-investment Gaps

The dramatic improvement in the Moldovan current account from -19.6% of GDP in 1998 to -1.6% of GDP in 1999 resulted from the improvement of both the government and the non-government saving-investment balance. Non-government balance improved by 12.1% of GDP, while the government deficit improved by 5.9% of GDP.

Table 17. Saving-Investment Gap (Current Account Balance), Non-government and Government Savings-Investment Gaps, in % of GDP

Period	S-I	$S_{ng}-I_{ng}$	S_g-I_g
1995	-6.6	1.4	-8.0
1996	-11.7	2.7	-14.3
1997	-14.8	-10.6	-4.2
1998	-19.6	-10.6	-9.0
1999	-1.6	1.4	-3.1

Source: Tables 4, 5 and 6 above

2.3. Summary of Macroeconomic Developments in Moldova in 1995–1999

The pre-crisis situation in Moldova, until late 1998, was characterized by a large macroeconomic disequilibrium. Government sector resource deficit was huge – between -4.2% and -14.3% of GDP. Non-government sector also ran deficits – in 1997–1998 non-government consumption and investment exceeded non-government disposable income by 10.6% of GDP. Both these deficits were financed by a current account deficit – excess savings of foreign economic partners of Moldova. The later improvement in the current account was associated with a turnaround in the Non-government sector savings-investment balance and a reduction of the public sector deficit. As a result, in 1999 public sector deficit of -3.1% of GDP was financed by 1.4% of GDP of the non-government sector surplus and 1.6% of GDP of the surplus of the rest of the world.

In spite of the crisis, the share of investment in GDP suffered little reduction. This is unusual, taking into account a sharp reduction of the real GDP (by 6.5% in 1998) and over 70% devaluation of the currency, which happened in the last quarter of 1998. It could have been expected that households, facing such large reduction in their welfare, would try to prevent their consumption from falling at the cost of decreased investments. The opposite happened, investments were slightly reduced but the bulk of the adjustment was attained by a drop in consumption. The data suggest that, in real terms, investments were falling faster than GDP, but their relative price was increasing.

The share of consumption in GDP was strongly reduced (by 9.3% of GDP). Reduction of consumption can be associated with the exchange rate devaluation. Before the crisis, an overvalued exchange rate gave Moldovan economic agents an excessive purchasing power over foreign goods. After the devaluation foreign goods became relatively more expensive. This switched the demand towards domestic products. However, domestic supply was not elastic enough to substitute for the reduced imports. The result was a growth of the price level and a suppression of the overall level of consumption.

Apart from the reduction in both non-government and public consumption, the improved savings outlook was connected with the developments in disposable income. Taking into account the price level increase and the devaluation, *real* disposable income fell, forcing the *real* reduction in consumption. However, in relation to GDP, Gross National Disposable Income increased by 5.9 percentage points, partly softening the effect of the economic downturn and making improvement in savings a bit easier. But the result was, that the dependence of Moldova on net factor incomes and transfers from abroad increased significantly. According to the preliminary estimates, in 1999 they amounted to 12.6% of GDP.

The exchange rate devaluation in the late 1998 resulted in the needed adjustment of Moldovan macroeconomic aggregates. Mainly, the share of domestic absorption (consumption + investment) in GDP was reduced to a more sustainable level. A strongly improved current account balance and a stabilization of the exchange rate indicated regaining of equilibrium.

3. Remonetization and Its Reversal

The next chapter concentrates on the issue of monetization – its changes since the stabilization and their interpretation. It is argued here that the driving force behind

remonetization or demonetization in Moldova was a growth or decline of confidence in the stability of the domestic currency. In a country, which, as Moldova, conducts an unsustainable fiscal policy, tight monetary policy cannot be credible in the longer run. When the critical level of external disequilibrium and debt burden had been reached, devaluation expectations emerged and the remonetization trend reversed itself.

3.1. Evolution of Monetization in Moldova in the 90's

Monetization of Moldovan economy has followed a typical pattern: unsustainably high in the period of a fast money supply growth, reduced sharply in the moment of stabilization and gradually growing afterwards. In 1997 Moldova reached the level of monetization of about 20% of GDP, which did not differ significantly from many other low-income countries (see Appendix I). Unfortunately, stabilization proved to be fragile and after a peak in the late 1997 monetization started to decrease again. By mid-1999, when the effect of the regional crisis could already be felt strongly, Moldova was again close to countries with the lowest monetization by world standards.

Figure 2. Monetization: share of end year M2 and M3 in GDP, 1991–1999
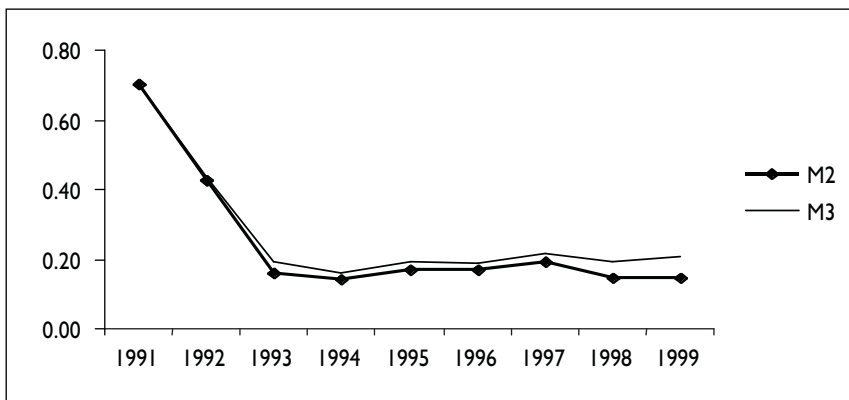
Source: MET, own calculations

In the period of fast monetary expansion prior to first stabilization attempts Moldova had a high but artificial and unsustainable level of monetization. This phenomenon has been observed in all transition economies. Money supply was growing so fast that growth of prices (and, as a result, of nominal GDP) did not fully catch up with it. Additionally,

price adjustment to money supply was distorted by administrative regulations. The increasing rate of inflation (151% in 1991, 1670% in 1992 and 2706% in 1993) was a clear signal of the unsustainability of the situation.

