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**Małgorzata Jakubiak, Paweł Kaczorowski,
Joanna Siwińska, Tomasz Tokarski**

Private, Public and Foreign Savings

W a r s a w , 1 9 9 9

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CASE – Center for Social and Economic Research
ul. Sienkiewicza 12, 00-944 Warsaw, Poland
tel.: (4822) 622 66 27, 828 61 33, fax (4822) 828 60 69
e-mail: case@case.com.pl

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Małgorzata Jakubiak

The author holds MA in International Economics from the University of Sussex (1997) and MA in Economics from the University of Warsaw (1998). Since 1997 junior researcher at the Center for Social and Economic Research – CASE. Her research interests focus on issues related to transition, particularly international trade and some aspects of open economy macroeconomics.

Paweł Kaczorowski

Author holds MA in Economics from the University of Łódź (1996). He works as a research assistant in the Institute of Economics at the University of Łódź and co-operates with CASE Foundation in Warsaw. His research fields include labour market and restructuring issues.

Joanna Siwińska

Author graduated from Warsaw University, Department of Economics, program Columbia (1997). After a one year scholarship at the University of Sussex, she received a MA degree in International Economics (1996). Now she is a PhD student at the Department of Economics, Warsaw University. Her area of interest is macroeconomics and public finance.

Tomasz Tokarski

Born in 1967, Ph.D. in Economics at the University of Łódź in 1997, Assistant in Institute of Economics University of Łódź and collaborator of CASE Foundation in Warsaw. Research fields: theoretical and empirical aspects of economic growth (neo-classical and endogenous growth theory, time-series cross-section analysis), Theory of the labour market, regional analysis of the situation on the labour market in Poland.

Abstracts

Saving, Investment, Financial Integration and FDI in Central Europe **Małgorzata Jakubiak**

Evidence on domestic savings and investments in industrialised countries indicates that capital markets are not perfectly integrated. On the contrary, various measures of financial integration prove that capital has become highly mobile. This paper presents theoretical explanations for this fact, data on the European Union "Northern" and "Southern" states and estimations of the saving-investment relation for some emerging Central and Eastern European countries (CEECs).

It was found that domestic investments in Poland, Hungary, Estonia, and the Czech Republic have been partly financed by FDI inflows in recent years. A similar situation was taking place in the so-called "Southern" Europe in the 1980s. There has been a geographical shift in FDI inflows from Southern EU countries to more developed CEECs in the mid-1990s. It seems possible that fast growing FDI inflows in Poland and in Estonia could hamper the future growth of saving rate.

The Interactions between Private Savings and Governments Budget Deficits **Joanna Siwińska**

This paper attempts to assess the influence of government budget deficit on private saving rate, with special emphasis on Poland and other transition economies. The theoretical predictions concerning the direct impact of budget actions on private savings are given by the Ricardian-Barro Equivalence Theorem and the Neo-classical view. Existing empirical research on the correctness of the Ricardian versus the Classical view is largely inconclusive.

A simple empirical analysis for Poland indicates, that in years 1991–1997 there was no strong Ricardian-type relationship between the government net lending and private savings. There is however a possibility of the existence of a weak form of Ricardian Equivalence in Poland, when one assumes, that the social security is treated differently than the rest of government net lending, and therefore social security balance is excluded from government budget balance. However, much longer time series is needed to draw any strong conclusions.

Influence of Interest Rates on Credits and Deposits of Non-financial Sector in Poland

Paweł Kaczorowski, Tomasz Tokarski

The main purpose of this paper is to analyse factors that influence the magnitude of credits and deposits held by households and enterprises. The analysis is performed for the period 1994–1998 using quarterly time-series data. The magnitude of credits and deposits was initially supposed to depend on GDP, real interest rate, real exchange rate, and M_2/H ratio (explaining the development of banking sector in Poland). Authors conclude that the growth rate of zloty denominated deposits held both by households and by enterprises is positively correlated with real interest rate, and that this relation is stronger in the case of households. It can be said that the development of banking sector in Poland influences the growth of credits and deposits held by households, but it does not affect the behaviour of firms. It seems that GDP influences the growth rate of deposits, while it has no effect on the demand for credits in Poland. A change in the real interest rate matters only for corporate actions.

Part I. Saving, Investment, Financial Integration and FDI in Central Europe

Małgorzata Jakubiak

1.1. Introduction

Evidence on domestic savings and investments in industrialised countries indicates that capital markets are not perfectly integrated. On the contrary, various measures of financial integration prove that capital has become highly mobile. This paper presents theoretical explanations for this fact, empirics on the European Union "North" and "South" states and estimations of the saving-investment relation for some emerging East and Central European countries. Poland stays in the centre of interest.

It was observed, that part of the investments done in the so called "Southern" EU countries was financed by the capital from abroad, from which foreign direct investment played an important role. More advanced Central and East European countries have been characterised by growing flows of FDI in the 1990s, therefore the magnitude and dynamics of FDI in the region are also analysed with their possible impact on domestic investment.

The paper is organised as follows. First part looks at the Feldstein-Horioka paradox of saving and investment correlation in a world of (perceived) high capital mobility, its critique and proposed explanations of the phenomenon. Section two examines evidence on the saving and investment rates of the EU countries. Section three takes a closer look at Central European saving, investment, and FDI trends and formulates predictions.

