# PART TWO

# ASPECTS OF STRUCTURAL CHANGE AND ADJUSTMENT IN TRANSITION ECONOMIES

# CHAPTER 4

# DOMESTIC SAVINGS IN THE TRANSITION ECONOMIES

*There is widespread agreement that the mobilization of domestic resources is crucial for raising rates of economic growth and promoting development. Despite many ambiguities in the relationship, the body of empirical research supports the common-sense view that capital investment is a powerful engine of economic growth and that higher levels of domestic saving are associated with higher levels of investment. Although foreign investment can be important, its role is essentially complementary, and usually subsequent, to domestic efforts: historically, domestic private savings have played the major role in supporting investment in the industrialized countries. This chapter examines the aggregate savings-investment balances in a large group of transition economies, an exercise which is only possible now because of recent improvements in their statistics. Among the various determinants of savings in the transition economies, the analysis emphasizes the importance of the level of per capita income and the depth and strength of the financial system. The latter underlines the crucial importance of financial reform and the creation of sound institutions for encouraging higher levels of savings and investment.*

## 4.1  Introduction

The economic transformation of the former centrally planned economies involves a fundamental re-allocation of resources and deep economic structural change. If these countries are to build modern economies based on up-to-date production technologies and, ultimately, catch up with the living standards in the industrialized countries, they need to sustain high rates of economic growth for a long period of time. However, the process of transformation during the past decade has been rather uneven and progress has often lagged behind expectations due to the unprecedented problems and policy challenges that these countries have been facing.

When assessing the experience of the past decade, it has sometimes been claimed that whereas the process of economic transformation and reindustrialization requires the mobilization of enormous resources and their channelling into efficient use, the transition economies, after several decades of economic mismanagement, are poorly endowed with domestic resources. It has been further argued that, given the restricted access of many transition economies to the international financial markets and the limited amounts of official assistance they have been getting, many of these countries face severe resource constraints – similar to those faced by many developing countries – which have hampered their economic recovery and, if unchecked, may continue to cause serious impediments to future development and growth.

While the debate about the determinants of (and constraints on) development and growth is not new – it has long been present in the development economics literature and in the old and still on-going policy debate on these issues – there has not been much empirical research on the actual pervasiveness of resource constraints in the transition economies, and of the extent to which such constraints may be narrowing their growth prospects. This can be partly explained by the absence of adequate data (or by its poor quality), in particular on domestic savings, which has effectively prevented in-depth research in this area. This chapter addresses some of the issues related to the financing of development and growth in the transition economies, and it focuses on their saving-investment balances and, in particular, on the role of domestic private savings. In defining its analytical focus, the chapter draws extensively on previous theoretical and empirical research in this area (section 4.2). Thanks to the progress in statistical reporting, especially in the last few years, it is now possible to re-constitute the aggregate saving-investment balances for a large group of transition economies (section 4.3). The availability of these data has allowed a more detailed empirical analysis of the saving and investment patterns in the transition economies as well as some of the main determinants of private savings (section 4.4).

## 4.2  Savings, investment and growth

The analysis of the relationships between saving and investment and between investment and growth occupies an important place both in economic theory and in empirical economic research. In view of the undisputed link between fixed investment and growth, these relationships are closely monitored by policy

makers as well. Governments have traditionally been active in searching for ways and means of stimulating economic activity and achieving high and sustained rates of economic growth.

Economists – both in theoretical and in applied research – have for a long time been intrigued by the links between domestic savings and investment, on the one hand, and between investment and economic growth and development, on the other. The "conventional wisdom" about these links has been that thrift is a major determinant of growth, which in turn leads to the belief that in the long run there must exist a positive return on the invested capital, regarded as "the reward for parsimony".[437] In the main, empirical research has provided convincing evidence in support of this conjecture, in particular as regards long-run economic performance.[438]

Despite the indisputable fact of the existence of links between savings, investment and growth, there is an ongoing debate as to how, precisely, savings and investment affect economic performance and vice versa: different theoretical models provide different interpretations of the causal relations and transmission mechanisms, and many of the results in this area are quite ambiguous. Thus two important strands of economic theory – the neo-classical and the Keynesian – offer different interpretations of the role of savings and investment for economic growth; and, in addition, the results differ substantially according to whether the models refer to a closed or an open economy.

The relationship between savings, investment and growth has been closely scrutinized in the different growth models which comprise the corpus of economic growth theory, most of which are in the neo-classical tradition. These models incorporate some of the basic assumptions of the neo-classical economics: for example, the existence of perfect markets which clear instantaneously through adjustment in prices; a tendency towards the full utilization of production factors; social endowments of production factors (in accordance with their marginal product), etc. In general, neo-classical growth models are exclusively focused on the supply side and, consequently, output is determined by supply conditions alone.

Earlier (pre-neo-classical) growth models such as the Harrod-Domar model implied a direct link between the (short-run) rate of economic growth and the level of current investment.[439] As recognized by one of its authors, this model was not meant to be a long-run growth model; it was envisaged as a tool to analyse economic performance in the short run, particularly during the course of a business cycle.[440] However, in practice it has been extensively used – sometimes without justification – to analyse longer-term growth performance, especially in the context of designing aid programmes for developing countries.[441]

While very attractive for policy purposes because of its clear framework and ease of manipulation, the Harrod-Domar model – due to the simplicity of its assumptions – fails to capture some of the important links and relations that are widely believed to be part and parcel of actual economic life. Hence, both its empirical validity and its policy relevance have been widely questioned by economists.[442] One of the key underlying assumptions of the Harrod-Domar model is that both domestic and foreign savings (the latter often in the form of external assistance) are fully channelled into productive investment. Obviously, this is a very strong – and probably not always realistic – assumption, especially as regards a developing or transition economy. If it is to be adopted as a working guideline for policy making purposes (in the context of aid and development programmes), it needs to be tested against the actual absorptive capacity of the economy: that is, whether it is capable of fully putting into productive use the envisaged financial resources. In a developing country (as well as in transition economies), the actual absorptive capacity of the economy may be a constraint for the effective deployment of such resources because of institutional bottlenecks and/or a scarcity of profitable investment opportunities.

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[437] S. Cesaratto, "Savings and economic growth in neo-classical theory", *Cambridge Journal of Economics*, Vol. 23, No. 6, 1999, pp. 771-793.

[438] For example, the Penn World Tables, containing comparable data on long-term economic performance (from 1950 onwards) for some 150 countries, provide evidence of a positive and relatively strong statistical association between average investment rates and long-run rates of growth of per capita GDP. R. Summers, I. Kravis and A. Heston, "International comparisons of real product and its composition: 1950-1977", *The Review of Income and Wealth*, Series 26, No. 1, 1980, pp. 19-66 and R. Summers and A. Heston, "The Penn World Tables (Mark 5): an extended set of international comparisons, 1950-1985", *The Quarterly Journal of Economics*, Vol. 106, No. 2, May 1991, pp. 327-368.

[439] The model assumes that the growth of output in the current year is proportional to the investment ratio (the share of investment in output) in the previous year.

[440] E. Domar, *Essays in the Theory of Economic Growth* (New York, Oxford University Press, 1957).

[441] In the framework of the Harrod-Domar growth model a targeted rate of growth of GDP implies a "required" investment rate, the "incremental capital output ratio". Hence, the difference between domestic savings and the "required investment rate" was interpreted as a "financing gap" which needed to be bridged by additional finance (in particular, foreign savings or aid). Most development assistance programmes of the 1950s-1970s were designed along this strand of economic thinking. W. Easterly, "The ghost of the financing gap: testing the growth model used in the International Financial Institutions", *Journal of Development Economics*, Vol. 60, No. 2, 1999, pp. 423-438.

[442] In his comprehensive study, W. Easterly tested the Harrod-Domar model on pooled cross-country data for 146 countries for the period 1950-1992 in an attempt to find out whether *ex post* there is any empirical justification of the underlying assumptions of the model. These results were profoundly negative both as regards the relation between aid and investment and the relation between investment and growth. Moreover, in 60 per cent of the countries studied he actually found a negative statistical association between foreign aid and domestic investment and in most of the others there was no statistically significant correlation between aid and investment. As regards the underlying assumption of a linear relation between lagged investment and growth, the sample data did not provide evidence of a statistically significant association either. He concluded that "there is no theoretical or empirical justification for assuming a short-term proportional relationship between investment and growth or between 'investment requirements' and saving", and that "there is no theoretical or empirical justification for using a 'financial gap' calculation to influence policy or the allocation of foreign aid". W. Easterly, loc. cit.

Another implication of the assistance policies derived from the Harrod-Domar growth model is that an economy has to have a positive and sufficiently large marginal saving rate (the share of savings in an incremental change of income) in order to embark on a path of self-sustained growth. If this condition is not met, official credit will fail to generate growth while foreign debt will continue to accumulate, driving the economy into a debt trap. Consequently, external aid in the form of debt finance (and its continued availability) should in principle be conditional on the country achieving higher domestic saving rates. However, even if this is done, there are no *ex-ante* guarantees of success in meeting such conditionality due to the complexity of private saving behaviour and the numerous factors that affect it (this issue is discussed in more detail in section 4.4). In addition – in a developing or transition economy – there are further limitations due to the limited absorptive capacity of the economy and institutional bottlenecks.

The neo-classical growth theory has relaxed some of the simplistic assumptions of the Harrod-Domar model but it still fails to offer a satisfactory account of the links between savings and growth, which would conform to the "conventional wisdom", that capital accumulation is the engine of growth. Indeed, one of the puzzling results of the mainstream growth models is the apparent lack of a direct link between the saving rate and the long-run rate of growth of the economy. In the growth model developed by Robert Solow, a rise in the saving rate only causes a one-time increase in the level of per capita income and does not affect the equilibrium rate of growth; it is only during the transition from one steady state to another that the rate of growth changes in response to a change in the saving rate.[443] These controversial results have not been supported by empirical evidence which, as noted earlier, suggests a positive correlation between the investment ratio and the long-run rate of growth.

Further extensions of neo-classical growth theory have attempted to circumvent the limitations of the Solow model. Thus, endogenous growth models incorporate an explicit link between variables which reflect different preferences regarding the allocation of output between present and future consumption (that is, savings) and future economic performance, in the first place growth. One strand of these models hinges on the introduction of a "human capital" variable which is an input in the production function and whose present value depends on past savings and investment decisions.[444] Other

endogenous growth models assume a relation between investment and the level of productive efficiency (the rate of technological progress), which provides a link between savings/investment and the rate of growth.[445] A third group of models deviates from the standard neo-classical assumption of constant returns to scale and considers capital accumulation as a source of increasing returns to scale.[446] All these theoretical approaches imply an active role of savings in future growth, in line with the notion that capital accumulation is a fundamental source of growth.[447]

Keynesian economics interprets the role of savings and investment in promoting growth in a different context. In contrast to the basic neo-classical assumptions, in the Keynesian framework prices only change or adjust very slowly: in the short run they are taken as given and fixed ("sticky" prices); output is demand determined and suppliers produce what is demanded at the given price level; markets may be imperfect and adjustment may be costly; and there is not necessarily a general tendency towards the full utilization of production factors. In an economy that operates under these assumptions, any exogenous disturbance that changes aggregate effective demand (including investment) – which may be external or internal, or policy induced – affects growth as well. Obviously, a change in the consumption/saving patterns of economic agents (which may also be a response to a change in the environment or in expectations) directly affects the level of economic activity (and hence growth) through the disturbance generated in final demand. In the framework of an open economy (the so-called Mundell-Fleming model), the relationship between aggregate demand (and the implied policy mix) and growth becomes more complex due to the effect of the exchange rate regime: the same disturbance can produce different growth outcomes depending on the actual exchange rate regime.[448]

Regarding the relationship between investment and savings, a number of empirical studies in this area, based on comprehensive statistical data for various countries, have demonstrated the existence of a strong and statistically significant correlation between the two.[449]

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[443] In the Solow model, the long-run (equilibrium, or steady-state) rate of growth only depends on the rates of growth of labour supply and the efficiency of the production technology ("technical progress"), both of which are taken as exogenously determined. R. Solow, "A contribution to the theory of economic growth", *Quarterly Journal of Economics*, Vol. 70, 1956, pp. 65-94. As observed by Cesaratto, this model implies that the savings decisions of the community (that is, its choices between present and future consumption) are irrelevant for the determination of the (long-run) rate of growth, an implication which breaks the direct link between thrift and economic growth. S. Cesaratto, loc. cit.

