

**Financial liberalization, Saving, and Growth: the Experience
of Transition Economies in Eastern Europe**

Corina Gavrea

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Advisor: Dr. M. Bradley

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I. Introduction

In the recent years it has become a common idea that a high level of saving and investment is one key element of sustained economic growth. The difficult access to international capital markets in Eastern Europe makes domestic saving the most important source of investment for these countries.

Before the beginning of the transition process, Eastern European countries had very high saving rates. This situation started to change once the transition process began and saving rates dropped sharply from levels around thirty percent of GDP to about ten percent in early transition years.

Even though some Eastern European countries like Poland, Czech Republic and Hungary registered an increase in economic growth, most of them were not capable of matching these three leaders and experienced falling or stagnant economic activity in the past decade. One possible reason for this stagnation could be a low level of saving and investment.

Most of the empirical literature on saving focuses on industrialized countries, neglecting the analysis of transition economies (one explanation could be the poor quality of economic data for these countries especially for Eastern Europe).

The objective of this paper is to analyze the developments of domestic and private saving in the future EU member states in the Baltics and Central Eastern Europe. The countries under consideration are: Bulgaria, Czech Republic, Hungary, Poland, Romania, Slovak Republic and Slovenia from Central and Eastern Europe and Estonia, Latvia and Lithuania from Baltics. Besides focusing on determinants of private and public saving, this paper will also attempt to answer other open questions. Is there a correlation between

saving and financial liberalization? Do the demographic variables have any impact on the saving rate?

II. Trends in saving rates

The last decade was characterized by a severe decline in saving rates, from levels around thirty percent of GDP (before transition) to low twenties and even tens, in almost all transition economies of Eastern Europe.

One explanation for the high saving rate during the socialist era could be the “involuntary” or “forced” saving, caused by the lack of consumer goods. The possibility of involuntary savings during socialist era was the subject of many debates. Involuntary savings can exist if consumers don’t have access to any goods or asset market where price movements can equate demand and supply¹. However, the results obtained by Denizer and Wolf (2000)² offers some evidence for the presence of involuntary saving in almost all EU accession countries (except for Czech Republic).

The gross domestic saving rates are reported in Table 1. Pre-transition savings rates were among the highest in the world, with the highest level of saving rate in 1989 registered in Poland (42.7 percent of GDP).

With the beginning of transition process³ saving rates dropped sharply from levels above thirty percent to less than twenty percent. This collapse in savings might be explained by the elimination of the involuntary savings. Other reasons for the reduction in saving rates could be: high inflation, high unemployment rate and a reduction in GDP.

¹ Dornbush and Wolf (2000); “Monetary overhangs”

² Denizer and Wolf (2000); “The Savings Collapse during Transition in Easter Europe”. The paper is part of a World Bank research project entitled “Saving Across the World”

³ Transition began in 1990 in Czech Republic, Hungary, Poland, Slovenia, Slovak Republic; 1991 in Romania and Bulgaria and in 1992 Baltic countries (Latvia, Lithuania, Estonia).

Once the economy begun its recovery, in many EU accession countries, saving rates registered a slight increase and remained relatively stable during the recent years.

Table 1: Gross domestic saving rates as a percentage of GDP ⁴

Country	1989	1990	1991	1992	1993	1994	1995
Bulgaria	31.3	22	26.8	14.1	7.6	8.7	14.1
Czech Republic	30.6	27.8	30.1	27.5	28.4	27.1	29.3
Estonia	25.9	22.3	34.5	32.7	22.4	16.5	18.6
Hungary	29.9	28	19.5	15.8	11.8	15.7	22.7
Latvia	34.7	38.8	43.5	48.1	25	20.8	15.2
Lithuania	25.8	25.2	32.9	19.2	11.4	12.4	12.6
Poland	42.7	32.8	18	16.7	16.5	19.9	22.1
Romania	29.5	20.8	24.1	23	24	22.7	18.7
Slovak Republic	28.5	24.2	28.2	24.1	21	26	28.2
Slovenia	33	32.6	26.4	24.7	20.4	23.2	21.13
<i>Average</i>	31.2	27.45	28.41	24.59	18.85	19.3	20.263
<i>Standard Deviation</i>	4.91	5.77	7.45	10.04	6.76	5.92	5.6