1.2. National Saving, International Investment and Capital Flows

1.2.1. National Saving and International Investment

The evidence on saving-investment correlation indicates that markets are not perfectly integrated, while it seems that 1990s brought almost perfect capital mobility in Europe. Original finding of high S-I correlation – the Feldstein-Horioka paradox – seemed to contradict the belief that nowadays capital is highly mobile. This part of the paper reviews the literature on saving-investment correlation, the evidence on financial markets integration, and presents possible explanations of the phenomenon.

Feldstein-Horioka paradox

In a closed economy saving equals investment by an identity. In an open economy case the difference between these two aggregates is reflected in the current account. Feldstein and Horioka (1980) postulate that when capital is perfectly mobile between countries so that it can flow freely to equalise the yield of investors, there should be no correlation between a nation's saving and investment rates. If domestic saving were added to a world saving pool and domestic investment competed for funds in that same world saving pool, the saving that originate in a country did not have to remain there. On the contrary, if there are numerous restrictions on capital flows, domestic saving and investment should be highly correlated. It is obvious that these two cases have different implications for domestic policies.

To assess the evidence between saving rates and investment rates Feldstein and Horioka (1980) estimated cross-sectional regression of the form:

$$(I/Y)_i = \alpha + \beta(S/Y)_i \quad (1)$$

where $(I/Y)_i$ represented the ratio of gross domestic investment to gross domestic product and $(S/Y)_i$ was the corresponding ratio of gross domestic saving to gross domestic product. The analysis was conducted for 21 OECD countries and the average 15-years ratios (1960–1974) were used. The estimate of β for the entire period was 0.89 with the standard error equal to 0.07 and was not significantly different from one.

From the above regression Feldstein and Horioka (1980) drew the conclusion that the evidence strongly contradicts the hypothesis of perfect world capital mobility and indicates that in the long run most of any incremental saving tends to remain in the country in which the saving is done.

Moreover, they found that while the link between saving and investment may vary among countries, there was no evidence that it varied in relation to either the size of the economy or the importance of international trade. The authors also reestimated the equation taking into account the potential endogeneity of the saving ratio. They constructed the simultaneous equations model which consisted of some structural features. These variables were supposed to be responsible for inter-country differences in saving rates according to the traditional life-cycle model. The growth rate of income and the ratio of retirees to the working age population were among these structural variables. The evidence did not alter their earlier results of imperfect capital mobility.

Feldstein and Bacchetta (1991) re-examined the data through the period 1980–1986 and concluded that there has been a substantial decline in the correlation between the rates of gross domestic saving and gross domestic investment for 23 OECD countries.

However, an increase in domestic saving still had a strong effect on the level of domestic investment, although this effect was smaller than in the 1960s and in the 1970s. Even in the 1980s, the saving retention coefficient (β from eq. 1) was above 0.80 for all 23 OECD countries.

Saving and investment disaggregated

Feldstein and Horioka (1980) examined whether investment was equally responsive to different forms of savings. They disaggregated total savings into three components: government saving (SG), household saving (SH), and corporate saving (SC), and estimated the following regression for nine OECD countries during the period 1961–1974:

$$(I/Y)_i = \alpha + \beta_H(SH/Y)_i + \beta_C(SC/Y)_i + \beta_G(SG/Y)_i \quad (2)$$

The coefficients on different types of saving were very close reflecting the similar contribution of the three types of saving to total investment. However, at a more disaggregated level of corporate investment, corporate saving was found to be more responsive than other sources of funds.

Feldstein and Bacchetta (1991) estimated the similar regression which divided domestic saving into two components: government saving and private saving for 1970–1985 (13 countries) and 1965–1984 (9 countries) periods. Their results implied that either the source of the variation in national saving had the same effect on domestic investment.

Understanding reasons for high saving-investment correlation [Dornbusch, 1991]

Dornbusch (1991) commented the 1991 Feldstein and Bacchetta study writing that "unusually high savings retention is now well established as a fact" [Dornbusch, 1991: 226]. However, he pointed out that there may have existed different channels through which the high correlation between saving and investment in open economies occurs. The reasons for such a strong link according to Dornbusch can be the following:

- constraints on external balances that can limit the extent to which investment can get out of line with saving;
- capital mobility may depend on the actual size of a firm within an economy, so that only large corporations and public sector may have access to world markets;
- regulatory treatments of financial institutions may enhance investors' risk aversion thus causing imperfect capital mobility;
- savings-investment correlation may reflect an economic structure that induces simultaneously both high saving and high investment.

Dornbusch treats the Feldstein-Horioka thesis of imperfect world capital mobility with caution saying that unless we understand the reasons underlying the strong correlation, we should not make strong inferences about the investment response to saving policies.

US breaks F-H paradox in the 1980s [Dornbusch, 1991; Frankel, 1991]

The observed saving-investment correlation for the aggregated sample of the OECD countries does not seem to occur for every individual country. As Dornbusch (1991) and Frankel (1991) noted, there is a striking discrepancy between the 1980s and the earlier period in the US data. The general saving-investment positive correlation broke down in the 1980s reflecting large current account deficits when declines in US saving rates were not matched by corresponding declines in investment rates. Till now, it is difficult to assess whether this phenomenon reflects a world wide trend or whether it is peculiar to the US [Dornbusch, 1991] as a consequence of financial liberalisation in Japan, the UK, and the developments of Euromarkets [Frankel, 1991].