In 1993 monetary expansion slowed down for the first time (from 348% M2 growth in 1992 to 263% growth in 1993). This enabled prices to finally reflect all the past excessive money supply growth. As a result, inflation exceeded significantly the current money growth and thus real money balances were reduced (and so was money share in GDP). In 1994 inflation was already broadly in line with the monetary growth (105% inflation vs. 128% M2 growth), which means that the equilibrium between money supply and demand was more or less restored. The sustainable level of money supply, which corresponded to the demand, proved to be very low, less than 10% of GDP.

Figure 3. Monetization: share of M2 and M3 in GDP, annualized, seasonally adjusted
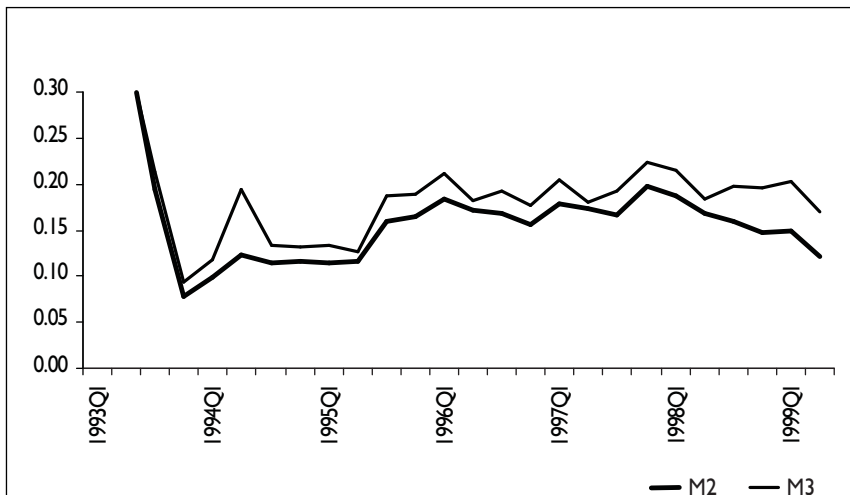
Source: MET, own calculations

Between 1994–1997 a gradual growth of monetization has been observed. Abstracting from changes in the real GDP, this means that the rate of inflation was slower than the rate of money supply growth. Part of the monetary expansion was accepted by the economy without inducing price increases. This process is usually referred to as a growth of the real demand for money. Seasonally adjusted data show the fastest remonetization in the second half of 1995 and the beginning of 1996. Then the trend became less clear, with minor decreases and increases. In the end of 1997 the peak was reached.

The Russian crisis triggered a crisis in Moldovan economy in the second half of 1998. However, the reversal of the remonetization trend happened much earlier, already in the end of 1997 / beginning of 1998. It was a clear signal of some unfavorable structural change taking place and it provided an early warning. This structural change can be labeled as an outflow of demand for the Moldovan leu. Further analysis shows 1) through what mechanisms the demonetization was realized and 2) what were the possible reasons of this process.

3.2. The Mechanism of Demonetization

The reversal of the remonetization trend happened at the end of 1997. Figure 4 allows to distinguish two distinct phases of demonetization that followed:

1. First, since the beginning of 1998 until the third quarter of the year, demonetization came about mainly through monetary contraction.

2. Subsequently, beginning with the fourth quarter of 1998, the main factor in this process was the increased inflation, which reduced real money balances and increased the nominal GDP, thus decreasing the share of M2. The devaluation of the leu was the cause of inflation and money supply growth lagged behind.

Figure 4. Quarterly changes of M2, CPI and MDL/USD exchange rate (%)
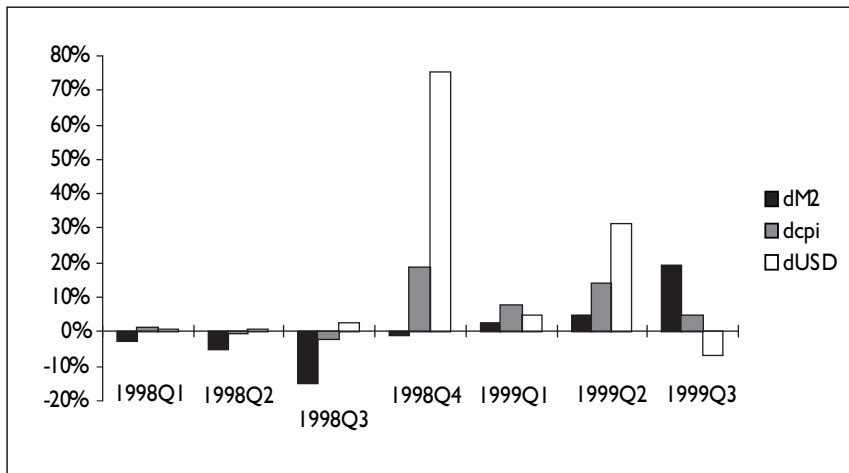
dM2 – change of M2; dcpi – change of CPI; dUSD – change of the exchange rate (MDL per 1 USD)
Source: MET

Table 15 presents the contributions of each separate component of money supply to changes in Broad Money. Contraction of currency in circulation was initially the most important factor of money supply reduction. In the second half of 1998, shrinking of currency in circulation slowed down, but then an outflow of deposits from banks accelerated. 250 mln lei of deposits were withdrawn and 145 mln were converted into foreign currency deposits.