[444] Among the first models of this type is that suggested in R. Lucas, "On the mechanics of economic development", *Journal of Monetary Economics*, Vol. 22, No. 1, 1988, pp. 3-42.

[445] P. Romer, "Endogenous technological change", *Journal of Political Economy*, Vol. 98, No. 5, Part 2, 1990, pp. 71-102.

[446] P. Romer, "Increasing returns and long-run growth", *Journal of Political Economy*, Vol. 94, No. 5, 1986, pp. 1002-1037.

[447] However, as argued by some of their critics, the establishment of such a link in these extensions of the neo-classical growth model is in most cases achieved at the expense of deviations from the standard principles of the neo-classical theory. S. Cesaratto, loc. cit.

[448] While providing a useful framework for analysing short-term economic adjustment (given that the main assumptions are empirically valid), the models based on Keynesian principles do not address the long-run growth properties of the economy and the factors that affect them. The analytical power of these models as a policy-making tool diminishes when the underlying key assumptions are violated in reality (for example, in circumstances when prices do change rapidly or when supply constraints matter).

[449] M. Feldstein and C. Horioka, "Domestic saving and international capital flows", *Economic Journal,* Vol. 90, No. 358, 1980, pp. 314-329. Later, similar results were reported in A. Penati and M. Dooley, "Current account imbalances and capital formation in industrial countries, 1949-

Despite these relatively robust empirical findings there remains significant divergence in the interpretation of the results.[450] Martin Feldstein and Charles Horioka, the authors of the first and highly influential study in this area, assume that in a world of perfect capital mobility, domestic investment and saving rates should be completely independent of one another. Under the assumption of perfect capital mobility, investors from any part in the world should have an equal opportunity to invest in any country and thus the level of domestic investment should only depend on the expected rate of future returns.[451] Hence the authors interpret the observable correlation between investment and savings as a reflection of the existence of market imperfections and restrictions on the free flow of capital. Subsequently this interpretation (the so-called Feldstein-Horioka puzzle) was widely debated – and challenged – in the literature, especially as regards its policy implications. It has been argued that the existence of a strong statistical correlation between domestic investment and domestic savings, even in countries with no or very weak controls on capital mobility implies that in reality capital is not truly perfectly mobile and cannot be expected to become so even if all formal restrictions are lifted.[452]

Whatever the interpretation, one of the main conclusions of these empirical findings is that, historically, countries have in the main relied mostly on domestically generated savings to finance domestic investment.[453] Moreover, various studies have shown that the statistical association between investment and savings is an inherent feature of economic performance both in the short and in the long run; this empirical relationship is general and is not restricted to a particular group of countries.[454]

Although there is still considerable debate regarding the theoretical modelling of the relationship between savings, investment and growth, empirical research has produced much less ambiguous results in this area: in general, empirical economics has come up with rather strong results emphasizing the importance of domestic savings and investment for the development and growth of individual countries and nations. In fact, recent theoretical research seeking to reflect the role of capital accumulation as an engine of growth has partly been a response to such empirical findings. While economic theory has so far not been fully successful in reflecting the underlying economic interactions in consistent, closed form models, the notion that savings and investment play a fundamental role in the process of economic development continues to dominate present day economic thinking.

## 4.3 The patterns of savings and investment in the ECE transition economies

Savings and investment are essential for development and growth, and even more so for those countries with economies undergoing an unprecedented transition from plan to market. The legacy of communism was a group of economies characterized by inefficient production technologies and employing obsolete physical assets. Building modern and competitive market economies requires, among other things, a complete overhaul of practically all industries. For this to materialize enormous amounts of resources need to be mobilized and channelled into productive fixed investment. Indeed, the experience during a decade of economic transformation provides convincing evidence that the most successful transition economies have been those where the economic environment stimulated domestic savings and business fixed investment. Some of the leading reformers among the transition economies have experienced in recent years an investment boom, often led by FDI and involving large multinational companies, that has laid the foundations of a number of new, modern and competitive industries.

The available data on recent economic performance in the transition economies support the view that capital accumulation is essential for achieving high rates of economic growth. Despite the inevitable caveat related to the short observation period,[455] the pooled data shown in chart 4.3.1 are in line with the findings of other empirical studies which, as noted earlier, support the existence of a positive statistical association between the level of investment and the rate of economic growth. The relatively high dispersion in the scatter diagram in chart 4.3.1 (indicating a relatively weak correlation between the two variables) is not surprising given the fact that the transition economies are still undergoing fundamental structural change, which inevitably involves a high degree of instability in structural relationships.

Analysing the determinants of capital accumulation, as well as its two-way relationship with development and growth, requires in the first place a detailed knowledge of

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81", *IMF Staff Papers*, Vol. 31, No. 1, 1984, pp. 1-24 and L. Tesar, "Savings, investment and international capital flows", *Journal of International Economics*, Vol. 31, No. 1-2, 1991, pp. 55-78.

[450] Later studies have explored the existence of possible sample biases in the cross-country analysis of the statistical association between investment and savings. For example, it has been argued that this correlation is much weaker in developing countries than in industrialized ones; in addition it has been pointed out that small economies tend to experience larger fluctuations in capital flows than large ones, which would also weaken the saving-investment correlation. M. Dooley, J. Frankel and D. Mathieson, "International capital mobility: what do saving-investment correlations tell us?", *IMF Staff Papers*, Vol. 34, No. 3, 1987, pp. 503-530.

[451] This interpretation has sometimes been used as an argument in favour of the rapid liberalization of international capital flows. However, the available empirical evidence does not provide strong support for this hypothesis. For example, Feldstein and Horioka obtain results which are equivalent to the statistical rejection of the hypothesis of perfect international mobility of capital.

[452] A central argument is scepticism as to the possibility of ever eliminating the numerous market and informational imperfections that characterize real economic life and which imply additional costs and risks associated with the international movement of capital.

[453] Thus, for the industrialized countries it has been estimated that domestic savings are responsible for some 85-95 per cent of domestic investment. M. Feldstein and C. Horioka, loc. cit.

[454] L. Tesar, loc. cit.

[455] The fundamental association between capital accumulation and growth is essentially a long-run relation, whereas the relevant data for the transition economies are only available for a relatively short period of time.

**Investment ratios and rates of growth of GDP per capita in selected
east European, Baltic and CIS economies, 1995-1999**
*(Per cent)*



*Source:* UN/ECE secretariat, based on national statistics.

differences in the levels of industrialization and per capita income,[458] as well as traditional and historical patterns. In addition, the on-going process of deep structural change in the transition economies has probably also added to the divergence; moreover, the speed of this process differs considerably among countries.

The balances presented in tables 4.3.1 and 4.3.2 show the saving-investment patterns of the private sectors and of governments in the transition economies over the last five years or so. While private savings are analysed in more detail in section 4.4, the remainder of this section is mostly devoted to changes in the aggregate gross saving and gross investment ratios.

Each individual ratio can be interpreted both in terms of its absolute level and of its change over time, with the latter indicating the degree of stability of the underlying structural relation. The significant variability over time in many cases is yet another indication of the instability of structural relations in many of the transition economies. In general, the dynamics of the saving and investment ratios in most countries are non-monotonic year-on-year, even during the recent phase of recovery, which suggests that the process of deep structural change in these countries is still underway.

Given the great cross-country diversity of the saving patterns in the transition economies, it is instructive to compare them with the saving patterns in other countries and regions as such a perspective allows a better assessment of the level of domestic savings in individual countries. For example, during the period 1994-1997, the unweighted average gross domestic saving ratio in the EU member states was 19.5 per cent; the variation among countries was also substantial (though not as much as among the transition economies) with the saving ratio ranging between 14.4 per cent of GDP in the United Kingdom and 25.6 per cent of GDP in the Netherlands.[459] Among the industrialized countries Japan has traditionally had the highest gross domestic saving rates (usually above 30 per cent of GDP). On a global scale, during the period 1983-1992, the highest average gross domestic saving ratios were in the newly industrialized economies of south-east Asia (an average of 24.5 per cent of GDP), followed by the industrialized countries (20.4 per cent average rate) while the gross saving ratios in Latin America and Africa were 15.3 per cent and 16.8 per cent, respectively.[460] From such a perspective the domestic saving ratios in the central European transition economies such as the Czech Republic, Hungary, Poland, Slovakia and Slovenia (which are also in general quite advanced in the transformation reforms), as well as the Russian Federation (which is a special case) fall into the high category. The rest of the transition economies are characterized by saving ratios which are in the low to medium range.

the actual patterns of savings and investment. Until recently, due to the absence of adequate statistical data, it was not possible to analyse in detail, and on a comparative basis, the components of saving-investment balances in the transition economies. Owing to the progress in statistical reporting in these countries, and especially to the almost universal adoption of the System of National Accounts (although practical application varies widely among countries), it is now possible to calculate the saving-investment balances for a large number of ECE transition economies in recent years. The method used in compiling these balances is described in box 4.3.1 and the actual results (in terms of percentage shares in GDP) are shown in tables 4.3.1 and 4.3.2.[456]

The data indicate a very high degree of variation in all the components of the saving-investment balances of the transition economies. Cross-country variation in itself cannot be regarded as atypical,[457] since it mirrors existing

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[456] As a word of caution, despite the notable progress in statistical reporting, the quality of the available statistical data for the transition economies is uneven and sometimes questionable. In particular, due to recurrent discrepancies in the reporting of the balance of trade and services in the national accounts of a number of countries, the current account balance as reported in the national balance of payments statistics has been used in the actual calculations of the saving-investment balances. For the sake of internal consistency and the comparability of the estimates, this has been done for all the transition economies. The reliability of other statistical data used in the computations (such as the fiscal statistics but also the balance of payments data themselves) may also be questioned. Due to these limitations, the components of the saving-investment balances in tables 4.3.1 and 4.3.2 should be regarded as tentative.

[457] The heterogeneity of the saving-investment patterns across countries has been observed in other empirical studies as well. See S. Edwards, *Why Are Saving Rates So Different Across Countries?: An International Comparative Analysis*, NBER Working Paper, No. 5097 (Cambridge, MA), April 1995.

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[458] For an assessment of convergence and divergence in per capita income levels among the transition economies see UN/ECE, *Economic Survey of Europe*, *2000 No. 1*, pp. 155-188.