Country	1996	1997	1998	1999	2000	2001	2002
Bulgaria	13.5	14.45	17.11	12.1	12.9	12.8	12.1
Czech Republic	28.6	26.6	28.8	26.8	26.3	27	NA
Estonia	16.3	19.4	18.9	19.6	23.7	24	23.3
Hungary	26.1	27.7	27.6	26	27.2	25	NA
Latvia	10.8	14.3	14.1	16.7	18.5	18.8	19.5
Lithuania	14.7	15.9	12.4	12.4	14.3	16.3	16.5
Poland	20.3	20.2	21	20	18.4	17.1	15.7
Romania	17.4	13.6	9.72	11.2	14	13.8	14.6
Slovak Republic	24.4	25.7	24.1	23.9	24	23.4	22.9
Slovenia	22.5	23.4	24	24	24.2	25.1	NA
<i>Average</i>	19.56	20.39	19.27	19.35	20.28	21.1	18.75
<i>Standard Deviation</i>	5.75	5.21	6.87	5.82	5.49	4.7	3.74

⁴ Data source – World Bank Development Indicators, own calculations.

III. Theoretical determinants of saving and previous findings

Because understanding the determinants of saving is crucial in designing a number of policy interventions, the analysis of saving behavior has become one of the most important issues in empirical macroeconomics. Many of the empirical studies have used aggregate saving figures while only a few focused on private saving. However, because private saving is the main component of domestic saving, discovering the determinants of private saving is of great importance for economists and policy makers. The determinants of savings most often used in empirical studies are discussed below.

Income

The existing literature not only suggests that income is positively correlated to saving, but also that income plays a key role in explaining saving behavior⁵ (Loayza, 1999). High income will improve per capita income of households; this will induce them to save more. Thus, richer people can afford to save for their future consumption, but the poor people have low incomes that only allow them to consume at the minimum level.

Growth

Modigliani showed many years ago (1966), using Life Cycle hypothesis model, that saving is positively correlated with income growth. He argued that a higher growth rate,

⁵ Loayza, N., Schmidt-Hebbel, K., and Serven, L. (1999): "What Drives Saving Across the World? The World Bank Project.

would, with unchanged saving rates, rise aggregate saving because it would increase aggregate income of those working relative to those who do not earn labor income.

On the other hand, if workers expect that their income will grow in the future, according to the Life Cycle Model they would want to consume more. This increase in consumption may reduce individual savings by a sufficient amount to offset the effect of higher growth on aggregate saving. This idea was presented by Tobin (1967) who argued that individual saving rates remain unchanged only in case of myopic expectation of future income.

More recently, Deaton and Paxson (1992) and Bosworth (1993) have provided evidence that higher income growth may produce higher saving. Also, Loayza et al (2000) analyzed this issue once again and concluded that one percent increase in growth rate generates an increase in saving, but the effect may be temporary.

Interest Rate

The effect of interest rates on saving is ambiguous because it depends on the substitution and income effects of interest rate changes. If the substitution effect is higher than the income effect, an increase in interest rate will have a positive effect on savings and vice versa.

Previous empirical literature on developing economies does not clarify the ambiguity of the effect of real interest rates on saving behavior. For example, Ogaki, Ostri and Reinhart (1994) find positive but small interest rate effects on saving. The same result was obtained by Loayza *et. al.*(1999) who found a weak interest rate elasticity of aggregate and private saving.

Demographics

Life-cycle models indicate that demographic variables affect the saving rate. The empirical studies made by Leff (1969) and Modigliani (1970) showed that demographic variables indeed influence the saving behavior, more specifically they found that higher proportion of the young and elderly to those of working age are associated with lower savings rates. As theory suggests, people have the highest saving rate during the peak earning period of their life cycle. How much people save varies significantly among different age groups. In the life-cycle hypothesis younger people have negative saving rates and older people dissave (spend from their saving) because they have only low income during their retirement phase. The vast majority of the empirical studies on the effect of demographics on saving rates used as an explanatory variable the so-called dependency ratio – those under age 15 and over 65 as a share of the total population.

Fiscal Policy

When the government changes its spending on public goods or the level of taxes, it affects the demand for the economy's outputs of goods and services and alters the saving decision. The effect of changes in the supply of public goods on saving behavior depends on the degree of substitutability between private and public goods.