Saving-investment correlation cannot serve as test of international capital mobility [Jansen, 1996]

Jansen (1996) postulates that the high saving-investment correlation found in cross-sectional studies reflects the cointegration of each country's saving and investment rate over time. This means that there is a long run equilibrium relationship between saving and investment, although both series may have trends or cyclical variations. Jansen stresses that the feature which stands behind this long run relationship is precisely the intertemporal budget constraint. He argues that in the short run different disturbances may push the system out of equilibrium, but the disequilibrium error, i. e. the current account tend to fluctuate around its mean value.

Jansen applied the ECM to 23 OECD countries (1952–1991 period) and found that countries exhibited considerable differences in the short run saving-investment correlations: some of them were characterised by the high contemporaneous correlations and for some others there was no relation between changes in saving and changes in investment through the 1952–1991 period. He also performed the Monte Carlo simulations that resulted in the original Feldstein-Horioka regression equation yielding estimates of the "retention coefficient" which strongly tended towards one because of intertemporal budget constraint and possibly because of limited capital mobility. Since it is not possible to identify the individual contributions of the two, Jansen concluded that cross-sectional regressions in levels were therefore inappropriate for both measuring the degree of capital mobility and testing for its presence.

Jansen proposed another way of testing international capital mobility. He run cross-sectional regressions for every year relating changes in investment rates to changes in the rates of saving. Estimates of annual changes in saving and investment were not affected by the intertemporal budget constraint, while restrictions on capital flows might still be able to give rise to a positive saving-investment correlations. Jansen expected to obtain a downward trend over time in the value of the correlation since it is believed that capital mobility has substantially increased from the 1950s. However, the estimates of the correlation effect turned out to be highly volatile from year to year, so that they would rather represented distorting role of country-specific business cycle effects. Jansen thus concluded that the short run correlation reflected mainly adjustments to supply and demand shocks which differ across countries and therefore the short run saving-investment correlation has no economic meaning.

Jansen (1996) concludes that it is impossible to construct a reliable test of Feldstein and Horioka basic idea that the correlation of saving and investment in a cross-section of data provides information on the degree of global capital mobility. Instead, he proposes to consider short and long run analyses on the level of individual country, which can yield interesting country specific tests.

International capital flows reconsidered [Feldstein, 1994]

Feldstein (1994) investigated the nature of global capital flows and its implications for tax policy. He claimed that although capital is generally free to move across national borders there is strong evidence on capital market segmentation that make it relatively immobile. Therefore, as Feldstein argues, the original Feldstein-Horioka regressions reflected the relationship between savings and capital flows that were actually taking place.

Feldstein presents evidence that capital can and does move across borders, with the most direct proof being the equality of interest rates on identical securities in different markets. On the other hand, there is strong evidence that capital does not move across national borders in the same way that it does within countries. The most powerful confirmation of this proposition comes from the original investment-saving equations. There is also some evidence supporting the segmentation of global capital market, like a "home country bias" in investment portfolios, the fact that uncovered interest parity and real interest parity do not hold for major currencies, and the observed evolution of the capital stock to GDP ratio for some OECD countries. Feldstein summarised this evidence by concluding that capital is internationally mobile while its owners prefer to keep it at home. He pointed that "evidence that capital can move and that some capital moves is not the same as evidence that capital is allocated globally without regard to national boundaries".

The explanations of Feldstein thesis are similar to those of Dornbusch (1991) with the emphasis put on currency hedging. He states that while some capital may be truly global and moving in the direction of the highest expected rate of return available, this may not be true for all investors. Risk aversion can also play an important role in discounting the gains from actual capital flows, with the currency risk being of particular significance. The presence of this risk causes many portfolio managers to hedge substantial amounts of their foreign portfolio investments, so that investors can take positions in foreign securities without a net transfer of capital across borders. Therefore, as Feldstein argues, it may be misleading to look at the amounts of foreign portfolio investment or foreign borrowing and draw inferences about the corresponding amount of true international capital movements.

Feldstein also observed that outbound foreign direct investment reduced domestic investment by an approximately equal amount while it had not any effect on domestic saving.

The analyses that have already been described, gave a clear picture of S-I correlation well established as a fact. At this point, it is worth to refer to evidence on capital flows that are really taking place. Studies mentioned below, assess the extent of capital mobility in the EU and in Eastern Europe.

1.2.2. Evidence on Financial Markets Integration

Quantifying capital mobility

Frankel (1991) presents four alternative definitions of international capital mobility and applies them to test a sample of 25 countries. Among those definitions is the Feldstein-Horioka definition, real interest parity, uncovered interest parity, and covered interest parity. Frankel presents them according to their specificity, and indicates that uncovered interest parity requires closed interest rate parity – the claim that capital flows equalise interest rates across countries when contracted in single currency – plus an assumption that the exchange rate risk premium is zero. Real interest parity, in turn, requires uncovered interest parity plus the condition that expected exchange rate depreciation is zero. Then the Feldstein-Horioka test requires not only real interest parity – that international capital flows equalise interest rates across countries – but also an assumption about the determinants of investments.