Table 18. Categories of Banking System Liabilities – Contributions to Broad Money growth (in %)

	Dec97-Jun98	Jun98-Dec98	Dec98-Jun99
Currency in circulation	-5.64%	-0.44%	3.13%
Lei deposits	-1.44%	-12.73%	2.78%
Foreign deposits	4.51%	6.90%	19.38%
in US dollar terms	*4.34%*	*-3.19%*	*8.33%*
exchange rate adjustment	*0.17%*	*10.09%*	*11.06%*
sum: Broad Money (M3)	-2.57%	-6.27%	25.30%

Source: Own calculations, data from IMF, Moldova Recent Economic Developments, CR99/110

In the second phase of demonetization, in the first half of 1999, lei deposits recovered slightly and the growth of USD deposits even significantly overcompensated the previous decrease. However, if inflation is taken into account, real broad money barely increased and real domestic money shrank further.

Apparently, in the eyes of depositors, the banking sector asset portfolio was invulnerable to more than 70% devaluation of the leu. There was no large scale bank run and no banking crisis. The main problem was not a fall of confidence in the banking system, but rather a fall of confidence in the Moldovan leu. Lei deposits were temporarily withdrawn and later converted into foreign currency deposits. The possibility to freely convert deposits into dollars played a positive role, softening the impact of the crisis on the liquidity of the banking system.

The whole process of demonetization began with the shrinking of currency in circulation (which is a Central Bank liability) since the beginning of 1998. Table 16 shows the corresponding changes on the asset side of the Central Bank balance sheet. It demonstrates clearly that the main cause of monetary contraction was the shrinking of Net Foreign Assets.

Table 19. NBM Assets – Contributions to Reserve Money growth (in %)

	Dec97-Jun98	Jun98-Dec98	Dec98-Jun99
NFA adjusted	-19.4%	-81.6%	18.9%
Net Claims on General Government	1.3%	82.3%	11.0%
Credit to Banks	3.6%	-8.3%	-8.5%
Other Items (net) + adjustment	1.8%	15.7%	-3.5%
sum: Reserve Money	-12.6%	8.1%	17.8%

Note: NFA (Net Foreign Assets) contributions have been decreased by the valuation adjustment (adjustment for the change in the leu value of dollar assets caused by the devaluation), which was added to Other Items

Source: Own calculations on the basis of data from IMF (1999)

Later, the table shows a highly unhealthy process of a rapid increase in the credit to the government sector and a decrease of credit of the NBM to banks and of the banking sector to the non-government economy. The NBM had to save the government from the danger of default. At the same time, to squeeze lei liquidity and thus facilitate the defense of the exchange rate the NBG raised the required reserve ratio for banks from 8% to 25%.

Figure 5. NBM net currency purchases on the Chisinau Interbank Currency Exchange (USD mln)
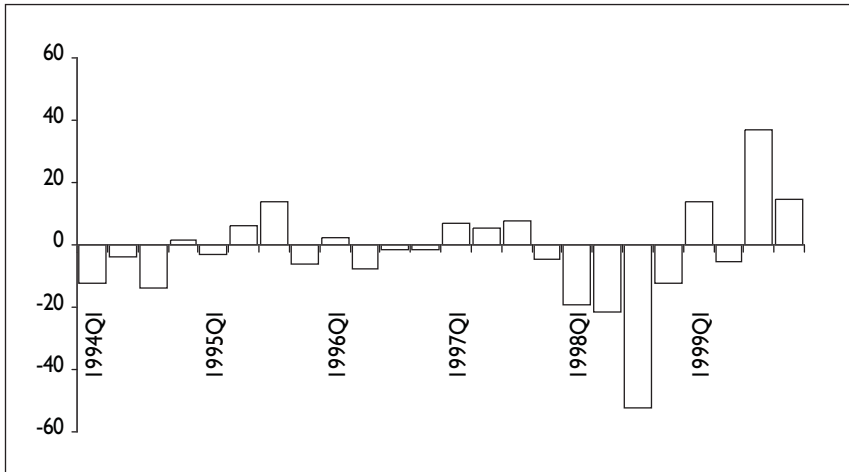
Source: NBM

Part of the outflow of Net Foreign Assets and the corresponding shrinking of lei currency in circulation is visible also on the activity on the InterBank Foreign Exchange. Since the beginning of 1998 the NBM was forced to intervene constantly on the market, selling about $41 mln in the first half of 1998 and $81 in the second half of the year. The NBM was selling dollars and accepting lei in return, thus removing them from circulation.

Changes in the international reserves of the NBM were tightly linked with the level of monetization. Interventions on the currency exchange have a direct impact on the amount of currency in circulation. Also, when the Central Bank has a higher level of reserves to back up the domestic currency then people have more confidence in its stability and are more willing to hold it.

Figure 6. NBM International Reserves (US dollars) and monetization (M2/GDP), annualized
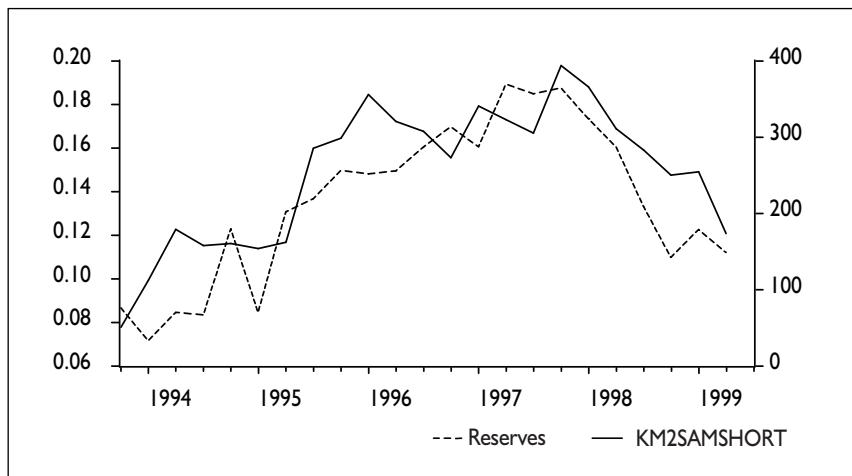
KM2SAMSHORT – monetization (M2/GDP), RESERVES – NBM International Reserves
Source: MET, own calculations

Explaining the outflow of Foreign Assets of the NBM is the key to understanding the reversal of the remonetization trend in 1997/1998. The answer can be found in the Balance of Payments. In the beginning of 1998 the Current Account deficit increased and simultaneously the Capital and Financial Account deteriorated. An outflow of Portfolio investments, which had begun already in the last quarter of 1997, accelerated. The asset position under Other Investment, which shows mainly non-repatriation of export

receipts, increased [7] (with the minus sign in the B.o.P.). Part of the increase of the liabilities position reflects accumulation of arrears. All these phenomena are a clear signal of an undermined confidence in the stability of the Moldovan economy and, especially, in its currency.