[459] *OECD Economic Outlook*, No. 66 (Paris), December 1999, p. 219.

[460] The average ratios reported above are calculated for representative samples of countries. S. Edwards, op. cit.

BOX 4.3.1

### The arithmetic of the national saving-investment balance

Although closely related, savings and investment denote different economic categories. At the level of individual economic agents, "savings" denote that part of income from the current period which the agent sets aside for future consumption, while "investment" refers to the expenditure actually made by the agent during this period for the acquisition of various types of assets. Each economic agent, among other things, strikes a balance between the amounts of savings and of investment expenditure. When investment expenditure exceeds savings, the agent has to borrow additional funds in order to finance the deficit; conversely, in the case of a positive balance the excess amount can be lent to those in need of funds.

The annual saving-investment balance of a country represents the aggregate of the individual saving-investment balances of all the economic agents that are entitled to identify themselves with the country. While there may be different ways of looking at a national saving-investment balance, it is usually recognized that there are two main categories of agent that need to be distinguished in the aggregate balance: the private sector (which incorporates all businesses and households) and the state (with all its bodies and institutions). Dis-aggregating the saving-investment balance this way requires identification of the three components (savings, investment expenditure and the ensuing balance) for the private sector, the government and the economy as a whole. It is this approach that has been followed in compiling the saving-investment balances for the transition economies.

At the microlevel the saving-investment account is derived from the individual income balances. Each economic agent i uses monetary income $R_i$ either for consumption $C_i$ or for saving $S_i$:

$$R_i = C_i + S_{i...} \qquad \text{... (1)}$$

On the other hand the agent incurs expenditure $E_i$ which can be grouped into two major categories: consumption $C_i$ and investment $I_i$:

$$E_i = C_i + I_i \qquad \text{... (2)}$$

Subtracting (2) from (1) yields

$$D_i = R_i - E_i = S_i - I_i \qquad \text{... (3)}$$

which implies a numerical equivalence between the balance of monetary income and the saving-investment balance.

In turn, the aggregated national saving-investment balance is derived from the national accounts identity:

$$Y = C + I + M - X \qquad \text{... (4)}$$

where Y denotes total income (gross national product); C is total final consumption; I stands for gross capital formation; and M and X denote imports and exports, respectively.

Since aggregate income is either used for consumption or saved, it follows that:

$$Y = C + S \qquad \text{... (5)}$$

where S denotes total gross domestic savings.

Substituting (5) into (4) yields the main accounting identity of the national saving-investment balance:

$$S - I = X - M \qquad \text{... (6)}$$

where X – M is the balance of trade in goods and services. In the national saving-investment balance, a negative trade balance is interpreted as foreign savings attracted to finance domestic investment.

As both savings and investment have two components (private sector and government) (6) can be rewritten as:

$$(S_p + S_g) - (I_p + I_g) = (S_p - I_p) + (S_g - I_g) = X - M \qquad \text{... (7)}$$

where subscripts p and g denote private sector and government, respectively.

Taking into account the definition of the saving-investment balance from the individual income accounts, (1) to (3), and substituting in (7) yields:

$$D_p + D_g = X - M \qquad \text{... (8)}$$

where

$$D_p = R_p - E_p = S_p - I_p \qquad \text{... (9)}$$

is the aggregated income balance of the private sector and

$$D_g = R_g - E_g = S_g - I_g \qquad \text{... (10)}$$

is the income (fiscal) balance of the public sector (or, more precisely, general government).

These identities are sufficient to compile the saving-investment balance from the national accounts and the general government fiscal statistics. Knowing the values of the balance of trade in goods and services and of gross capital formation, the first step is to determine gross domestic savings from (6). (In the absence of sufficiently detailed national accounts, the balance of trade in goods and services is sometimes approximated by the current account of the balance of payments.) It follows from (10) that government savings ($S_g$) can be computed from the fiscal accounts as the sum of the fiscal balance $D_g$ and capital expenditure by the government ($I_g$). Private savings ($S_p$) are then determined as the residual difference between total savings and government savings. Similarly,

TABLE 4.3.1

**Saving-investment balances in selected east European and Baltic countries, 1994-1999**

*(Per cent of GDP)*

| | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 |
|---|---|---|---|---|---|---|
| **Bulgaria** | | | | | | |
| Gross domestic investment | 9.4 | 15.7 | 8.4 | 11.4 | 16.9 | 19.0 |
| Budget | .. | 2.1 | 1.6 | 3.1 | 4.0 | 5.5 |
| Private | .. | 13.5 | 6.8 | 8.3 | 12.9 | 13.5 |
| Gross domestic savings | 9.1 | 14.6 | 7.8 | 15.0 | 16.4 | 13.7 |
| Budget | .. | -3.9 | -14.8 | 1.5 | 4.7 | 6.4 |
| Private | .. | 18.5 | 22.6 | 13.5 | 11.7 | 7.3 |
| Foreign savings | 0.3 | 1.1 | 0.6 | -3.6 | 0.5 | 5.4 |
| Government balance | .. | -6.0 | -16.4 | -1.6 | 0.7 | 0.9 |
| Private sector balance | .. | 4.9 | 15.8 | 5.2 | -1.2 | -6.3 |
| **Croatia** | | | | | | |
| Gross domestic investment | 17.4 | 17.6 | 21.9 | 28.2 | 23.2 | 23.2 |
| Budget | .. | 4.5 | 6.8 | 6.0 | 6.9 | 9.4 |
| Private | .. | 13.1 | 15.1 | 22.1 | 16.3 | 13.8 |
| Gross domestic savings | 23.0 | 9.9 | 16.2 | 16.6 | 16.0 | 15.9 |
| Budget | .. | 2.8 | 5.0 | 3.8 | 5.4 | 5.8 |
| Private | .. | 7.0 | 11.2 | 12.8 | 10.6 | 10.1 |
| Foreign savings | -5.7 | 7.7 | 5.8 | 11.5 | 7.1 | 7.3 |
| Government balance | .. | -1.7 | -1.8 | -2.2 | -1.5 | -3.6 |
| Private sector balance | .. | -6.0 | -3.9 | -9.4 | -5.6 | -3.7 |
| **Czech Republic** | | | | | | |
| Gross domestic investment | 29.8 | 34.0 | 34.9 | 32.8 | 29.7 | 28.5 |
| Budget | .. | 7.1 | 6.4 | 5.5 | 5.2 | 5.7 |
| Private | .. | 26.9 | 28.5 | 27.3 | 24.4 | 22.8 |
| Gross domestic savings | 27.8 | 31.4 | 27.5 | 26.7 | 27.3 | 26.5 |
| Budget | .. | 5.1 | 4.0 | 3.0 | 2.3 | 1.6 |
| Private | .. | 26.3 | 23.6 | 23.7 | 25.0 | 24.9 |
| Foreign savings | 1.9 | 2.6 | 7.4 | 6.1 | 2.4 | 2.0 |
| Government balance | .. | -2.0 | -2.4 | -2.6 | -2.9 | -4.1 |
| Private sector balance | .. | -0.6 | -5.0 | -3.5 | 0.5 | 2.1 |
| **Hungary** | | | | | | |
| Gross domestic investment | 22.2 | 23.9 | 26.8 | 27.4 | 29.7 | 28.8 |
| Budget | .. | 5.5 | 5.2 | 6.0 | 5.9 | 5.7 |
| Private | .. | 18.4 | 21.6 | 21.4 | 23.8 | 23.1 |
| Gross domestic savings | 12.8 | 18.4 | 23.1 | 25.2 | 24.8 | 24.5 |
| Budget | .. | -2.2 | 1.0 | 0.5 | -1.9 | – |
| Private | | 20.6 | 22.1 | 24.8 | 26.7 | 24.5 |
| Foreign savings | 9.4 | 5.6 | 3.7 | 2.1 | 4.9 | 4.3 |
| Government balance | .. | -7.7 | -4.2 | -5.5 | -7.8 | -5.6 |
| Private sector balance | .. | 2.1 | 0.5 | 3.4 | 2.9 | 1.3 |
| **Poland** | | | | | | |
| Gross domestic investment | 17.6 | 19.7 | 21.9 | 24.6 | 26.2 | 27.1 |
| Budget | .. | 2.7 | 3.1 | 3.5 | 3.7 | 3.2 |
| Private | .. | 17.0 | 18.8 | 21.0 | 22.5 | 23.9 |
| Gross domestic savings | 18.3 | 23.9 | 20.9 | 21.6 | 21.9 | 19.7 |
| Budget | .. | -0.3 | -0.6 | 0.1 | 0.5 | -0.3 |
| Private | .. | 24.2 | 21.5 | 21.5 | 21.3 | 20.0 |
| Foreign savings | -0.7 | -4.2 | 1.0 | 3.0 | 4.3 | 7.4 |
| Government balance | .. | -3.0 | -3.7 | -3.5 | -3.2 | -3.5 |
| Private sector balance | .. | 7.2 | 2.7 | 0.5 | -1.2 | -3.9 |
| **Romania** | | | | | | |
| Gross domestic investment | 24.8 | 24.3 | 25.9 | 20.6 | 21.4 | 19.9 |
| Budget | .. | 5.4 | 4.7 | 3.9 | 4.1 | .. |
| Private | .. | 18.9 | 21.1 | 16.7 | 17.3 | .. |
| Gross domestic savings | 23.4 | 19.3 | 18.6 | 14.6 | 14.3 | 16.1 |
| Budget | .. | 1.9 | -0.4 | -2.6 | -2.4 | .. |
| Private | .. | 17.4 | 18.9 | 17.1 | 16.7 | .. |
| Foreign savings | 1.4 | 5.0 | 7.3 | 6.1 | 7.2 | 3.8 |
| Government balance | .. | -3.5 | -5.1 | -6.5 | -6.5 | .. |
| Private sector balance | .. | -1.5 | -2.2 | 0.4 | -0.6 | .. |

| | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 |
|---|---|---|---|---|---|---|
| **Slovakia** | | | | | | |
| Gross domestic investment | 23.1 | 27.3 | 37.1 | 36.6 | 36.1 | 31.9 |
| Budget | .. | 5.0 | 6.7 | 6.7 | 5.9 | 3.7 |
| Private | .. | 22.3 | 30.4 | 29.9 | 30.2 | 28.2 |
| Gross domestic savings | 27.9 | 29.5 | 26.5 | 27.0 | 26.5 | 26.4 |
| Budget | .. | 4.5 | 3.0 | 0.7 | – | 0.1 |
| Private | .. | 25.0 | 23.5 | 26.3 | 26.5 | 26.3 |
| Foreign savings | -4.8 | -2.1 | 10.6 | 9.6 | 9.7 | 5.5 |
| Government balance | .. | -0.5 | -3.7 | -6.0 | -5.9 | -3.6 |
| Private sector balance | .. | 2.6 | -6.9 | -3.6 | -3.7 | -1.9 |
| **Slovenia** | | | | | | |
| Gross domestic investment | 20.9 | 23.3 | 23.4 | 24.1 | 25.6 | 28.2 |
| Budget | .. | 4.5 | 4.7 | 4.8 | 5.2 | 6.4 |
| Private | .. | 18.8 | 18.7 | 19.3 | 20.4 | 21.8 |
| Gross domestic savings | 25.1 | 23.2 | 23.6 | 24.3 | 25.6 | 25.3 |
| Budget | .. | 4.2 | 4.5 | 2.9 | 3.7 | 5.8 |
| Private | .. | 19.0 | 19.2 | 21.4 | 21.9 | 19.5 |
| Foreign savings | -4.2 | 0.1 | -0.2 | -0.2 | – | 2.9 |
| Government balance | .. | -0.3 | -0.3 | -1.9 | -1.6 | -0.6 |
| Private sector balance | .. | 0.2 | 0.5 | 2.1 | 1.6 | -2.3 |
| **The former Yugoslav Republic of Macedonia** | | | | | | |
| Gross domestic investment | 15.5 | 20.8 | 20.1 | 22.4 | 23.0 | 21.0 |
| Budget | .. | 2.8 | 2.5 | 1.3 | 1.9 | 2.6 |
| Private | .. | 17.9 | 17.6 | 21.0 | 21.1 | 18.4 |
| Gross domestic savings | 10.8 | 15.8 | 13.6 | 14.9 | 14.2 | 17.0 |
| Budget | .. | 1.8 | 1.5 | 1.0 | – | 1.0 |
| Private | .. | 14.0 | 12.1 | 13.9 | 14.2 | 16.0 |
| Foreign savings | 4.7 | 5.0 | 6.5 | 7.5 | 8.8 | 4.0 |
| Government balance | .. | -1.0 | -1.0 | -0.4 | -1.9 | -1.6 |
| Private sector balance | .. | -3.9 | -5.6 | -7.1 | -6.9 | -2.4 |
| **Estonia** | | | | | | |
| Gross domestic investment | 27.6 | 26.7 | 27.8 | 30.9 | 29.4 | 24.5 |
| Budget | .. | 4.2 | 5.2 | 4.4 | 4.4 | 4.4 |
| Private | .. | 22.6 | 22.6 | 26.5 | 25.0 | 20.1 |
| Gross domestic savings | 20.3 | 22.3 | 18.7 | 18.7 | 20.2 | 18.8 |
| Budget | | 2.2 | 2.3 | 5.4 | 2.8 | -0.9 |
| Private | | 20.1 | 16.4 | 13.3 | 17.4 | 19.6 |
| Foreign savings | 7.3 | 4.4 | 9.1 | 12.2 | 9.2 | 5.7 |
| Government balance | .. | -2.0 | -3.0 | 1.0 | -1.6 | -5.3 |
| Private sector balance | .. | -2.4 | -6.2 | -13.2 | -7.6 | -0.5 |
| **Latvia** | | | | | | |
| Gross domestic investment | 19.1 | 17.6 | 18.8 | 22.8 | 27.6 | 26.3 |
| Budget | .. | 0.9 | 2.2 | 2.5 | 4.1 | 5.0 |
| Private | .. | 16.7 | 16.6 | 20.3 | 23.5 | 21.3 |
| Gross domestic savings | 24.6 | 17.2 | 13.4 | 16.7 | 16.9 | 16.0 |
| Budget | .. | -2.4 | 0.7 | 2.3 | 3.0 | 1.5 |
| Private | .. | 19.6 | 12.7 | 14.4 | 13.9 | 14.5 |
| Foreign savings | -5.5 | 0.4 | 5.4 | 6.1 | 10.7 | 10.3 |
| Government balance | .. | -3.3 | -1.5 | -0.2 | -1.1 | -3.5 |
| Private sector balance | .. | 2.9 | -3.9 | -5.9 | -9.6 | -6.8 |
| **Lithuania** | | | | | | |
| Gross domestic investment | 18.4 | 24.7 | 24.5 | 26.5 | 24.4 | 22.9 |
| Budget | .. | 4.0 | 2.8 | 3.1 | 4.0 | 5.5 |
| Private | .. | 20.8 | 21.7 | 23.4 | 20.4 | 17.4 |
| Gross domestic savings | 16.2 | 14.5 | 15.3 | 16.3 | 12.3 | 11.7 |
| Budget | .. | -0.8 | -1.0 | 1.0 | 3.7 | -1.9 |
| Private | .. | 15.3 | 16.3 | 15.3 | 8.7 | 13.6 |
| Foreign savings | 2.2 | 10.2 | 9.2 | 10.2 | 12.1 | 11.2 |
| Government balance | .. | -4.8 | -3.8 | -2.1 | -0.4 | -7.4 |
| Private sector balance | .. | -5.4 | -5.4 | -8.1 | -11.7 | -3.8 |

*Source:* UN/ECE secretariat, based on national statistics.