Frankel (1991) concludes that by 1988, the integration of the financial markets in the 1980s, and what follows, international capital flows, eliminated short-term interest differentials for major industrial countries. The research results suggest that capital has

been world-wide mobile when measured by covered interest rate parity. In other words, from the measures described above, only the real interest rate differentials adjusted for expected real currency depreciation remained small.

Some of the European countries were included in the sample data. Covered interest differentials, during the years 1982–1988, recorded relatively small magnitudes for countries known to be free of capital controls like Germany, Switzerland, and the Netherlands. The differentials were also small for another group of European countries that begun removing their capital controls in the 1970s or in the 1980s, that is for the United Kingdom, Austria, Belgium, Ireland, Italy and Sweden. The covered interest differentials remained significantly negative for France and large and negative for Spain, Denmark, Portugal, and Greece, implying controls on capital outflow.

Capital controls in industrial and transition countries

Tamirisa (1998) examines effects of exchange and capital controls on trade for 1996. She constructs an index of capital controls, which captures information on around 50 individual types of control from the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions. The index encompasses controls on capital and money market securities, derivatives, credit operations, FDI, real estate transactions, provisions specific to commercial banks, other credit institutions and institutional investors, surrender and repatriation requirements. Tamirisa presents indices for aggregated group of countries, where industrial countries are compared with a group consisting of both developing and transitional countries. The natural conclusion appears that developing and transitional economies have more extensive capital controls.

Liberalisation of capital controls and emerging markets' financial integration

The 1990s have witnessed a movement of capital into emerging markets on a scale not seen since the gold standard era of the late 1800s and early 1900s [IMF International Capital Markets, 1997]. IMF International Capital Markets presents the scale of these capital flows and puts the recent flow into emerging markets in historical perspective.

The capital control index, constructed for 163 emerging countries – including Asian, South American, and East European economies – shows the loosening of capital controls there since the mid-1980s. The measure accounts for restrictions on capital account transactions, multiple exchange rate practices, and surrender requirements for export proceeds. This index has been falling rapidly since 1990, which has been matched by the recent boom in capital flows into emerging markets – as measured by the ratio of capital flows to GDP.

An index of integration developed by the World Bank combines a measure of a country's ability to attract different forms of private flows – that is portfolio capital flows,

commercial bank flows, and FDI – and a measure of a diversification of a country's source of finance. The measure is based on ratings by Institutional Investor magazine. It shows that there occurs the process of further financial integration of emerging markets.

Financial integration indicators

When investment portfolios have become increasingly global, the differences in "attractiveness" of particular countries have become more and more important. The relative magnitudes of capital flows, and associated with location of capital in any given market can then be used as an approximation of risk perceived by investors. Therefore, countries in which capital controls are substantial, as evaluated by a country risk or creditworthiness, should not experience large capital flows.

Table I presents financial integration indicators, published by the World Bank [World Development Indicators, 1997]. Institutional Investor credit ratings, that allow to rank countries according to portfolio investment opportunities, are based on information provided by leading international banks. The indicator ranges from 0 to 100. Gross capital flow ratios approximate the depth of financial integration. They are better indicators than the net flows, because they measure total value of financial transactions during a given period. Gross private capital flows are the sum of the absolute values of direct, portfolio, and other investment inflows and outflows recorded in the balance of payments financial account, excluding assets and liabilities of monetary authorities and general government. Gross foreign direct investment is calculated as the sum of the absolute values of inflows and outflows of FDI recorded in the balance of payments financial account. Both indicators are calculated as ratios to GDP converted to dollars using PPP.

After the closer examination of table I, the following pattern reveals. The institutional investors credit ratings for Poland (50.2) and Hungary (49.7) are not very far from the indicator for Greece, that is 53.0. Portugal, Italy and Spain recorded the next closest – although quite distinct – values of, respectively 71.2, 75.4, and 75.5. United Kingdom, France, and Netherlands obtained the "least risky" grades of around 90.

Gross private capital flows as a percentage of GDP for Poland (9.3) are again not very far from those of Greece (10.9) and Spain (10.3). Hungary then recorded in 1996 a value of 14.0, which brings the country closer to Portugal, with gross private capital flows to GDP ratio of 19.0, and Italy (19.1). The evidence on gross FDI is more mixed. Polish and Hungarian FDI flow shares – that presumably reflect inward investment flows – are again similar to the values for Greece, Portugal, Spain, and Italy.

The gross indicators probably reflect different features of these capital flows, that is an inward investment in Eastern Europe, and more balanced flows in the EU. But still, they provide a reliable information on the relative amounts of these flows in 1996.