Table 20. Moldova – Balance of Payments 1997–1999 (semiannually, $mln)

	97H1	97H2	98H1	98H2	99H1
Current account	**-148.6**	**-118.8**	**-182.3**	**-151.4**	**-14.5**
Trade balance	-180.3	-164.7	-216.1	-182.4	-62.7
export (FOB)	395.2	494.4	363.9	280.2	192.5
import (FOB)	-575.5	-659.1	-580.0	-462.6	-255.1
Services	-29.7	-32.3	-34.5	-38.9	-29.4
Income	30.6	32.5	23.6	17.0	18.3
Current transfers (net)	30.7	45.7	44.6	52.9	59.3
Capital and financial account	**155.0**	**101.5**	**179.3**	**127.1**	**35.1**
Capital account	-0.1	-0.1	0.0	1.5	115.5
Financial account	155.1	101.6	179.3	125.6	-80.4
Financial account less Reserves	**177.7**	**131.1**	**101.3**	**-19.0**	**-49.9**
Direct investments (net)	30.2	41.3	45.2	41.1	11.6
Portfolio investments (net)	236.2	0.4	-12.4	-42.4	-141.7
Other investments	-88.6	89.4	68.5	-17.7	80.2
assets (net)	0.5	0.2	-22.8	-26.3	-35.5
liabilities (net)	-89.1	89.2	91.3	8.6	115.7
Reserve assets (net)	**-22.7**	**-29.5**	**78.0**	**144.6**	**-30.4**
Errors and omissions	-6.3	17.3	3.0	24.3	-20.6

Source: National Bank of Moldova, http://www.bnm.org

Data presented in the introduction (Tables 1, 2 and 3) leave no doubt that the explosion of public debt was leading straight to a collapse – a balance of payments crisis. In 1996 and partly in 1997 conditions were favorable for raising capital on the world markets, which made it possible for Moldova to fall deep into the trap of indebtedness. In the middle of 1997 the Asian crisis begun and the climate on financial markets changed,

[7] See: A comment on the Balance of Payments data for 1998 in the NBM internet site: http://www.bnm.org

especially with respect to investing in emerging market economies [Radziwiłł et al., 1999] note the following facts that preceded the debt catastrophe:

– In mid-1997 the IMF stopped disbursing credits to Moldova, which was followed by the withholding of World Bank loans. After that Moldova could rely only on a much more expensive commercial capital. Budget deficit was financed with the help of the sale of Eurobonds.

– At the end of 1997 Moldova was forced to reschedule credits from Russia, totaling over $30 mln. In 1998 debt arrears amounted already to $50 mln and energy payment arrears to $103 mln [IMF, 1999].

– The spread on Moldovan Eurobonds increased from 380 basic points to 800 at the end of 1997.

– Foreign participation on the T-bill market decreased from 38% to 22%.

Interest rates on 3 month T-bills increased from 21% in 1997Q3 to 31% in 1998Q1 in spite of stable (only seasonally fluctuating) inflation.

Figure 7. Interest rates on 3-month T-bills (quarterly weighted average) (% per annum)
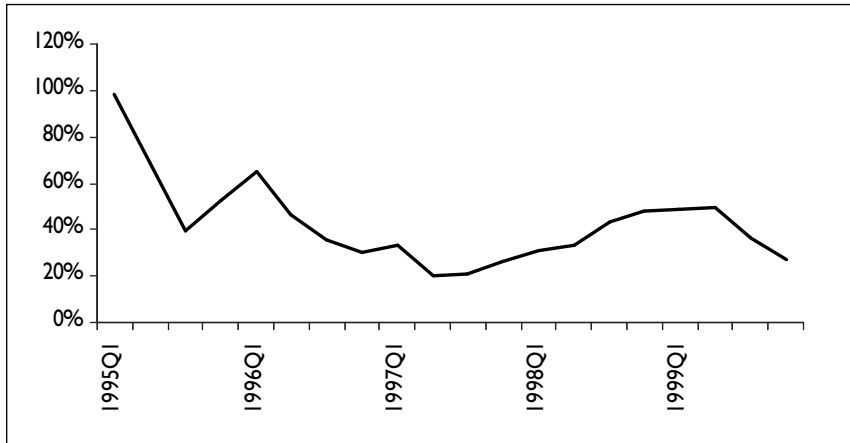
Source: MET, own calculations

Another signal of the increasing expectations of depreciation was the growth of deposits dollarization. The reversal of the remonetization trend in the early 1998 was accompanied by a rapid and unprecedented growth of dollarization.