TABLE 4.3.2

**Saving-investment balances in selected countries of the CIS, 1994-1999**

*(Per cent of GDP)*

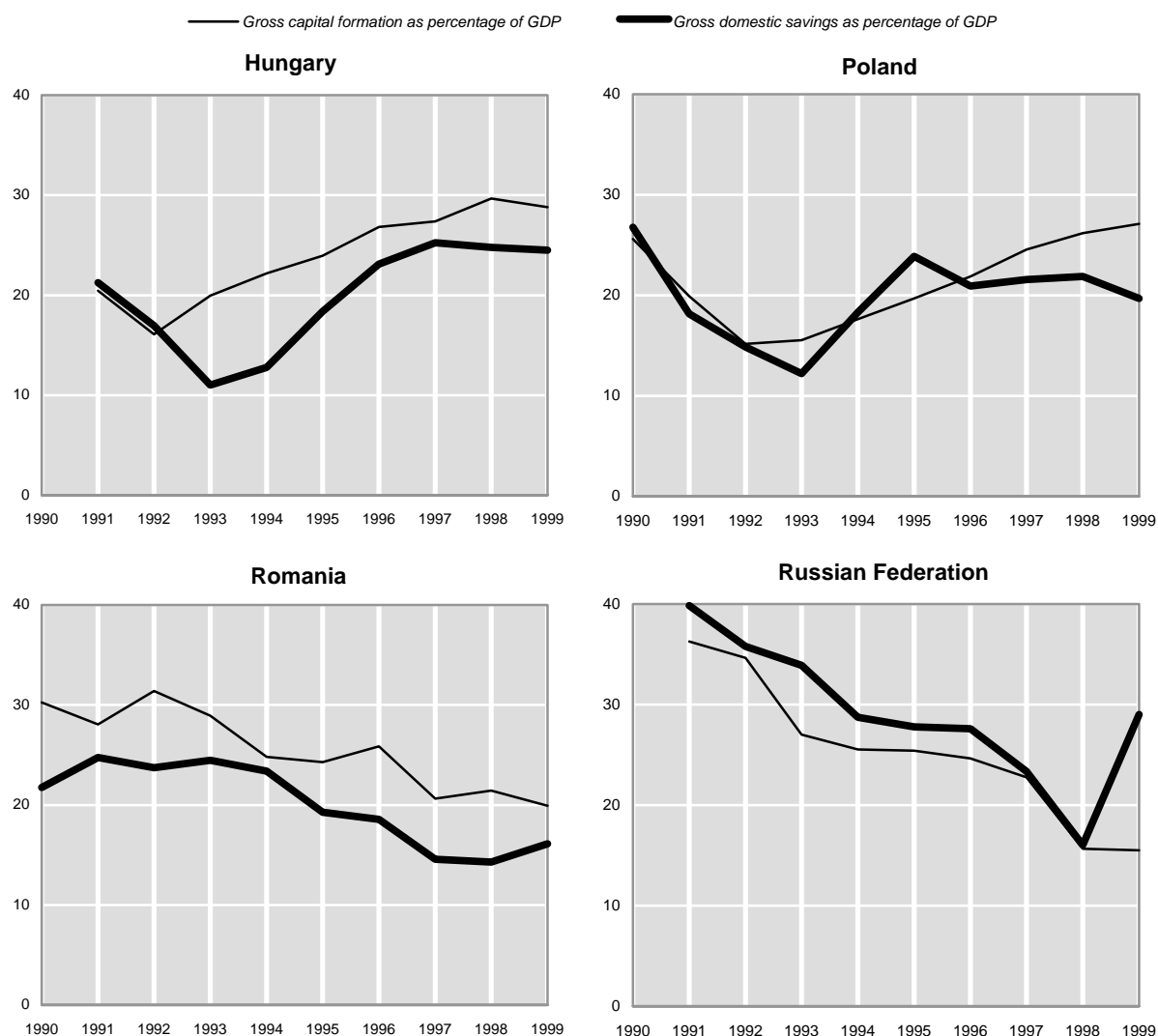| | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Armenia** | | | | | | | **Kyrgyzstan** | | | | | | |
| Gross domestic investment . | 23.5 | 18.4 | 20.0 | 19.1 | 19.1 | 19.5 | Gross domestic investment . | 9.0 | 18.3 | 25.2 | 21.7 | 15.4 | 12.4 |
| Budget ............................. | .. | 2.1 | 3.0 | 1.2 | 3.7 | 1.7 | Budget ............................. | .. | 1.2 | 0.6 | 0.7 | 0.8 | – |
| Private ............................. | .. | 16.3 | 17.0 | 17.9 | 15.4 | 17.8 | Private ............................. | .. | 17.2 | 24.6 | 21.0 | 14.6 | 12.4 |
| Gross domestic savings ...... | 6.8 | 1.0 | 1.8 | 0.4 | -1.5 | 4.5 | Gross domestic savings ...... | 1.4 | 2.6 | 1.5 | 13.8 | -7.7 | -2.8 |
| Budget ............................. | .. | -1.3 | -1.9 | -1.4 | 0.9 | -2.4 | Budget ............................. | .. | -12.7 | -8.2 | -5.4 | -2.7 | -2.5 |
| Private ............................. | .. | 2.3 | 3.8 | 1.8 | -2.4 | 6.8 | Private ............................. | .. | 15.3 | 9.7 | 19.2 | -5.0 | -0.3 |
| Foreign savings .................. | 16.6 | 17.4 | 18.2 | 18.7 | 20.6 | 15.0 | Foreign savings .................. | 7.6 | 15.7 | 23.7 | 7.8 | 23.2 | 15.2 |
| *Memorandum items:* | | | | | | | *Memorandum items:* | | | | | | |
| Government balance ........ | .. | -3.4 | -5.0 | -2.6 | -2.8 | -4.0 | Government balance ........ | .. | -13.8 | -8.8 | -6.0 | -3.6 | -2.5 |
| Private sector balance ...... | .. | -14.0 | -13.2 | -16.1 | -17.8 | -11.0 | Private sector balance ...... | .. | -1.9 | -14.9 | -1.8 | -19.6 | -12.7 |
| **Azerbaijan** | | | | | | | **Republic of Moldova** | | | | | | |
| Gross domestic investment . | 15.3 | 23.8 | 29.0 | 34.2 | 33.4 | 30.2 | Gross domestic investment . | 28.8 | 24.9 | 24.2 | 23.8 | 25.9 | 22.1 |
| Budget ............................. | .. | 1.4 | 1.3 | 1.3 | 1.1 | 6.3 | Budget ............................. | .. | 3.4 | 3.3 | 4.9 | 5.0 | 2.4 |
| Private ............................. | .. | 22.4 | 27.7 | 32.9 | 32.3 | 23.9 | Private ............................. | .. | 21.5 | 20.9 | 18.9 | 20.9 | 19.7 |
| Gross domestic savings ...... | 6.8 | 7.2 | -0.2 | 11.2 | 2.7 | 15.2 | Gross domestic savings ...... | 21.8 | 18.3 | 12.3 | 9.0 | 5.4 | 20.1 |
| Budget ............................. | .. | -2.4 | -1.0 | 0.4 | -0.8 | 1.8 | Budget ............................. | .. | -4.3 | -7.2 | -5.3 | 0.8 | -1.7 |
| Private ............................. | .. | 9.5 | 0.8 | 10.8 | 3.5 | 13.5 | Private ............................. | .. | 22.6 | 19.6 | 14.3 | 4.7 | 21.9 |
| Foreign savings .................. | 8.5 | 16.6 | 29.2 | 23.1 | 30.7 | 15.0 | Foreign savings .................. | 7.1 | 6.6 | 11.9 | 14.8 | 20.4 | 2.0 |
| *Memorandum items:* | | | | | | | *Memorandum items:* | | | | | | |
| Government balance ........ | .. | -3.7 | -2.3 | -1.0 | -1.9 | -4.5 | Government balance ........ | .. | -7.7 | -10.6 | -10.2 | -4.2 | -4.2 |
| Private sector balance ...... | .. | -12.9 | -26.9 | -22.1 | -28.8 | -10.5 | Private sector balance ...... | .. | 1.1 | -1.3 | -4.6 | -16.2 | 2.2 |
| **Belarus** | | | | | | | **Russian Federation** | | | | | | |
| Gross domestic investment . | 32.9 | 25.1 | 24.5 | 27.6 | 27.8 | 24.0 | Gross domestic investment . | 25.5 | 25.4 | 24.6 | 22.8 | 15.7 | 15.5 |
| Budget ............................. | .. | 6.8 | 7.5 | 9.1 | 8.8 | 9.0 | Budget ............................. | .. | 5.9 | 5.2 | 4.2 | 3.2 | .. |
| Private ............................. | .. | 18.2 | 17.0 | 18.6 | 18.9 | 15.0 | Private ............................. | .. | 19.5 | 19.5 | 18.6 | 12.5 | .. |
| Gross domestic savings ...... | 23.2 | 20.7 | 20.7 | 21.7 | 20.2 | 21.6 | Gross domestic savings ...... | 28.7 | 27.8 | 27.6 | 23.4 | 16.0 | 29.0 |
| Budget ............................. | .. | 3.5 | 5.2 | 7.4 | 7.8 | 7.4 | Budget ............................. | .. | 2.1 | – | -1.6 | -3.0 | .. |
| Private ............................. | .. | 17.2 | 15.5 | 14.3 | 12.4 | 14.1 | Private ............................. | .. | 25.7 | 27.6 | 25.0 | 19.1 | .. |
| Foreign savings .................. | 9.7 | 4.4 | 3.8 | 5.9 | 7.6 | 2.4 | Foreign savings .................. | -3.2 | -2.4 | -3.0 | -0.6 | -0.4 | -13.5 |
| *Memorandum items:* | | | | | | | *Memorandum items:* | | | | | | |
| Government balance ........ | .. | -3.4 | -2.2 | -1.7 | -1.0 | -1.6 | Government balance ........ | .. | -3.9 | -5.1 | -5.8 | -6.2 | .. |
| Private sector balance ...... | .. | -1.1 | -1.5 | -4.2 | -6.5 | -0.8 | Private sector balance ...... | .. | 6.2 | 8.1 | 6.4 | 6.6 | .. |
| **Georgia** | | | | | | | **Ukraine** | | | | | | |
| Gross domestic investment . | 16.8 | 24.0 | 8.1 | 15.6 | 24.4 | 14.1 | Gross domestic investment . | 35.3 | 26.7 | 22.7 | 21.4 | 20.8 | 19.8 |
| Budget ............................. | .. | 1.9 | 3.0 | 1.9 | 1.4 | .. | Budget ............................. | .. | 3.2 | 3.2 | 3.1 | 1.6 | 1.3 |
| Private ............................. | .. | 22.1 | 5.0 | 13.8 | 23.0 | .. | Private ............................. | .. | 23.5 | 19.4 | 18.3 | 19.2 | 18.5 |
| Gross domestic savings ...... | -8.7 | 16.5 | 1.5 | 8.1 | 15.9 | 7.0 | Gross domestic savings ...... | 32.3 | 23.6 | 20.0 | 18.8 | 17.6 | 22.2 |
| Budget ............................. | .. | -4.8 | -5.2 | -3.2 | -3.7 | .. | Budget ............................. | .. | -2.3 | -1.2 | -3.2 | 0.4 | -0.2 |
| Private ............................. | .. | 21.3 | 6.7 | 11.3 | 19.6 | .. | Private ............................. | .. | 25.9 | 21.2 | 22.0 | 17.2 | 22.4 |
| Foreign savings .................. | 25.5 | 7.5 | 6.5 | 7.6 | 8.5 | 7.0 | Foreign savings .................. | 3.1 | 3.1 | 2.7 | 2.7 | 3.2 | -2.4 |
| *Memorandum items:* | | | | | | | *Memorandum items:* | | | | | | |
| Government balance ........ | .. | -6.7 | -8.2 | -5.1 | -5.0 | – | Government balance ........ | .. | -5.5 | -4.4 | -6.3 | -1.2 | -1.5 |
| Private sector balance ...... | .. | -0.8 | 1.7 | -2.5 | -3.4 | – | Private sector balance ...... | .. | 2.4 | 1.8 | 3.7 | -2.0 | 3.9 |
| **Kazakstan** | | | | | | | **Uzbekistan** | | | | | | |
| Gross domestic investment . | 28.7 | 23.3 | 16.1 | 15.6 | 17.2 | 15.4 | Gross domestic investment . | 18.3 | 24.2 | 23.0 | 18.9 | 14.8 | 15.3 |
| Budget ............................. | .. | 2.6 | 1.0 | 1.8 | 2.2 | 1.6 | Budget ............................. | .. | 6.1 | 7.1 | 7.4 | 7.0 | 6.3 |
| Private ............................. | .. | 20.7 | 15.1 | 13.8 | 15.0 | 13.8 | Private ............................. | .. | 18.1 | 15.9 | 11.5 | 7.8 | 9.0 |
| Gross domestic savings ...... | 21.1 | 22.0 | 12.6 | 12.0 | 11.6 | 14.3 | Gross domestic savings ...... | 20.4 | 24.0 | 15.9 | 15.0 | 14.5 | 13.5 |
| Budget ............................. | .. | -1.3 | -4.3 | -5.6 | -6.0 | -4.2 | Budget ............................. | .. | 2.0 | -0.2 | 5.2 | 3.6 | 4.1 |
| Private ............................. | .. | 23.3 | 16.9 | 17.6 | 17.6 | 18.5 | Private ............................. | .. | 22.0 | 16.1 | 9.8 | 10.9 | 9.4 |
| Foreign savings .................. | 7.6 | 1.3 | 3.6 | 3.6 | 5.5 | 1.1 | Foreign savings .................. | -2.1 | 0.2 | 7.1 | 4.0 | 0.3 | 1.8 |
| *Memorandum items:* | | | | | | | *Memorandum items:* | | | | | | |
| Government balance ........ | .. | -3.9 | -5.3 | -7.4 | -8.2 | -5.7 | Government balance ........ | .. | -4.1 | -7.3 | -2.2 | -3.4 | -2.2 |
| Private sector balance ...... | .. | 2.6 | 1.7 | 3.8 | 2.6 | 4.6 | Private sector balance ...... | .. | 3.9 | 0.2 | -1.8 | 3.1 | 0.4 |

*Source:* UN/ECE secretariat, based on national statistics.

Notwithstanding the substantial heterogeneity and variability of the saving-investment ratios, the saving-investment balances for the transition economies also suggest some similarities within groups of countries. Chart 4.3.2 portrays the dynamics of the (gross domestic) saving and (gross) investment ratios in two groups of transition economies, which are probably representative of two broad patterns of saving and investment behaviour during the past decade.

CHART 4.3.2

**Saving and investment ratios in selected east European and CIS economies, 1990-1999**
*(Per cent)*

——— *Gross capital formation as percentage of GDP*    ▬▬▬ *Gross domestic savings as percentage of GDP*



**Hungary**



**Poland**



**Romania**



**Russian Federation**

*Source:* UN/ECE secretariat, based on national statistics.

The ratios for Hungary and Poland (chart 4.3.2) are probably typical of economies that have undergone a successful transformation in this period and their evolution falls into two distinctly different phases. In the initial phase, which corresponds to the period of transformational recession, there is a drop in the saving and investment ratios and this can be traced in all transition economies. While this was largely a consequence of the fall in real incomes (as consumption is much less elastic to changes in income than both savings and investment), it was also partly an adjustment from the abnormally high saving and investment ratios that characterized the centrally planned economies.[461]

In Hungary and Poland, this phase was followed by an upturn in the ratios around the mid-1990s, corresponding to the recovery and growth of output which is continuing in both countries. In both of them, the recovery in gross domestic investment has been stronger than in gross domestic savings, indicating that they have attracted foreign savings to support the rapid growth of domestic investment. In contrast, domestic saving ratios, after recovering somewhat, have stopped growing (in Hungary) or declined (in Poland), suggesting a relative shift in preferences towards present consumption.

[461] C. Denizer and H. Wolf, *The Savings Collapse During the Transition in Eastern Europe*, World Bank Working Papers Series, No. 2419 (Washington, D.C.), August 2000. Among the then centrally planned economies, Hungary was an exception with relatively lower saving and investment ratios.

The saving and investment ratios in Romania and Russia (the lower panel of chart 4.3.2) are probably symptomatic of countries that have experienced serious difficulties in the process of economic transformation. In both countries, the prevailing trend throughout the whole decade has been a decline in both savings and investment, a reflection of their prolonged transformational recessions.[462] But, given the experience of Hungary and Poland, when a recovery eventually occurs, a similar reversal in these trends may be expected to take place.

The saving-investment pattern in Russia, however, reveals one feature which is specific to this country, namely, a systematic excess of domestic savings over domestic investment. In most of the other transition economies domestic savings fell short of domestic investment, and there was consequently a net inflow of foreign savings during the decade. The latter is in line with the common-sense view that the process of deep economic restructuring in the transition economies requires very large amounts of resources which are not all available domestically and so the balance must be attracted from abroad.