Table 1. Capital flows and financial integration indicators, 1996

	Institutional Investors credit rating	gross private capital flows (% of GDP)	gross FDI (% of GDP)
AUSTRIA	86.5	22.0	2.9
BELGIUM	81.3		
DENMARK	82.6	27.8	2.7
FINLAND	76.6	29.7	5.6
FRANCE	88.4	17.2	3.7
GREECE	53.0	10.9	0.8
IRELAND	76.7	66.5	4.7
ITALY	75.4	19.1	0.8
NETHERLANDS	90.6	35.5	9.0
PORTUGAL	71.2	19.0	1.0
SPAIN	75.5	10.3	1.9
SWEDEN	76.2	92.6	6.1
UNITED KINGDOM	88.4	59.9	6.6
POLAND	50.2	9.3	2.0
HUNGARY	49.7	14.0	2.8
BELARUS	14.2		
BULGARIA	22.2	6.4	0.4
CROATIA	33.6	12.3	1.7
CZECH REPUBLIC		10.9	1.3
ESTONIA	36.9	13.7	3.2
LATVIA	32.6	15.4	3.8
LITHUANIA	31.1	6.5	0.9
ROMANIA	34.1	3.9	0.3
RUSSIAN FED.	27.5	11.6	0.4
SLOVAK REP.	44.8	10.7	0.8
SLOVENIA	36.9	9.5	0.8
UKRAINE	19.8	7.2	0.2

Source: monthly Institutional Investor, published in World Development Indicators, pp. 262–264; IMF's Balance of Payments Statistic Database, published in World Development Indicators, pp. 310–312

The cited evidence suggests that capital controls in Poland and other countries in the region have fallen significantly in the 1990s. The measures of financial integration show that Poland is not a long way behind some of the EU countries. Moreover, there is an opportunity for capital to be mobile, and – as other studies state – Polish economy experienced a surge in capital flows in the mid-1990s, and large capital flows are present.

1.2.3. Saving-Investment Puzzle

Up to this moment two observations came clear from the review of the literature. First, saving and investment rates are correlated. Second, capital in the EU – and more recently in the CEECs – tends to be more and more internationally mobile. These two facts, that were originally thought to contradict each other, gave rise to the whole class of theoretical explanations of this paradox.

Several authors have proposed models built on the assumption of perfect capital mobility, in which saving and investment were correlated because they both reacted to common conditions [Artis and Bayoumi, 1990]. The paper of Baxter and Crucini (1993) is an example of such theoretical explanation on the subject. The authors construct a two-country, one-good version of the standard neoclassical model, where labour is immobile, firms are subject to exogenous productivity shocks, and markets are complete, which means that agents may trade any contingent claims they wish. There are no restrictions on opportunities for international risk pooling, and country size is captured by the population size.

The analysis starts from the assumption that capital is highly mobile, and then examines the other components of the model and relationships among them. The correlation between basic saving – defined as national output minus the sum of private and government consumption – and investment depends on the correlation between output and investment, the correlation between consumption and investment, the volatility of consumption relative to output, and the volatility of output relative to basic saving. As an effect, positive correlations between saving and investment come as a robust prediction of this quantitatively restricted model. Moreover, the model correctly predicts that these correlations are higher for larger countries.

Another set of arguments, opposing the claim that saving-investment correlation tests the mobility of capital, offers the proposition that governments may have targeted the current account. Artis and Bayoumi (1990) present an estimation of government reaction functions for industrialised countries. Reasonably stable monetary policy reaction functions were identified for several of them. The analysis showed that the current

account was a policy target in the 1970s, and that its importance declined in the 1980s, which would suggest falling saving-investment correlation. Next section of the paper address the problem of what was the behaviour of saving and investment rates in Europe, and how strong this correlation in Europe has been.

1.3. National Saving and Investment – Empirical Evidence

The empirical part of this paper focuses on answering the question whether saving and investment ratios in Europe are indeed correlated, and whether it implies a low mobility of capital in the area. The present study aims at analysing this paradox for Poland, but since the long time series data are not available here, the work has a comparative approach to the subject. The S-I relationship and the actual – and potential – capital flows are analysed separately. The investigation covers 13 EU countries, together with Polish and Hungarian data from the 1990–1995 period. The analysis starts from the review of time paths of saving and investment rates in Europe during the last three decades.

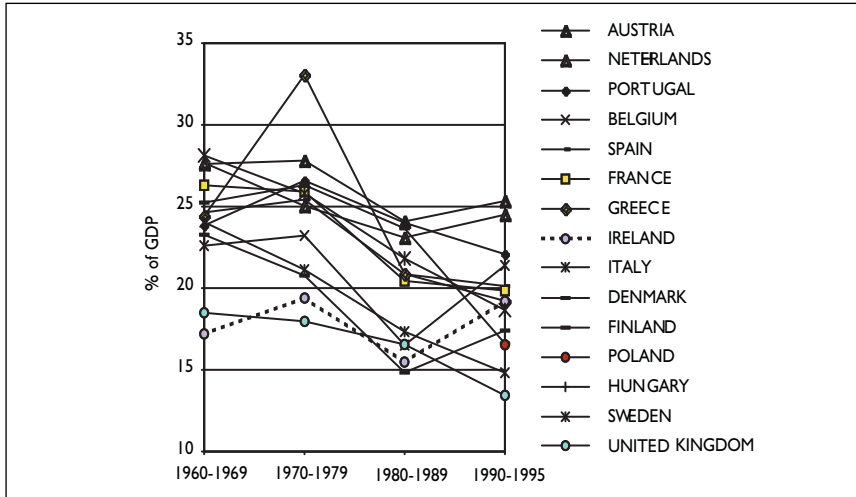
1.3.1. Empirical Examination of Average Saving and Investment Ratios