Figure 8. Dollarization of deposits (share of foreign currency deposits in total deposits) (%)
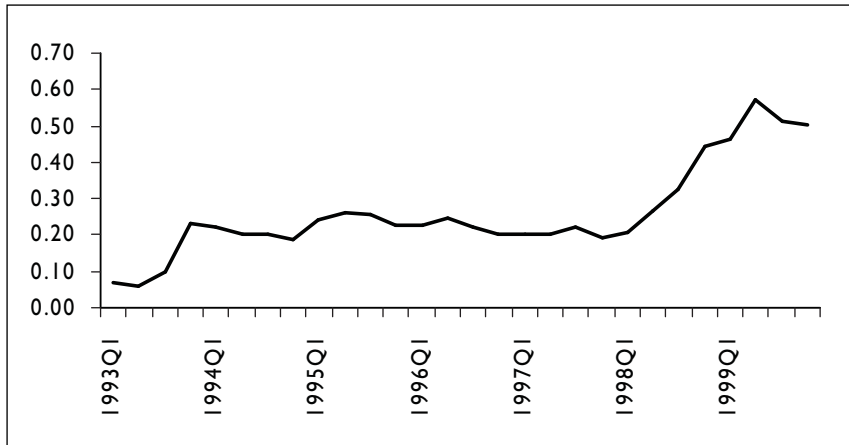
Source: MET, own calculations

So, the outflow of demand for Moldovan leu and outflow of capital had begun already about 8 months before the Russian crisis. This resulted in a demonetization – a falling share of domestic money in GDP.

4. Conclusions

Many people believe that in 1998 Moldova was a victim of the Russian financial crisis, which on its turn was caused by the Asian crisis. The importance of links between economies, especially in case of close trading partners like Moldova and Russia, in propagating financial crises, is not to be underestimated. However, for several years preceding the crisis Moldova was on an unsustainable path and economic pressures were mounting. The Russian crisis was merely a trigger of a crisis, which, if the existing policies had been maintained, would have emerged sooner or later anyway.

The fiscal imbalance caused a real appreciation, which was incompatible with a slowly growing competitiveness of Moldovan industry. This effect was combined with a too slow restructurization and toleration of non-payment in some areas. The result

was an unsustainable growth of the level of consumption in GDP, which was financed by inflow of foreign capital.

As a result of the open crisis, the adjustment came about through depreciation of the leu, which reduced the purchasing power of the population. Devaluation accompanied by a further decline in domestic supply, caused growth of the price level, a suppression of the share of consumption in GDP, and an even greater reduction in real consumption.

Dependence of Moldova on remittances from citizens working abroad and on current transfers from abroad increased. Unfortunately, these inflows of additional disposable income from abroad will be, in the future, counterbalanced by a growing burden of interest payments on the foreign debt.

Investment in Moldova shrank noticeably, but still remains surprisingly high, considering the depth and the length of the economic depression. However, the influence of these investments on competitiveness of producers is not manifesting itself. Although in nominal terms investments follow the GDP, their relative prices rise and their real level falls faster than the GDP.

Apart from causing a macroeconomic disequilibrium, unsustainable fiscal policy and rapid growth of debt undermined credibility of the attained monetary stabilization. The decrease of confidence manifested itself in high interest rates, growing dollarization and an outflow of the NBM foreign reserves. All those signals were observed long before the open balance of payments crisis emerged in the last quarter of 1998.

Monetization of an economy is a good indicator of a long term stability and confidence in the domestic currency and banking sector. In Moldova monetization increased initially, but later its growth stagnated, although there was still plenty of room for its growth (see Appendix I). A falling trend in domestic money share in GDP emerged prior to the open crisis, along with other signals of imminent danger.

So far the banking sector went intact through all the economic turmoil. The volume of deposits and credits in GDP, although low by world standard, is much higher than in most other CIS countries. However, because of the uncertainty about the future stability of the leu, people converted much of their deposits into dollars and dollarization reached more than 50% of deposits.

Moldova is yet another, among the CIS countries, example of the fact, that partial reforms bring unproportionally poorer results than the comprehensive ones. Monetary stability is relatively easy to attain, especially when conditions on the world financial markets are favorable for raising capital and central bank credits to government can be substituted by foreign credits. However, it is the fiscal adjustment

that provides the key to a long term stability. Without it, tight monetary policy can at best postpone a currency depreciation and a return of inflation.

In the case of Moldova, the balance of the partial reforms without fiscal adjustment, conducted since 1993, was disastrous. Only in the years 1995–1999 the cumulative real GDP contraction amounted to 16%, while the burden of foreign debt rose from 21% of GDP in 1993 to 129% of GDP in 1999.

Appendix I: Monetization in Moldova in Comparison with Other Countries

It is worthwhile to assess the level of monetization of the Moldovan economy. Is Broad Money at 20% of GDP a normal level, or a dramatically low one? What is the resulting remonetization potential and how fast is it likely to be realized? This question can be answereed by means of comparing Moldovan indicators with those of other countries. Below, this question is answered by repeating a regression analysis, which Wellisz (1995) used to assess the level of monetization in Poland.

Money and credit tend to play a greater role in more developed countries than in less developed ones. Rich countries are more stable: they tend to have (or can afford) more efficient tax administrations and usually have less urgent budget needs, which diminishes their incentives to resort to inflation tax as a way of generating budget revenues. They also have (or can afford) a higher level of human capital and better financial institutions, which implicates a more efficient, safer and wider use of credit. In 1997 in countries with the annual income above 10,000 USD per capita, the average monetization (ratio of Broad Money, including foreign currency deposits, to GDP) was 82%, while in the remaining countries only 37%. Figure 9 presents the relationship between per capita income and monetization, with a fitted regression line.

A simple regression of monetization on income (and a constant term) captures around 40% of the variability of monetization. This result has been shown to be independent of the period for which the data is analyzed [8].

Table 21. Regression analysis of monetization and per capita GDP

	Coefficients	**Standard Error**	**t-Statistic**
Intercept	0.36	0.029784	11.9
GDP per capita	1.72 E-05	2.28E-06	7.54
Observations: 83	Std. Error: 0.22	R^2: 0.41	Adj. R^2: 0.41

Source: Own calculations

Transition economies, to which Moldova belongs, are likely to have a low monetization level at least because their per capita GDP is low. Additionally, their financial systems have been developed seriously only in the last several years. Finally,

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[8] See: Wellisz (1995), Jarociński (1998).