With regard to changes in taxes, any increase in taxation reduces savings. However, as Schrotten and Stephan (2001) pointed out, in transition economies it is necessary to distinguish between “official taxation” and “unofficial taxation” (anything that benefits the government and imposes a cost on private sector without showing up on the budget).

The unofficial taxation occurred at the beginning of the transition process increasing the overall tax burden to be paid by private sector.

Borrowing Constraint

The life cycle hypothesis argues that young and old people will dissave to level out their consumption over their life time. But, for young people the tendency to dis-save depends on the ability to borrow. If there is a borrowing constraint young people would like to increase consumption but, there is no way to do so. This may cause an increase in savings over a life time. But, previous findings like Loayza et al (1999) show a negative impact of the borrowing constraint on saving.

Inflation

The empirical studies on the effect of inflation on the saving behavior have ambiguous results. The Mundell-Tobin effect suggests that inflation could lower the real interest rate permanently and cause a portfolio adjustment from real money balances towards real capital.⁶ This means that higher inflation would be expected to lead to increased saving and investment. However, higher inflation may also lower saving through increased uncertainty (Ipumbu and Kadhikwa, 1999).

Financial Liberalization

Financial reforms have consisted mainly of the removal of administrative controls on interest rates, fewer credit constraints, increased saving opportunities, a larger portfolio of

⁶ This point was independently made by Tobin (1965) and has come to be known as “Mundell-Tobin” effect.

investment instruments, a larger number and diversity of financial institutions and a development of securities markets. Early literature on financial reform pointed out the possibility that a higher interest rate will boost savings. But, it is not clear that financial liberalization will actually increase saving because the effect of higher interest rate on savings is itself ambiguous (in case income effect is higher than the substitution effect an increase in interest rate will have a negative effect on savings) .

Besides the increase in interest rate, financial liberalization has other characteristics such as larger supply of consumer credit or housing finance that may cause a reduction in saving and a temporary consumption boom (Japelli and Pagano, 1994).

The difficult part in determining the effect of financial liberalization on saving behavior is finding ways to measure it. The easiest way to control for financial liberalization is to include in the saving model dummy variables that make distinction between pre and post liberalization periods.

Another way to measure financial liberalization is to construct an index that would attempt to measure both de-regulatory and institution buildings aspects of the process (Bandiera, Caprio, Honohan and Schiantarelli, 1998). In this project I will attempt to use both methods in estimating the saving function.

IV. The Model for Estimation

An econometric analysis is necessary to examine the determinants of private and domestic saving in the sampled countries. The period covered by our analysis is between 1989-2002.

Because we are using a panel data set that combines time series with cross sectional data, the model for estimation can be written as follows:

$$y_{it} = \beta_{1it} + \sum_2^k \beta_{kit} x_{kit} + e_{it}$$

Where: $i = \overline{1, N}$ refers to a given country; $t = \overline{1, T}$ refers to a given year.

y_{it} is the dependent variable for country i at time t , and x_{kit} is the k th explanatory variable for country i at time t .

For the aggregate saving the dependent variable is - the ratio of gross domestic savings to GDP

As explanatory variables we will include:

- annual growth rate of real GDP
- Real GDP per capita used to measure the level of income
- inflation rate measured as annual growth rates of the CPI
- real interest rate
- dependency ratio – i.e., the ratio of people under 15 and over 65 to the total population

- Current Account balance as a percentage of GDP as a proxy for the international borrowing constraint of an economy
- Financial liberalization

In order to estimate the private saving function (households and enterprises), we will include the public saving as an additional explanatory variable and the dependent variable will be the ration of private saving to GDP.

The period covered by this study is between 1989-2002 and the most important data source is the World Bank “World Development Indicators”.

Because of the poor quality of economic data, private sector saving is unavailable for all sampled countries. In order to estimate these two models we have to do our own calculation to obtain data for private saving. We will calculate private saving by subtracting from domestic saving, the overall government deficit (used as a proxy for public saving or dissaving). Even though this method is very simplified, it is the most commonly used in case of a poor quality of data (see Loayza *et al.* 2000).

Another aspect that we have to consider before estimating the models is finding a way to control for financial liberalization. To do that we will use two methods:

1). Control for every major event of financial market liberalization in the sampled countries by constructing separate dummy variables. (See Annex 1 for information regarding the major events of financial reform). We will test the significance of every one of these variable and eliminate from our estimation the ones that are not significant.