Figures 1 and 2 show the evolution of average saving and investment rates during the last three decades. The investment rate is defined as a ratio of gross fixed investment to GDP, and the saving rate – as a ratio of gross saving to GDP. The saving and investment rates were calculated at the annual frequency, and then averaged for the 10 and 6 years periods. There can be seen a general downward trend both for the average saving and for the average investment ratios. The investment rates were varying from 19% to 34% in the 1970s, from 17% to 31% in the 1980s, while in the 1990–1995 period these threshold values went down to 15% and 27%, respectively. The equivalent values for the saving ratios went down from the 17% – 28% range in 1960s, to 13% – 25% range during the years 1990–1995.

Portugal has recorded the highest investment ratios through all the period (34% in the 1970s, 27% during the years 1990–95). Spanish and Greek investment rates have also been among the highest in Europe. Greece experienced the highest "peak" in the average saving rates in the 1970s (33%).

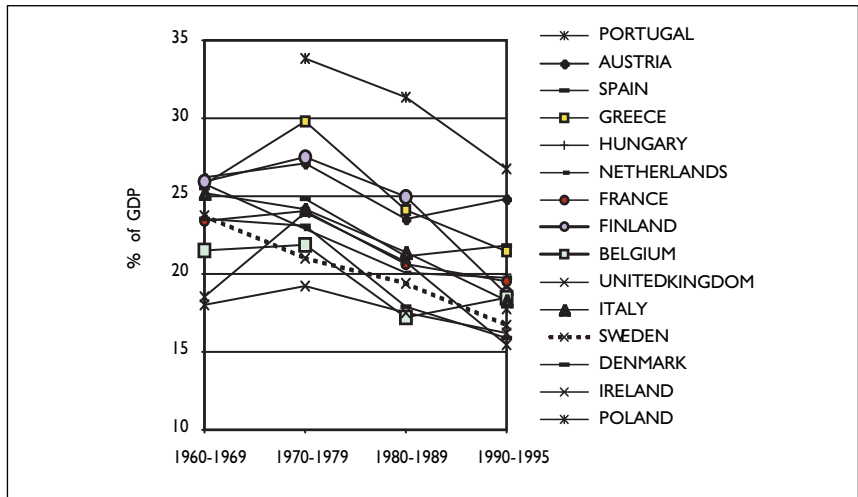
Polish (17.8% of GDP) and Hungarian (19.9% of GDP in years 1991–1995) investment rates are located in the middle of the sample distribution of average investment rates of 13

Figure 1. Average saving ratios, 1960–1995



Source: OECD Economic Outlook Database

Figure 2. Average investment ratios, 1960–1995



Source: OECD Economic Outlook Database

EU countries in the years 1990–1995. The same cannot be said for their saving rates, which – during this period – are relatively low when compared to the EU data from early 1990s.

Both Polish and Hungarian investment rates are similar in respect to their magnitude to the average investment rates for the majority of the European Union members during the years 1990–1995. However, giving the needs of these newly opened economies, and the behaviour of investment rates in the South European countries during the last three decades, it is highly possible that Eastern Europe will encounter growing investment rates in the next years. It is more difficult to assess, at this stage, the future adjustment of domestic saving rates in the region.

S-I cross sectional correlations in the EU

The following part of the analysis is devoted to the examination of the saving-investment correlation.

Table 2 shows the saving-investment correlations, expressed as a coefficient of the Feldstein-Horioka type regression (eq. 1). The results of the cross-sectional estimation for 11 European countries, for which the data were available are listed in the first column. The sample consists of data on Austria, Belgium, Denmark, Finland, France, Greece, Ireland, Italy, the Netherlands, Sweden, and UK. The coefficient values have been systematically falling from the 1960s. The estimate had a value of 0.74 for the period 1960–69, then 0.61 during the next decade, and 0.51 for the period 1990–1995.

Table 2. Relation between domestic saving ratios and domestic investment ratios, 1960–1995

Sample period	11 observations			13 observations		
	Constant	S/Y	R2	Constant	S/Y	R2
1960–69	5.63	0.738744	0.83			
1970–79	9.28	0.610487	0.74			
1980–89	9.26	0.585504	0.58	5.22	0.817232	0.53
1990–95	8.42	0.535884	0.51	6.52	0.669855	0.45

All estimates refer to equation 1 in the text. The variables were averaged for the sample period indicated.

The similar analysis was performed for the period 1980–1995, with the sample enlarged to cover additional data on Spain and Portugal. The estimate for 1980s had the impressive magnitude of 0.82, while for the period 1990–1995 it went down to 0.67.

The "savings retention" coefficients have been falling during the years 1960–1995 and 1980–1995, suggesting that the saving-investment correlation in Europe has been

going down. However, the exact magnitude of the coefficients was found to be very sensitive to changes in the actual countries included in the sample, indicating possible large inter-country differences in the saving-investment correlation.