The atypical pattern in Russia reflects the chronic outflow of capital from the country during the past decade and the combination of a general lack of investors' confidence in the economic prospects of the country[463] and a relatively high (even compared to other countries) gross domestic saving ratio, although the latter was declining until 1998. This may seem unusual, given the general decline in real incomes in Russia during the past decade. The abnormally high saving ratios, however, appear to reflect the abundance of natural rents (Russia being a major net exporter of energy and other natural resources) as well as the specific outcomes of the "wild" privatization which prevailed during the initial phase of transition. In the absence of proper regulation, and coupled with the widespread dismantling of state controls, a substantial share of these rents was unlawfully appropriated by profiteers and, due to the legally dubious nature of these profits, a large share of them ended up outside the Russian economy. Without this "excessive" component of gross domestic savings (which was concentrated in a handful of individuals), savings would probably have evolved in much the same way as in other transition economies with a similar output performance.
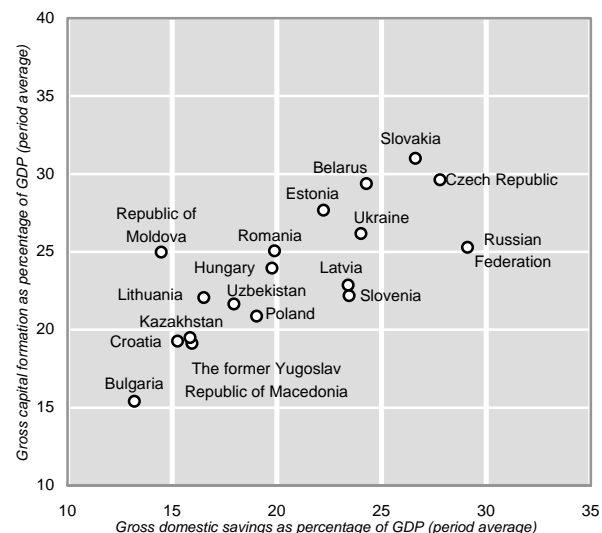
Although the saving-investment balances of the transition economies (tables 4.3.1 and 4.3.2) vary considerably, some of the general features outlined above can be traced in other countries as well. In particular, the saving-investment ratios in the rest of central Europe (the Czech Republic, Slovakia and Slovenia) as well as in the

CHART 4.3.3

**Gross domestic savings and gross investment in selected east European, Baltic and CIS economies, 1991-1999**
*(Per cent)*



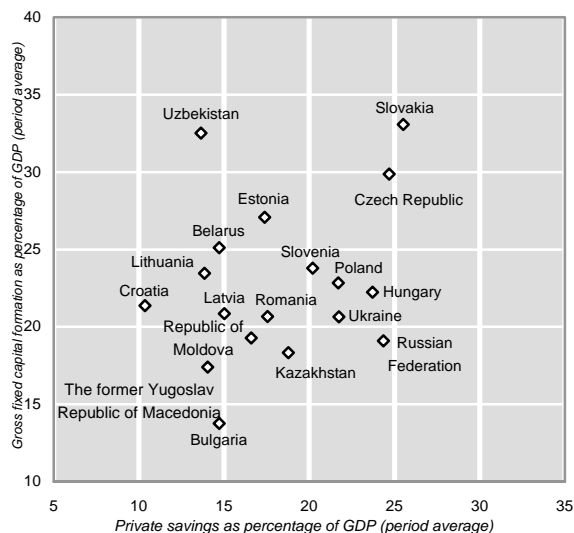*Source:* UN/ECE secretariat, based on national statistics.

Baltic states are to a certain extent similar to those in Hungary and Poland: in all countries there were falls in the ratios during the initial phase of transition (these data are not shown in the tables) which were then followed by recovery. There has been some convergence in the investment ratios in this group of countries in recent years while changes in the saving ratios have been more divergent. The saving and investment ratios in Bulgaria, The former Yugoslav Republic of Macedonia and to some extent Croatia were generally lower, and although evolving differently (they were relatively stable in The former Yugoslav Republic of Macedonia and Croatia while the investment ratio in Bulgaria started rising after 1997), by 1999 they were comparable to those in Romania. The dynamics of the saving and investment ratios in most of the CIS countries (which in general are less advanced with market reforms than the central European transition economies) had some features in common with those in Russia and in the countries of south-east Europe.[464] Notably, the average gross domestic saving ratios in some of the CIS countries (Armenia, Azerbaijan, Georgia, Kyrgyzstan) have been much lower (in some years even negative) than those in other transition economies.

Despite the considerable variation across countries and over time in the individual saving and investment patterns, the data do suggest some empirical regularities. The pooled data shown in chart 4.3.3 indicate a strong positive correlation between the average gross saving and

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[462] The down and upswings in the saving ratio in Russia in 1998-1999 probably reflect the distorting impact of the financial crisis of August 1998 on saving behaviour, as the crisis had deep and lasting economic repercussions, and probably can be regarded as outliers from the general trend.

[463] The strong economic recovery in Russia in 2000 has brought about some change in these ratios, in particular, an upturn in real investment. However, it remains to be seen whether this marks a reversal in the underlying trends.

[464] It should be noted that before the start of economic transformation, the Soviet Union had even higher saving and investment ratios than most of the other centrally planned economies. Thus in the successor states of the Soviet Union there was an even larger fall from this starting point during the initial phase of transition.

CHART 4.3.4

**Private savings and fixed investment in selected east European, Baltic and CIS economies, 1995-1999**
*(Per cent)*

*Source:* UN/ECE secretariat, based on national statistics.

gross investment ratios of individual countries between 1991 and 1999. This is in line with the conjecture (discussed in section 4.2) of the primordial role of domestic savings as a source for domestic investment.

The saving-investment balances of the transition economies also underscore the leading role of private savings as the main source of gross domestic savings: the private sector has systematically made a dominant net contribution to gross domestic savings while dis-saving is often a feature of government behaviour.[465] Private savings are positively correlated with fixed investment in the transition economies (chart 4.3.4) although, according to the available data, this relation is somewhat weaker than that between gross savings and gross investment.[466]

## 4.4 The determinants of private saving in the transition economies

The saving-investment balance is an accounting identity between groups of spending and financing items. It does not imply any specific causal relationships; moreover, the separate items that enter the balance are of a different economic nature and, accordingly, the underlying forces driving them may also vary. Because of this, the analysis of the determinants of saving is usually performed

separately, and not necessarily in the context of the saving-investment balance, using specific methods and techniques. The main focus of the analysis that follows in this section is on the determinants of private saving.

The fact that private savings account for the dominant share of gross national savings suggests that ultimately they are a key factor affecting not only the levels of domestic investment but, following the discussion in the previous sections, long-run economic performance as well. The fundamental importance of private savings has long been acknowledged by economists and policy makers, who have focused attention on the main determinants of parsimonious behaviour. Understanding the motivation for saving (at the level of individuals and for the community as a whole) is not only of academic interest but is important in terms of its policy implications. Identifying the key determinants of saving may help policy makers to design policies to stimulate domestic savings and thus domestic investment.

The annual flow of national private savings (as documented in the previous section) reflects the aggregate outcome of all microlevel decisions concerning the allocation of current income to consumption and savings during a selected reference period (in this case, one year). To analyse the determinants of these flows requires an examination of both the motives for individual saving behaviour and the factors affecting the aggregation of the microlevel flows.

The main theoretical explanation of individual saving behaviour in the economic literature is based on the notion of the intertemporal allocation of resources: individual agents (households) decide what portion of their current income they should allocate for present consumption and what portion should be set aside for future consumption (saving). A number of theoretical models have been proposed to study the saving behaviour of individuals including those based on the optimization of an individual utility function over a life cycle.[467] During the life cycle, the patterns of individual saving behaviour may change (switching from saving to dis-saving), depending on the present level of income (precautionary savings being made in periods of above average income and drawing from past savings or borrowing in the opposite case). In addition, theoretical models suggest different types of saving behaviour depending on the availability of external finance: if the borrowing constraints are not binding, individuals may change their saving patterns in order to smooth consumption over time. Other assumptions or restrictions also affect the optimal saving patterns derived from theoretical models. For example, the system of taxation and the operation of the social security system, as well as changes in them, may influence the saving decisions of individuals and households. These facets of individual behaviour are not exhaustive but just outline some of the aspects that need to be addressed when analysing saving patterns at a microlevel.

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[465] This also agrees with the empirical findings about saving patterns in other countries. B. Bosworth, *Saving and Investment in a Global Economy* (Washington, D.C., Brookings Institution, 1993).

[466] The available statistical data only allow a breakdown of savings and investment into "private sector" and "government" from 1995; hence the ratios shown in chart 4.3.4 are averaged over a much shorter period than those shown in chart 4.3.3.

[467] For a discussion see S. Edwards, op. cit.

At the microlevel it is not only households but also businesses that take decisions about saving. While some of the factors that affect the saving decisions of firms may be common to households, there are also firm-specific incentives to save or dis-save. Among them are the depth of the financial system and the access to various financial instruments; the access to resources from abroad (foreign savings); the prevailing opportunity costs of investing in various instruments; and so on. These are all factors that in principle should be taken into account when analysing the determinants of national private savings.

When savings are analysed at the macrolevel, the observable data on national private savings reflect the aggregate outcome of the varying behaviour of numerous individuals and households. When accounting for this economy-wide dimension, a number of additional factors need to be taken into consideration. For example, the aggregate saving pattern will be affected by demographic factors, such as the age structure of the population, and by the situation on the labour market. In addition, the structure of incomes in the economy, the distribution of wealth, the growth of incomes as well as other related factors are also important.

The literature on the determinants of saving in the transition economies is not very abundant, partly due to the unavailability (until recently) of adequate data for this type of analysis.[468] Despite their tentative nature and possible imperfections, the newly compiled saving-investment balances for the transition economies discussed in section 4.3 do provide an empirical basis for extending research in this area.

Given the wide range of factors that may affect saving behaviour, the technique most widely used in empirical research on the determinants of saving has been regression analysis. The selected reduced-form model takes into account (to the extent possible, given the availability of data) the considerations outlined at the beginning of this section.[469]

The independent variable in the model is private savings defined as a percentage of GDP (as reported in tables 4.3.1 and 4.3.2). The set of independent variables includes the following:

- Current account balance (as a percentage of GDP). When this is negative, it denotes the net amount of foreign savings which have been attracted, in addition to domestic savings. The sign of the estimated coefficient is interpreted in terms of the complementarity of the two flows: a positive sign (a negative correlation between the two flows) suggests

substitutability between the two flows (with foreign savings potentially crowding out domestic), while a negative sign (a positive correlation between the two flows) would imply complementarity of the two (with foreign savings adding to domestic savings).

- *Government savings* (as a percentage of GDP – tables 4.3.1 and 4.3.2). The sign and the value of the estimated coefficient are also interpreted in terms of the complementarity/substitutability of the two flows. In principle a negative sign is expected, implying that changes in government savings are partly offset by opposite changes in private savings. The closer the estimated coefficient is to -1, the greater the degree of substitutability between private and public savings.

- *Social security expenditure* (as a percentage of GDP). This variable is a proxy for the generosity of the social security system. In principle, theory suggests a negative sign (substitutability of the two flows) because individuals may tend to save less if they expect more generous social security benefits.

- *Level of per capita GDP*.[470] This variable aims to capture the impact of the absolute level of income on saving behaviour. It is expected that the higher the level of per capita income, the greater the share of income that will be allocated to savings (positive coefficient).

- *Rate of growth of per capita income*. Different theoretical models imply different directions in this relationship, so that the sign of the coefficient is basically an empirical issue. Two different variables have been selected for this purpose: the rate of change of GDP per capita (as reported in the national statistics) and the rate of change of real gross consumer wages (nominal wages deflated by the CPI).

- *Level of monetization* (the share of broad money in GDP). This variable aims to capture the development of the financial system in the country and as such it should have a positive effect on savings (the expected sign of the coefficient is positive).[471]

- *Real interest rate*. Since a change in real interest rates may act either as an incentive or as a disincentive to save, the sign of the coefficient is again an empirical issue.

- *Rate of change of the CPI*. In the model this reflects macroeconomic stability and the expected sign is negative, macroeconomic instability leading to dis-saving.