Figure 9. Per capita GDP and monetization in the world economies (excluding transition countries) in 1997
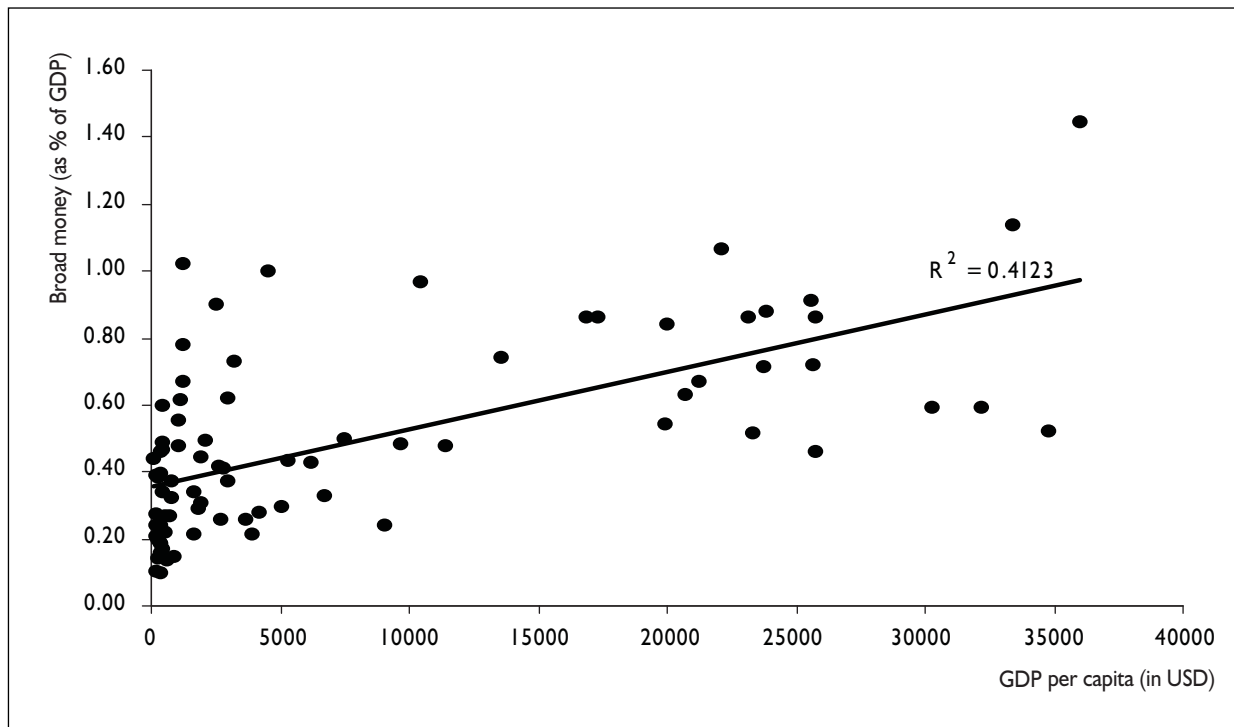
Note: The year 1997 was chosen for the comparison because this is the latest year for which data exists for most of the countries. Broad money includes foreign currency deposits because this aggregate is most widely available.

Source: International Financial Statistics

Figure 10. Per capita GDP and monetization in 1997 including transition economies – countries with per capita income below 10,000 USD, vertical scale truncated at 0.8% of GDP
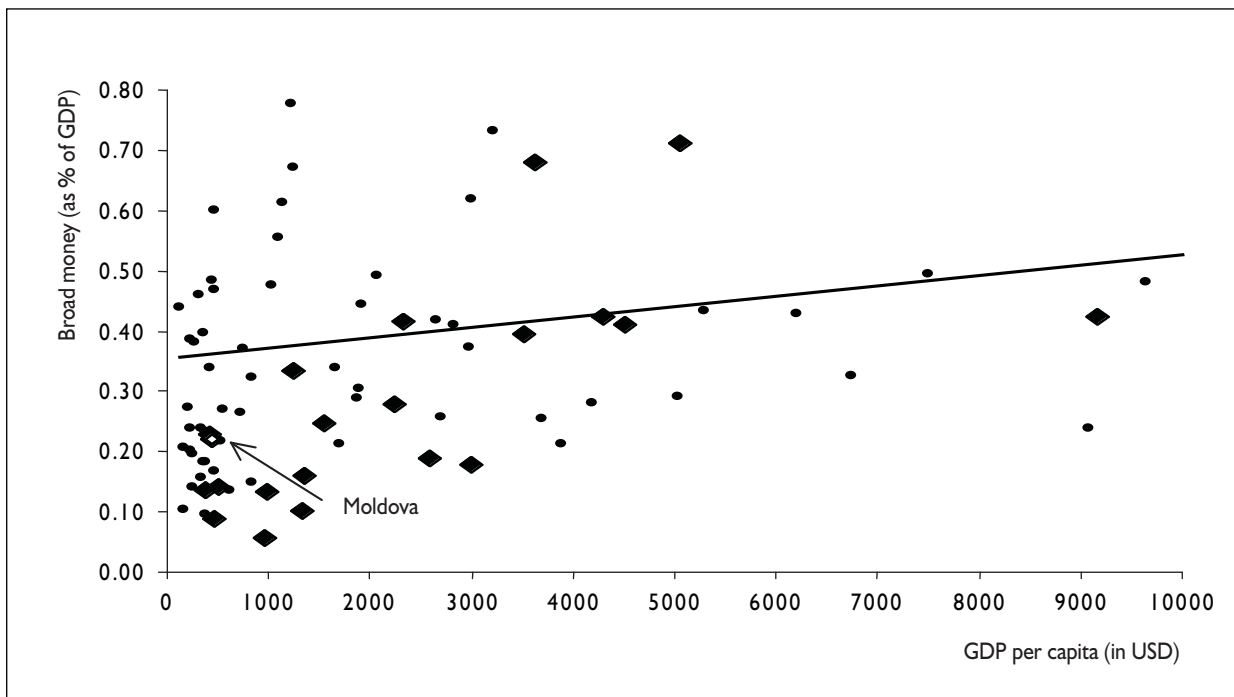
Note: Non-Transition Economies are marked with small points, Transition Economies are marked with big squares, and Moldova is marked with the big empty square.