1.3.2. Time Paths of Saving and Investment for CEECs

Since it was postulated that individual country studies can shed some light on the nature of saving – investment correlation, here follows the analysis of saving and investment over time.

Polish data on saving and investment rates are discussed first. For the sake of comparison, the analysis includes also a brief overview of relevant Czech, Hungarian, Slovenian, and Estonian data. Table 3 shows the magnitude of saving and investment rates during the period 1991–1997.

It can be seen that Polish investment rates, depressed during the 1992–1993 period, begun to increase, and an excess of investment over saving has been recorded since 1996. The investment rate reached the value of 22% of GDP in 1996, being at a level comparable to the average investment ratios recorded for the Southern European countries in the early 1980s. The domestic saving rate has significantly risen during the 1990s.

Hungarian investment ratios have been rising from 1993, although year by year at a slower rate. The saving rate, which was falling during the 1991–1993, begun to rise in 1994, and from 1996, its distance from the rate of investment has accounted only for 2% of Hungarian GDP. The growth of S rates in Hungary has been more pronounced than in Poland during last years. Even though Hungarian savings in 1993 were only around 10% of GDP, they managed to increase considerably in the next four years accounting for 23% of GDP. Unlike Polish, Hungarian investment rates have been exceeding domestic savings from 1991, and their relative magnitudes in 1996 and 1997 were slightly higher (25% of Hungarian GDP).

There are some similarities between Polish and Czech saving and investment rates. Czech investment rate, falling until 1993, rose in the next year to 20% of GDP, and has been increasing since, at a stable rate. Saving rate, depressed prior to 1994, started to rise from 1995 on, but the growing domestic resource gap has been recorded since 1995. The main difference between Czech and other Central European investment rates laid in their relative magnitudes. While Poland recorded investment at 22% of GDP in 1996, Hungary at 25%, Czech investment rate approached 35% in 1996. This was exceptionally high even for EU countries in the 1990s, and resulted in the domestic resource gap of 8% of Czech GDP in 1996.

Table 3. Polish, Hungarian, Czech, Slovenian, and Estonian gross saving and investment ratios as a percentage of GDP, 1991–1997

	1991	1992	1993	1994	1995	1996	1997
Poland:							
Gross domestic saving rate ^a	15.9	15.4	15.8	20.2	21.4	20.9	21.0
Gross investment rate ^a	19.9	15.2	15.6	17.7	19.8	22.0	24.7
FDI as a percentage of domestic investment ^e	2.0	5.0	13.0	10.9	14.8	16.5	16.1
Hungary:							
Gross domestic saving rate ^b	18.1	15.3	10.6	14.4	20.4	22.4	23.4*
Gross investment rate ^b	20.6	16.1	20.0	22.2	24.1	24.5	25.4*
FDI as a percentage of domestic investment ^b	21.4	24.7	30.5	12.5	41.4	18.2	
Czech Republic:							
Gross domestic saving rate ^c	36.84	27.45	20.23	20.11	23.31	26.91	
Gross investment rate ^c	29.89	27.07	18.39	20.37	27.81	34.52	
FDI as a percentage of domestic investment ^d			11.39	11.96	19.57	7.57	
Slovenia:							
Gross domestic saving rate ^c	26.42	24.73	20.61	23.16	21.89	22.24	
Gross investment rate ^c	20.61	18.41	18.73	19.75	21.20	22.09	
FDI as a percentage of domestic investment ^c			4.47	4.33	4.06	4.35	
Estonia:							
Gross domestic saving rate ^c	34.48	32.75	22.18	18.29	18.19	14.08	
Gross investment rate ^c	20.93	21.03	23.93	26.59	25.62	24.81	
FDI as a percentage of domestic investment ^c		7.06	15.63	19.21	18.81	12.94	

Source: a: GUS: SNA, b: IMF Staff Country Report No. 97/104, c: World Development Indicators, d: own calculations based on IFS and WDI databases; e: Liberda (1998) and own calculations based on GUS SNA; *IMF estimates

The domestic resource gap has been observed for Estonia since 1993, and it amounted to over 10% of Estonian GDP in 1996. Extremely high saving rates have been falling year by year since 1991, and in 1996 domestic savings were at 14% of GDP. Estonian investment rates increased between 1992 and 1993, and fluctuated around 25% level since then.

Slovenian saving rates stayed above 20% of GDP through 1991–1996. Although there was a decrease during the first two years, it did not continued, so saving rate was at 22% of Slovenian GDP in 1996. Contrary to the preceding examples, Slovenian investment rates have never been higher than saving rates, although the difference between the two became very small in the second half of the 1990s.

Comparison with some EU countries

Cointegration analysis of investment and saving rates in the EU reveals, that there does not seem to be any general trend concerning long-run relationship between the two values for the European Union countries during the period 1960–1995 [1]. The individual country time series analyses have found some cointegrating relations between saving and investment rates, but for the majority of them, cointegration was rejected. Moreover, for some of the countries for which investment and saving were found to be cointegrated, the long-run relationship was found to be negative – like in the case of Spain – while for some other it was positive.

These results contrast with outcomes obtained by Bayoumi (1989), who found a close correlation between saving and investment over time for nine over ten industrial countries. He reports coefficients not significantly different from unity, but significantly different from zero. However, other authors argue [after Artis and Bayoumi, 1990] that the inclusion of even the late 1980s period significantly reduces estimated correlations.