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[468] Among the relatively few empirical works in this area are two studies conducted at the World Bank: C. Denizer and H. Wolf, op. cit. and C. Denizer, H. Wolf and Y. Ying, *Household Savings in Transition Economies*, World Bank Working Papers Series, No. 2299 (Washington, D.C.), March 2000. The first of these studies analyses the determinants of saving during the initial period of transition (until 1995, using IMF estimates of savings) while the second is devoted to the more narrow aspect of household saving behaviour.

[469] The specification largely builds on the model suggested in S. Edwards, op. cit.

[470] As these data have to be comparable among countries in the estimations, per capita GDP has been taken at purchasing power parities (PPPs) and expressed in 1990 dollars. These estimates were based on UN/ECE, *International Comparisons of Gross Domestic Product in Europe*, *1996* (United Nations publication, Sales No. E.99.II.E.13).

[471] This variable may also reflect borrowing constraints faced by consumers, which will reduce their ability to smooth consumption through borrowing (and will hence affect their saving behaviour). S. Zeldes, "Consumption and liquidity constraints: an empirical investigation", *Journal of Political Economy*, Vol. 97, No. 2, April 1989, pp. 305-346. In this case the expected sign will be negative. Such an interpretation, however, by itself implies the existence of a relatively developed financial system, which is not the case in most transition economies.

**The main determinants of private savings in eastern Europe, the Baltic states and the CIS, 1995-1998: descriptive statistics**

| Variable | Dimension | Eastern Europe, Baltic states and CIS | | Eastern Europe and Baltic states | | CIS countries | |
|---|---|---|---|---|---|---|---|
| | | Unweighted average | Standard deviation | Unweighted average | Standard deviation | Unweighted average | Standard deviation |
| Private savings ............................................... | Per cent of GDP | 16.5 | 7.0 | 18.4 | 5.2 | 14.2 | 8.3 |
| Current account balance ................................... | Per cent of GDP | -7.1 | 7.2 | -5.2 | 4.3 | -9.5 | 9.1 |
| Government savings .......................................... | Per cent of GDP | 0.0 | 4.0 | 1.2 | 3.3 | -1.5 | 4.2 |
| Social security spending ................................... | Per cent of GDP | 10.5 | 4.1 | 12.2 | 4.0 | 8.5 | 3.2 |
| GDP per capita (at PPPs, international comparisons) ........ | Thousand dollars [a] | 5.0 | 2.8 | 6.7 | 2.5 | 2.9 | 1.4 |
| Rate of growth of GDP per capita (national statistics) ........ | Per cent | 2.2 | 5.6 | 3.5 | 4.4 | 0.6 | 6.5 |
| Rate of growth of real gross consumer wages ................... | Per cent | 7.3 | 17.2 | 3.4 | 9.2 | 12.0 | 22.7 |
| Level of monetization (broad money) ............................. | Per cent of GDP | 24.2 | 16.9 | 34.2 | 17.0 | 12.1 | 4.2 |
| *Ex-post* real interest rate on short-term deposits ................ | Per cent | -6.6 | 20.8 | -3.3 | 14.6 | -10.6 | 26.1 |
| Annual rate of change of CPI .......................................... | Per cent | 59.9 | 147.7 | 43.3 | 155.8 | 79.7 | 136.6 |
| Annual rate of change of the terms of trade ratio ............... | Per cent | -0.5 | 11.4 | -3.0 | 4.3 | 2.4 | 15.8 |
| Age dependency ratio (non-working age population in proportion to working age population) ................................ | Per cent | 52.4 | 8.2 | 47.9 | 2.1 | 57.7 | 9.5 |

*Source:* UN/ECE secretariat calculations, based on national statistics (ECE Common Database) and IMF data (*IMF Staff Country Reports*, various issues).

*Note:* The group "eastern Europe and the Baltic states" includes: Bulgaria, Croatia, Czech Republic, Hungary, Poland, Romania, Slovakia, Slovenia, The former Yugoslav Republic of Macedonia, Estonia, Latvia and Lithuania; the "CIS countries" include Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, the Republic of Moldova, the Russian Federation, Ukraine and Uzbekistan. The country coverage has been exclusively determined by the availability of statistical data.

[a] 1990 prices.

- *Rate of change in the terms of trade.*[472] This variable captures the gains from favourable changes in international prices (a positive change is equivalent to a windfall gain in resources) and as such the expected sign is positive.

- *Age dependency ratio* (defined as the proportion of the non-working age population to the working age population). The models of saving behaviour based on the lifetime cycle imply that individuals save more during their productive age and vice versa; hence the expected sign of the coefficient is negative.

Some general statistics (means and standard deviations) for the variables used in the regression analysis are shown in table 4.4.1.[473] As noted in section 4.3, while there is substantial cross-country variability in the saving-investment patterns, there are also groups of countries that reveal similar patterns or share common features. Different country sets reveal some notable divergence in the patterns prevailing in eastern Europe and the Baltic region, on the one hand, and in the CIS, on the other.[474] The corresponding statistics for the two subsets of variables are also given in table 4.4.1.[475]

These general statistics highlight some of the differences between these two groups of countries in terms of the average levels of the main variables. Thus during the period 1995-1998, "eastern Europe" on average was characterized by higher relative levels of private savings, government savings, social security spending and monetization but relatively smaller current account deficits. The absolute levels of GDP per capita in eastern Europe and the Baltic states were higher than those in the CIS and were growing faster while average CPI inflation and age dependency were lower.[476] The average rate of change in the terms of trade had different signs for the two groups, while the average real interest rate was negative in both cases but was smaller in absolute terms in eastern Europe and the Baltic states.

The statistical association between some of the regressors and the dependent variable (the private saving ratio) for the ECE transition economies in 1995-1998 is illustrated in charts 4.4.1, 4.4.2 and 4.4.3. Chart 4.4.1 indicates a positive correlation between the current account balance and private savings (that is, a negative correlation between the net inflow of foreign savings and the level of domestic private savings). This suggests that foreign savings tended to "crowd out" domestic savings

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[472] In the actual estimation the terms of trade variable was approximated by the ratio PPI/CPI (the "domestic terms of trade").

[473] The period selected for the estimation (1995-1998) was determined by the availability of data.

[474] Other groupings of countries were also tested but they produced less significant differences.

[475] Throughout this paper (including the results shown in tables 4.4.1 and 4.4.2) the group "eastern Europe and the Baltic states" includes Bulgaria, Croatia, Czech Republic, Hungary, Poland, Romania, Slovakia, Slovenia, The former Yugoslav Republic of Macedonia, Estonia, Latvia

and Lithuania; the "CIS countries" include Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, the Republic of Moldova, the Russian Federation, Ukraine and Uzbekistan; while the "ECE transition economies" include all of the above. The country coverage has been exclusively determined by the availability of statistical data.

[476] The reported average rate of change in the CPI for eastern Europe and the Baltic states (43.3 per cent) may appear unusually high for the period 1995-1998 when there was notable disinflation in most of these countries, but the high average is almost exclusively due to the hyperinflationary episode in Bulgaria (when the annual inflation rate in 1997 averaged more than 1000 per cent).
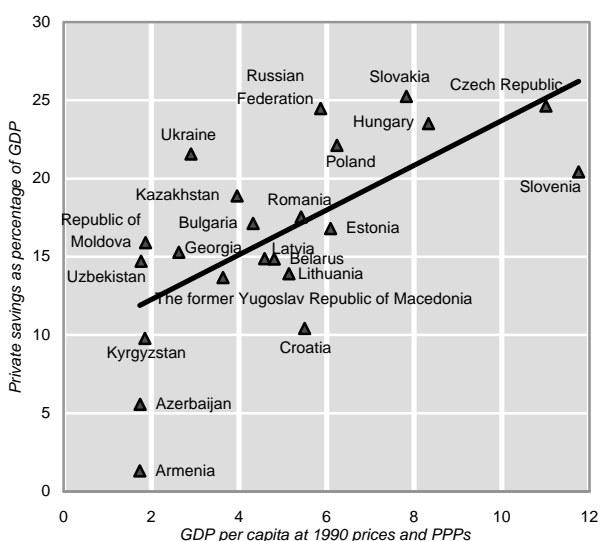
### CHART 4.4.1

**Current account balance and private savings in selected east European, Baltic and CIS economies, 1995-1998**
*(Period averages, per cent)*
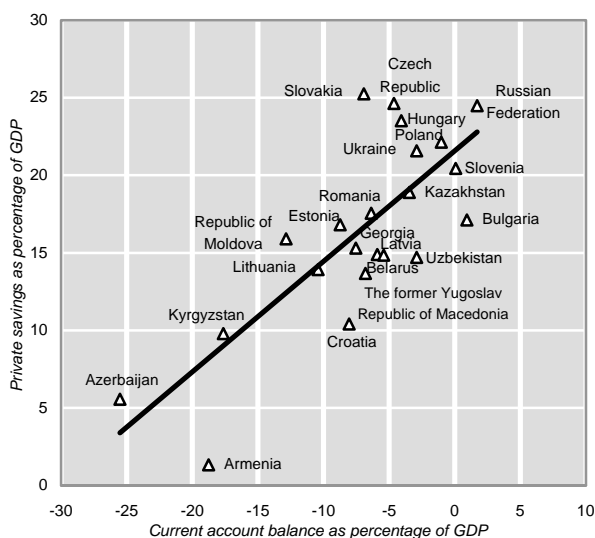


*Source:* UN/ECE secretariat, based on national statistics.

### CHART 4.4.2

**GDP per capita and private savings in selected east European, Baltic and CIS economies, 1995-1998**
*(Period averages, thousand dollars per capita, per cent)*



*Source:* UN/ECE secretariat, based on national statistics.

and in this sense the two were largely substitutable. Chart 4.4.2 points to a positive correlation between the level of per capita GDP and the intensity of private domestic savings, that is, countries with relatively higher per capita income tended to allocate a relatively higher share of their income for future consumption.

### CHART 4.4.3

**Monetization and private savings in selected east European, Baltic and CIS economies, 1995-1998**
*(Period averages, per cent)*
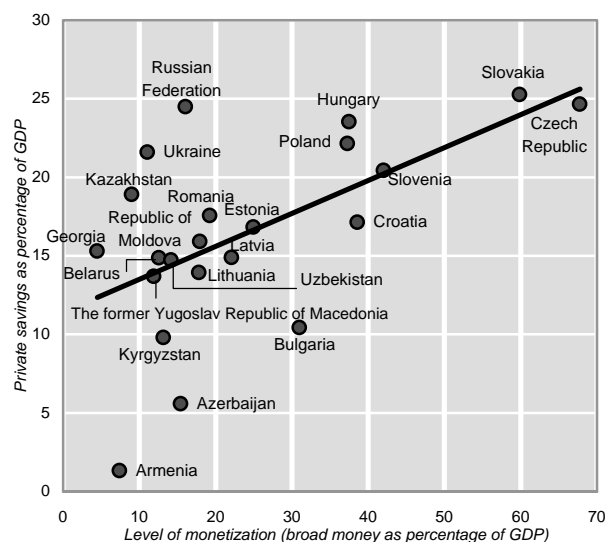


*Source:* UN/ECE secretariat, based on national statistics.