2). Construct an index for financial liberalization. The index will summarize the changes in interest rate, direct credit, bank ownership (privatization of financial institutions), liberalization of security markets and international financial liberalization

(information on all these events is included in Annex 1, which is also the base for our index calculation). Instead of introducing these variables separately in our model, we will use the method developed by Bandiera, *et al.*(1998) and construct a matrix of zero-one for each country. We construct our index by computing the principal components of this matrix.

Because we might expect problems like serial correlation in the error term and biased estimators we will estimate two models: a random and a fixed effect model. We will then compare the estimates of the random and fixed effect model by using the Hausman specification test.

References

Arestis, P., Demetriades, P. (1999). "Financial liberalization: The experience of developing countries", *Eastern Economic Journal*, 25 (4): 441-457.

Bandiera, O., G. Caprio, P. Honohan, and F. Schiantarelli. (2000). "Does financial reform raise or reduce savings?", *The Review of Economics and Statistics* 82 (2): 239-263.

Denizer, C., Wolf, H. (1998). "Aggregate saving in the transition", Working paper; part of World Bank research project: "Savings across the world".

Denizer, C., Wolf, H. (2000). "The saving collapse during the transition in Eastern Europe". Working paper; part of World Bank research project: "Savings across the world".

Johnson, D., Chiu, J. (2001). "The saving-income relation in under-developed and developed countries", *The Economic Journal*, 321-333.

Loayza, N., Schchmidt-Hebbel, K., and Serven, L. (2000). "What drives saving across the world?", The World Bank. Saving across the world project.

Masson, P., Bayoumi, T., and Samiei, H. (1996). "International evidence on the determinants of private saving", Discussion paper: *Center for Economic Policy Research*.

Ogaki, M., Ostry, J., and Reihart, C. (1994). "Saving behavior in low and middle-income developing countries: A comparison, IMF working paper.

Schmidt, M. (2001). "Saving and investment: Some international perspectives". *"Southern Economic Journal"*, 446-456.

Schrooten, M., Stephan, S. (2001). "Savings in Central Eastern Europe", *German Institute for Economic Research*.

Tybout, J., Jamie de Melo (1986). "The effects of financial liberalization on savings and investment in Uruguay", *Economic Development and Cultural Change*, 561-587.

Vinhas de Souza, L. (2004). "Financial liberalization and business cycles: The experience of future EU member states in Baltics and Central Eastern Europe", working paper.

Appendix 1. Major events of Financial Market Liberalization in the Sampled Countries⁷

1. Domestic Financial Liberalization.

a. Bank ownership.

We use a dummy variable equal to 1 when banks are privatized.

b. Interest rates.

Dummies equal 1 when interest rates were liberalized.

c. Credit control.

This variable reflects the elimination of credit controls. We will use a dummy equal to 1 if there are no credit controls.

d. Deposits.

We use a dummy equal to 1 when deposits in foreign currencies are allowed.

2. Capital Account Liberalization.

Here we use information related to exchange rate and borrowing abroad by banks (this variable equals one when capital movements and/or capital movements are liberalized.

3. Stock Market Liberalization.

For stock market liberalization we will use information related to the opening of stock exchange and development of securities and stock markets.⁷

⁷ Sources of information: IMF Country Reports, World Bank Country Reports, Transition Report (EBRD) 2003, "Financial Transition in Europe and Central Asia: Challenges of the new decade" edited by Lajos Bokros, Alexander Fleming and Cari Votava, "Financial Liberalization and Business Cycles: The Experience of Future EU Member States in the Baltics and Central Europe" L. Vinhas de Souza, Kiel Institute for World Economics.

BULGARIA

1.a Beginning of privatization of state owned banks in 1992. (In 1992 Bulgarian Government established the Bank Consolidation Company for the purpose of restructuring and privatizing the state owned banks).

1.b Interest rates are fully liberalized in 1991.

1.c Credit to residents and non-residents allowed in 1991.

1.d Deposits on foreign accounts allowed in 1991 (residents and non-residents: non-residents require BNB approval for transaction over 20,000 leva)

2. IMF entry at the end of 1990. Article VIII from the IMF Agreement adopted at the end of 1998. Borrowing from abroad and capital outflows allowed with prior registration with BNB.