Source: International Financial Statistics

it is proved that high inflation causes a fast and not easily reversible reduction of monetization [9] and most transition countries had an episode of high inflation in the beginning of transition.

Figure 10 demonstrates that transition countries indeed tend to lie below the line illustrating the average level of monetization, controlled for the level of income. Monetization is especially low in the post-soviet countries (excluding Baltic states). In fact some of them (Georgia, Armenia) have a level of monetization that is lower than in any other country of the world.

Table 22. Monetization in transition countries in 1997

Country	Monetization
GEORGIA	6%
ARMENIA	9%
KAZAKHSTAN	10%
UKRAINE	14%
KYRGYZ REPUBLIC	14%
AZERBAIJAN	14%
BELARUS	16%
RUSSIA	18%
LITHUANIA	19%
MOLDOVA	**22%**
MONGOLIA	23%
ROMANIA	25%
LATVIA	28%
BULGARIA	34%
POLAND	40%
HUNGARY	41%
ESTONIA	42%
SLOVENIA	42%
CROATIA	43%
SLOVAK REPUBLIC	68%
CZECH REPUBLIC	71%

Source: IFS

[9] See Ghosh (1996), De Broeck et al. (1997).

In 1997 Moldova had a level of monetization of 22% of GDP and the per capita income of 435 USD. Monetization was lower than the average for its income level, but it was not an exceptionally demonetized economy. In fact, this level of monetization is one of the highest among the post soviet republics (excluding Baltic states), which are the closest 'peer group'. Even in the global perspective, Broad Money above 20% of GDP is a low, but not unusually low, indicator. A similar level of monetization was noted in a number of low-income countries, such as Lao People's Rep. (18%), Ghana (19%), Tanzania (20%), Madagascar (20%), Guatemala (21%), Senegal (22%). Also, monetization was not much higher in some middle income countries, which had a recent episode of high inflation, such as Venezuela (22%, per capita GDP 3880 USD) or Argentina (24%, per capita GDP 9000 USD).

This analysis would suggest that in Moldova broad money could grow to above 30% of GDP (which is the global average for this income level), although this need not to happen fast. However, analyses conducted across longer time periods [Ghosh, 1996; Jarociński, 1998] suggest that the level of monetization decreases much faster than it recovers and that monetization, once reduced, can remain below average for decades.

Appendix II: Quantifying Public Confidence in the Leu

Below we present intermediate results of the research conducted by CASE, Warsaw and CLS, Sofia, in the framework of the project "Credibility of Exchange Rate Policies in Transition Economies" financed by the Freedom House, Budapest.

There exist no surveys of public expectations regarding the exchange rate in Moldova. Thus, statements about the level of confidence in the national currency and its influence on other variables are only speculations. Let us engage in such a speculation, stating clearly all the underlying assumptions.

The starting point of the analysis is a money demand function. For simplicity, let us abstract from the effect of interest rates on money demand. Assume that the alternative investment is in cash US dollars and the depreciation of the exchange rate is the opportunity cost of holding domestic money. Therefore, consider a money demand function of the form:

$$lnM - lnP = a + k\ lny - n\ E\{de/e\} \tag{1}$$

where M is a money aggregate, P – price level, y – real GDP, e – exchange rate (MDL/USD) and $E\{de/e\}$ is the expected rate of depreciation.

The National Bank of Moldova considers national currency stability as one of its primary goals [10] and for most of the period it intervened in the foreign exchange market to support the leu. Therefore, the expected rate of depreciation can be expressed in terms of the credibility of the National Bank commitment to stabilize the exchange rate. Let us express the expected rate of depreciation as a weighted average of the stability scenario (i.e. depreciation rate equal to zero) and a depreciation scenario (say, that the exchange rate will depreciate enough to reverse all the real appreciation, which occurred since the time just before stabilization, the latest moment when the exchange rate had been free floating for a longer period of time).

Then in the time period t, the expected rate of devaluation is:

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[10] "The main objective of the National Bank of Moldova is the maintenance of the national currency stability. This objective can be achieved through the implementation of a severe monetary and credit policy and through the implementation of a foreign exchange policy that corresponds to the situation of the market of the Republic of Moldova. In the condition of deterioration of external balance of payments and absence of a durable economic growth, the stability of the Moldovan Leu exchange rate is one of the main pillars that contribute to the stability of the national currency and attraction of foreign investments." – National Bank of Moldova, 1997 Annual Report, NBM internet site: http://www.bnm.org.

$$E\{de/e\} = \theta * 0 + (1-\theta) * [P_{Mold}(t)/[e(t)*P_{USA}(t)]] / [P_{Mold}(t_0)/[e(t_0)*P_{USA}(t_0)]] \qquad (2)$$

where t_0 denotes the last quarter of 1993, P_{Mold} is the Moldovan CPI, P_{USA} is the CPI in the USA.

The key parameter of interest here is θ. It provides a measure of the credibility of the National Bank commitment to the leu stability. For example, assume that there are only two sorts of economic agents in Moldova - optimists, which believe that the NBM will keep its promise and pessimists, who believe that the depreciation scenario will come true. Then θ is the share of optimists in the population. Alternatively, θ and $(1-\theta)$ can be understood simply as the probability weights that people assign to the two scenarios.

To illustrate the interpretation of monetization developments in Moldova in terms of public confidence in the national currency, one can calculate the values of θ for each period. What is needed for that, is to assign values to the parameters of the money demand function. The values for *a, k* and *n*, were chosen in the following way:

k – real income elasticity of real money demand was assumed to be equal to 1, so that monetization is not influenced by the real growth or shrinking of the economy;

a – constant term was chosen so that in the situation of the credible exchange rate stability monetization increases to about 37% of GDP – the average value for a country with the income level as in Moldova (see figures 9, 10 and regression in table 21);

n – elasticity of the money demand with respect to the expected depreciation was chosen so, that in the situation of a perfectly certain 50% depreciation, monetization decreases to 3.7% of GDP, or one-tenth of the 'stable-exchange-rate' value.