Chart 4.4.3 indicates that private savings in the transition economies were positively associated with the depth of the financial system (as approximated by the degree of monetization), that is, a more developed financial system tends to facilitate private savings. Moreover, a visual inspection of chart 4.4.3 confirms that the level of monetization of the economy is a realistic proxy for financial development and reform in the transition economies. Indeed, the transition economies that have made the most progress in reforming their financial systems (in terms of rehabilitation and privatization of the banking system, establishing and enforcing prudential banking regulations, introducing modern financial services and banking products, establishing functioning capital markets, etc.) are also among those with the highest monetization ratios; they are also among those that have mobilized a larger share of private domestic savings in recent years.

The actual results of the regression analysis (panel estimates using ordinary least squares for the groupings "eastern Europe and the Baltic states", "CIS countries" and "ECE transition economies") are shown in table 4.4.2. In general the model appears to be quite successful in explaining the variation in the dependent variable (the values of R-squared are quite high for panel estimates), while most of the estimated coefficients have the expected sign. These results confirm the above observations based on the visual inspection of the statistical relationships.

On average (judging from the results for the full sample of countries), the estimates imply that foreign savings attracted by the transition economies have been

TABLE 4.4.2

**Regression analysis of the determinants of private savings in eastern Europe, the Baltic states and the CIS, 1995-1998:
ordinary least squares estimations on panel data**
*(Dependent variable, private savings)*

| Independent variables | Number of observations. | Eastern Europe, Baltic states and CIS | | Eastern Europe and Baltic states | | CIS countries | |
|---|---|---|---|---|---|---|---|
| | | *88* | *88* | *48* | *48* | *40* | *40* |
| Current account balance ...................................................... | | 0.464 | 0.473 | 0.091 | 0.082 | 0.572 | 0.560 |
| | | (6.34) | (6.49) | (.88) | (.79) | (5.40) | (5.73) |
| Government savings ........................................................... | | -0.606 | -0.679 | -0.599 | -0.534 | -0.955 | -0.975 |
| | | (-4.61) | (-5.20) | (-3.60) | (-3.31) | (-4.67) | (-5.29) |
| Social security spending .................................................... | | 0.309 | 0.337 | 0.336 | 0.369 | 0.373 | 0.376 |
| | | (2.33) | (2.49) | (2.81) | (3.26) | (1.29) | (1.37) |
| GDP per capita (at PPPs, international comparisons) ........ | | 1.224 | 1.188 | 0.669 | 0.650 | 1.926 | 1.963 |
| | | (4.35) | (4.25) | (2.99) | (2.87) | (3.28) | (3.73) |
| Rate of growth of GDP per capita (national statistics) ........ | | -0.086 | | 0.092 | | 0.079 | |
| | | (-.91) | | (.75) | | (.46) | |
| Rate of growth of real gross consumer wages ................... | | | 0.024 | | 0.010 | | 0.049 |
| | | | (.71) | | (.17) | | (1.23) |
| Level of monetization (broad money) ................................. | | 0.058 | 0.063 | 0.137 | 0.139 | 0.427 | 0.450 |
| | | (1.32) | (1.44) | (4.35) | (4.38) | (1.85) | (2.17) |
| *Ex-post* real interest rate on short-term deposits ............... | | -0.073 | -0.079 | -0.195 | -0.102 | -0.036 | -0.052 |
| | | (-2.07) | (-2.23) | (-1.95) | (-1.84) | (-.72) | (-1.03) |
| Annual rate of change of CPI ........................................... | | -0.008 | -0.006 | -0.008 | -0.008 | 0.007 | 0.004 |
| | | (-1.53) | (-1.30) | (-1.52) | (-1.55) | (.68) | (.45) |
| Annual rate of change of the terms of trade ratio ............... | | 0.025 | 0.011 | 0.159 | 0.180 | 0.084 | 0.050 |
| | | (.62) | (.24) | (1.60) | (1.88) | (1.63) | (.87) |
| Age dependency ratio (non-working age population in proportion to working age population) ............................. | | 0.174 | 0.162 | 0.133 | 0.133 | 0.051 | 0.034 |
| | | (5.75) | (4.92) | (3.65) | (3.53) | (.89) | (.63) |
| Adjusted R-squared ........................................................... | | 0.688 | 0.686 | 0.786 | 0.783 | 0.740 | 0.751 |

*Source:* UN/ECE secretariat calculations, based on national statistics (ECE Common Database) and IMF data (*IMF Staff Country Reports*, various issues).

*Note:* t-statistics in parentheses. For the definition of country groups see the note to table 4.4.1.

substituting for rather than complementing domestic savings (positive and statistically significant coefficient). Private savings in the transition economies do tend to move in the opposite direction to government savings, partly offsetting changes in the latter (negative and statistically significant coefficient). The results support the notion that countries with higher per capita incomes tend to save relatively more than countries with lower income levels (positive and statistically significant coefficient). The estimated coefficients of the monetization, inflation and terms of trade variables all have the expected signs but are not statistically significant. Of the variables whose directions of impact are indeterminate, the real interest rate has a statistically significant and negative coefficient,[477] while the two variables reflecting income growth have coefficients with opposite signs but neither is statistically significant.

Two of the estimated coefficients (both of which are statistically significant) systematically have signs opposite to that expected: those for the social security and the age dependency variables. The emergence of a positive sign in the first case may reflect the radical overhaul in the social security system in many of the

transition economies: due to the on-going reforms, the system is not stable enough to generate long-run expectations, and the actual social security benefits are probably regarded by individuals merely as complements to other income. A similar instability probably affects saving patterns over the life cycle and is reflected in the coefficient of the age dependency variable.

While there are no major dissimilarities between the regression results for the groupings "eastern Europe and the Baltic states" and "CIS countries", the separate estimates reveal some intriguing nuances in the patterns of saving in the two groups of transition economies. The most important differences are in the estimated coefficients on the current account balance, government savings, GDP per capita and monetization variables. The CIS coefficient for the current account variable is positive, large and statistically highly significant, implying the same interpretation as outlined above. The coefficient for eastern Europe and the Baltic states is also positive but much smaller in value and statistically non-significant, implying much weaker evidence of crowding out of private savings by foreign savings. The coefficient of the government savings variable in the CIS is very close to -1 (which suggests an almost complete offsetting of government savings by private dis-saving), while the coefficient of eastern Europe and the Baltic states is around -0.5). This suggests that total gross domestic savings in the CIS is largely insensitive to the saving stance of the

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[477] This result, however, may also reflect distortions in saving behaviour caused by the endemic incidence of negative real interest rates in the transition economies.

government, which is not the case in eastern Europe and the Baltic states. The coefficients of the per capita income and monetization variables are both greater in absolute value for the CIS than for eastern Europe and the Baltic states, suggesting that private savings in the CIS are more sensitive to changes in these variables than in eastern Europe and the Baltic states. Hence, *ceteris paribus*, any further catching up in these variables (considering the fact that average per capita income levels and monetization in the CIS are below those in eastern Europe and the Baltic states) might be expected to produce an even faster rate of catching up in private savings. There is also a difference in the signs of the coefficient on the inflation variable but in the CIS case it is not statistically significant.

## 4.5 Policy implications and conclusions

Despite the existence of ambiguities and unsettled issues, both theoretical and empirical research in the main seems to support the long-held common-sense views that: 1) capital accumulation is an engine of economic growth, and 2) increased domestic savings lead to higher levels of investment and thus contribute to long-run growth. Although the conventional prescription, namely that economies' policies should encourage higher domestic savings in order to achieve higher rates of long-run growth, may not be universally valid nor always working in one direction, more often than not this does appear to fit the experience of many fast-growing economies.

Both theory and evidence are more ambiguous as to the assessment of the actual financing needs of developing or transition economies and to the actual mechanisms which are best suited to channel external financial assistance. Common sense suggests that if domestic savings and investment are low, then one approach to accelerating development would be to complement domestic resources with foreign savings, possibly through international financial assistance programmes. Indeed, this has been the implied logic of many developmental assistance programmes for several decades. There are, however, a number of inherent problems and unresolved issues in this approach. Reliable analytical tools to assess precisely the amount of external financing needs do not exist. The models that have been used for this purpose have proved to be inadequate and the *ex-post* performance of recipient countries has not validated either the prescriptions of the models or the amounts of resources that have been allocated for assistance. There may be numerous practical impediments, arising from the institutional environment and the actual absorptive capacity of the economy, to channelling external assistance into productive investment; if these are not eliminated, the outcome may be counterproductive. The main conclusion is that there are no "easy fixes" to the deep developmental problems that many of the economies in transition are facing. A comprehensive, long-term policy approach to these problems is needed, in which external assistance should be an integral component.

Judging from past experience, domestic savings (and in the first place private savings) have played the leading role as a source of investment and growth in most

industrialized counties. Attracting external resources has been important for development and growth but for this to happen on a massive scale they usually consist of capital inflows attracted by gainful investment opportunities. Without disregarding the importance of external assistance, it seems more likely that the transition economies will follow this traditional path. Moreover, while external assistance may imply external policy conditionality, when dealing with private savings and improvements in the investment climate, domestic policy becomes endogenous, that is, policy can and does affect saving and investment behaviour. Hence, by applying appropriate public policies, it may be possible to generate and attract more resources for financing the process of economic transformation in the transition economies.

The empirical analysis of the determinants of private savings reported in this chapter reveals some of the important factors that have affected saving behaviour in these economies in recent years and allows some general conclusions to be drawn. The actual level of aggregate savings reflects the simultaneous impact of numerous factors that affect individual saving behaviour; some of these are subject to direct policy control, others can be indirectly affected by policy, and some may be policy neutral, at least in the short run (such as demographic factors). Among the policy-sensitive factors that have exerted a statistically significant effect (and can be expected to continue to do so) on the level of private savings in the transition economies, are the depth and level of development of the financial system, the level of government savings and the level of social security spending. The impact of monetary policy (in particular interest rate policy) has been more ambiguous. Among the statistically significant factors that may be indirectly influenced by policy are the size of the current account balance, the rate of inflation and the level of per capita income.

The estimated regression model highlights the importance of the level of per capita incomes and of the depth of the financial system as major determinants of private saving. The robust finding of a strong positive correlation between financial depth and the intensity of private saving has important policy implications in terms of prioritizing financial reforms in the transition economies. This conclusion is especially relevant for the CIS countries where there is a greater sensitivity of private savings to the depth of the financial system: a catching up in terms of financial deepening is likely to stimulate a more rapid growth in private savings.

Foreign capital that has been attracted to the transition economies in recent years has tended to crowd out domestic savings; this was especially the case in the CIS countries but less so in the countries of eastern Europe and the Baltic region. In turn, government savings in the CIS countries tended to be almost fully offset by private savings and vice versa, while this occurred only on a limited scale in the other transition economies. A high rate of substitutability between these flows may reduce the efficiency of policies aimed at promoting one particular type of savings. The model

explored in this chapter does not identify the actual causes of substitutability, and further research will be needed in order to define them. However, one relevant conclusion is that policy needs to tackle first the issue of substitutability between different forms of savings, before attempting to address the level of aggregate domestic savings as such.

Savings and investment are not an unconditional panacea for development and growth. They only perform the role of engine in a healthy macroeconomic environment and in the framework of a coherent and consistent long-term policy. Only under these circumstances can a virtuous circle of "high savings – high investment – high growth" become a reality. The first signs of something emerging along these lines can be observed in recent years in some of the more advanced transition economies. While much more effort will be needed to sustain the rate of growth, this at least indicates that success is achievable and that policy efforts in this direction will be rewarded.