3. In 1992 first stock exchange begins trading. In 1995 The Law on Securities, Exchange and Securities Companies was adopted.

CZECH REPUBLIC

1.a Privatization of state owned banks late 1991.

1.b Liberalization of interest rates in 1992.

1.c Removal of credit control at the end of 1997.

1.d Starting with 2001 deposits on foreign accounts no longer need pre-approval.

2. IMF entry in 1993. Article VIII adopted in 1995. In 1999 most controls on capital transactions eliminated. No controls on borrowing abroad and capital outflows allowed.

3. In 1993 Stock exchange begins trading. In 1999: elimination of controls on foreign securities.

ESTONIA

1.a. In 1995 first state owned bank privatized.

1.b. No control on interest rates.

1.d Beginning with 1995 deposits on foreign accounts in domestic banks allowed

2. IMF entry in 1992 and Article VIII adopted in 1994. Borrowing abroad and capital outflows allowed.

3. Stock exchange established in 1996 (acquisition of shares, securities and bonds by foreign investors has been allowed since the beginning).

HUNGARY

1.a First state owned bank privatized in 1994.

1.b Liberalization of interest rates in 1987 for enterprises and in 1992 for households.

1.c Long term lending to non-residents allowed; in 2001 short-term credit freed.

1.d Deposits on foreign currency need approval. In 1998 the need for approval from residents and non-residents is extended.

2. IMF entry in 1982. Article VIII adopted in 1996. In 1991 borrowing abroad allowed but needs reporting.

3. In 1990 first Stock Exchange established. (Starting with 1996 non-residents from OECD allowed to buy debt securities of over 1 year maturity).

LATVIA

1.a In 1995 first state-owned bank privatized.

1.b Beginning with 1992: interest rates liberalized.

1.c Credit control removed in 2003.

2. IMF entry in 1992. Article VIII adopted in 1994. Borrowing abroad and capital outflow allowed.

3. Stock exchange established at the end of 1993 (Dec 1993). Acquisition by foreign investors allowed since the beginning.

LITHUANIA

1.a The reform of Lithuanian's state owned banking sector was started in 1992.

1.b No control on interest rates.

1.c No credit control (for residents and non-residents).

1.d Deposits on foreign allowed: 1992.

2. IMF entry in 1992, Article VIII adopted in 1994. Borrowing from abroad allowed.

3. In 1993 Stock Exchange trading begins.

POLAND

1.a In 1993 first bank privatized.

1.b Liberalization of interest rates starting with 1990.

1.c Permission needed for short-term credit to non-residents (lifted in 1998). Short term financial credit from residents to non-residents prohibited above a given limit.

1.d In 1990 deposits an foreign accounts allowed with limit.

2. IMF Entry in 1986. Article VIII adopted in 1995. Foreign loans authorized to specific banks, but subject to approval.

3. In 1991 Stock Exchange reopened

ROMANIA

1.a In 1998 first bank was privatized.

1.b No control on interest rates since 1991.

1.c In 1998 short term credit with permission from NBR. In 1999 credit operation of over a year liberalized.

1.d Starting with 1990 deposits on foreign accounts allowed.

2. IMF entry in 1972, Article VIII adopted in 1998. Borrowing abroad allowed with NBR authorization.

3. At the end of 1995 Stock exchange begins to operate. The acquisition of shares by non-residents was fully allowed from the beginning.

SLOVAK REPUBLIC

1.a Partly privatized two large banks in 1992 when Slovak Rep. was still part of Czechoslovakia (in 1993 Czechoslovakia splits into Czech and Slovak Republics).

1.b Interest rates were liberalized starting with 1992.

1.c In 1996: Foreign long-term borrowing by residents allowed; financial long-term credit to non-residents allowed.

1.d 1998: Deposits on foreign accounts allowed.

2. IMF entry in 1993, Article VIII adopted in 1995.

3. In 1993 Stock Exchange begins trading. Starting with 1998 OECD-nationals can acquire securities.

SLOVENIA

1.a First bank privatization in 1992.

1.c Financial credits to non-residents allowed.

1.d Financial credit to non-residents allowed.

2. IMF entry in 1992. Article VIII adopted in 1995. Borrowing abroad allowed.

3. In 1989 Stock exchange begins trading.