The choice of the parameters is therefore fairly arbitrary. However, whatever values are chosen, they do not influence the qualitative characteristics of the resulting series of θ values. The series reflects the assumptions of the model:

– Growth of monetization is ascribed to the growth of public confidence in leu.

– When inflation in Moldova accelerates, the risk that the exchange rate would become unstable increases. If, nevertheless, economic agents do not reduce their lei holdings, this is again ascribed to the growth of public confidence in leu (and vice versa).

The exemplification of the time path of θ values calculated with all the above assumptions is presented in Figure 11.

The interpretation of monetization developments in Moldova in terms of the framework described above is following. Since the currency reform and introduction of the leu, public confidence in its stability was increasing steadily, initially very fast and more slowly starting with 1996. The peak was reached in the last quarter of 1997. Already in the first quarter of 1998 the confidence begun to decrease. After a devaluation in 1998Q4 it dropped sharply and, after a small recovery in the first quarter of 1999, it plummeted again to a level close to zero [11].

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[11] Admittedly, the validity of model assumptions and the stability of parameters can be questioned after the huge devaluation in 1998Q4 and after the Central Bank apparently temporarily gave up its policy goal.
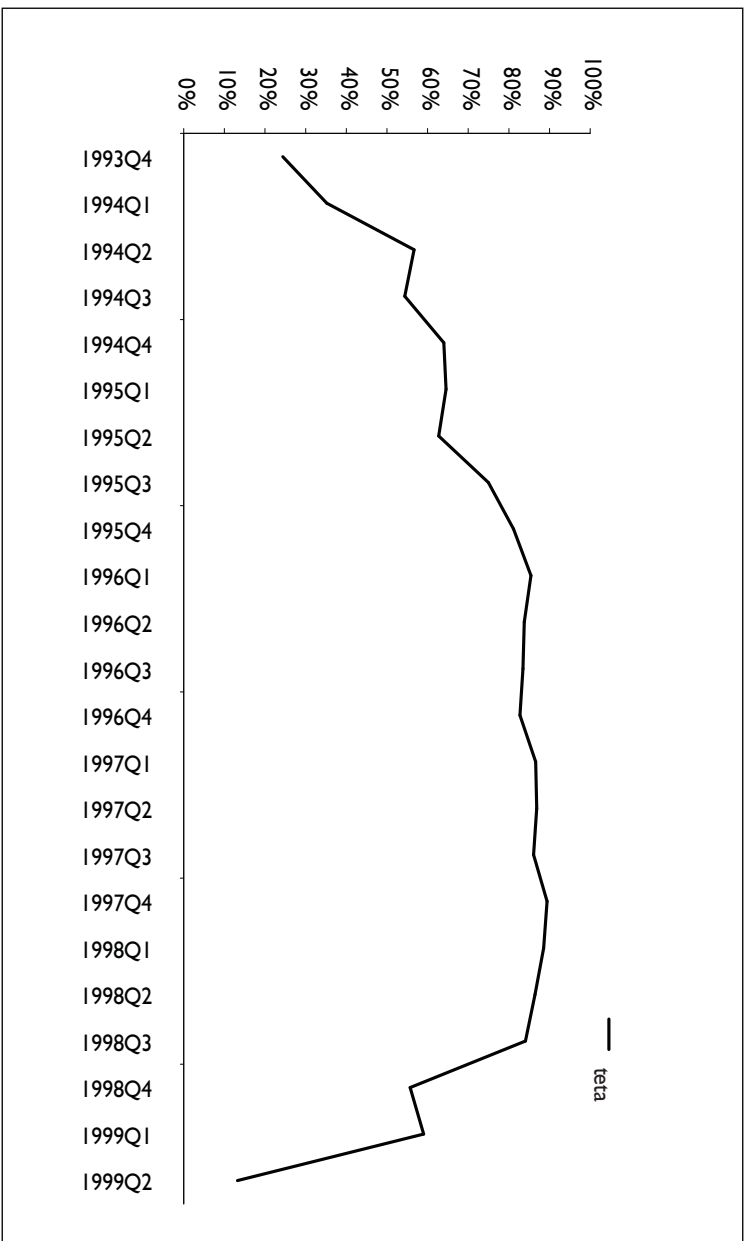
Figure 11. Public confidence in the stability of the leu

Source: Own calculations

References

CISR. Economic Survey. various issues, Center for Strategic Studies and Reforms, World Bank/UNDP Project, Chisinau.

Ghosh, A. (1996). De-Monetization and Re-Monetization. Mimeo, International Monetary Fund.

Ghosh, A. (1997). Inflation in Transition Economies: How Much? and Why? IMF Working Paper WP/97/80.

IMF (1998). Moldova Recent Economic Developments. IMF Country Report CR/98/58.

IMF (1999). Moldova Recent Economic Developments. IMF Country Report CR/99/110.

Jarociński, M. (1998). Money Demand and Monetization in Transition Economies. Center for Social and Economic Research - Central European University Working Paper No.13, Warsaw.

MET. Moldovan Economic Trends. various issues, TACIS, Chisinau.

National Bank of Moldova, various materials and data published at http://www.bnm.org

Ouanes, A., Thakur, S. (1997). Macroeconomic Accounting and Analysis in Transition Economies. IMF, Washington D.C.

Radziwiłł, A., Scerbatchi, O., Zaman, C. (1999). Financial Crisis in Moldova - Causes and Consequences. CASE Studies and Analyses No.192, Warsaw.

Swiderski, K. (ed.) (1992). Financial Programming and Policy: The Case of Hungary. IMF, Washington D.C.

Wellisz, S. (1995). Jakie są przyczyny utrzymywania się inflacji? Mimeo.

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Marek Jarociński