Because it was not possible to test the saving-investment correlation over time using econometric tools, further analysis focuses on visual examination of country specific information. The so-called "Southern countries" were chosen as points of reference for CEECs data. First, it seemed useful to find a base for comparisons. Second, since these countries of Eastern and Central Europe have been making preparations to join the EU in the future – while being significantly weaker economic partners – it is interesting to examine the time path of the relatively poorer economies of the EU, that become the Community members. In terms of "outside" environment and some macroeconomic condition the current situation of Poland, Hungary, Czech Republic, Slovenia, and Estonia somehow resembles the "Community southern frontier". Ireland was also added to the sample, as an example of successful integration.

The poorer EU economies of Portugal and Greece [2] have been characterised by the excess of investment over saving from the early 1980s (and even earlier in the case of Portugal). The largest "domestic saving" gaps of around 10% of respective country's GDP were present in the 1980s. Similar situation of an excess of investment over saving causing the large "domestic resources" gap in the 1980s has been also typical for Ireland until the last decade.

Data on Portugal and Greece suggest that Portuguese and Greek saving and investment ratios have exhibited much more year-to-year volatility than respective indicators for other EU countries. While yearly changes of saving and investment

[1] For two countries, for which earlier data were not available, sample started from the year 1970 (Spain) or 1977 (Portugal).

[2] As measured by GNP *per capita*.

ratios for these economies have been quite substantial, the stable EU countries recorded balanced S and I rates [3], fluctuating in the long-run around its mean values. Moreover, Portugal, Greece and Ireland experienced in the early 1980s period of exceptionally high investment rates, which have significantly fallen since then. This high investment was financed by the resource inflows from abroad.

The capital controls are still present in these economies (except for Ireland), and gross private capital flows reflect this fact (see Table I). As it was already mentioned, the relative stage of Polish, Czech, and Hungarian financial integration into world capital markets is not very distinct from those of some of the South European countries. Estonia and Slovenia also follow the same path. Therefore, it can be expected, that as these Central European economies become more stable and more opened, the risk associated with an investment falls, and that given sufficiently strong domestic demand, some of the domestic investment should be financed by the resource inflows. Thus we can expect, that CEECs investment rates will outweigh domestic saving, further causing "resource gaps" that have been observed for the majority of them since mid-1990s.

1.4. FDI in some EU and CEECs

The "capital gaps" are filled up with foreign resources. It is postulated here, that foreign direct investment is very important component of capital flowing from abroad, and its importance is especially valid for transitional economies of Eastern Europe.

The "domestic resource gaps" observed for the "Southern" EU countries in the 1970s and in the 1980s, have been financed by foreign investment inflows, from which foreign direct investment (FDI) played the most important role. Taking together, the flows of foreign direct investment coming to the southern Europe increased sharply in the late 1980s and the early 1990s. This increase was caused mainly by direct investment flowing to Spain and Portugal.

The 1990s brought about a decline of direct investment funds coming to the "southern" Europe. On the contrary, the newly independent states of Central and Eastern Europe started to attract FDI. FDI flows have been increasing for Hungary, Poland and Czech Republic, as shown on the Figure 3 [4]. There are also significant flows coming to Russia (\$ 2,452 millions in 1996, \$ 6,241 millions [5] in 1997: World

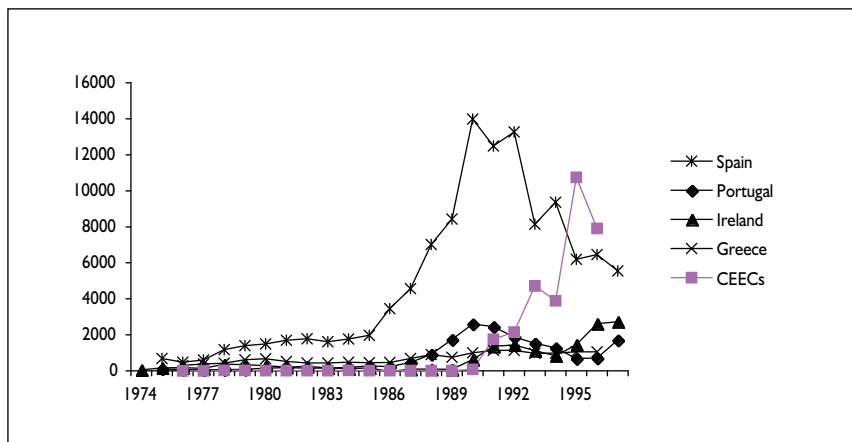
[3] Only in the case of Switzerland and Netherlands domestic saving rates have been significantly higher than the respective investment rates.

[4] CEECs Figure 3 stays for: Poland, Hungary and Czech Republic.

[5] Estimate.

Investment Report, 1998). Eastern and Central Europe attracted, as a region, 3.6% of the world FDI inflows in 1996, and 4% in 1997 [World Investment Report, 1998].

Figure 3. FDI inflows (in millions of US dollars), 1974–1997



Source: IMF International Financial Statistics

While FDI in Hungary is located mainly in the electricity and water distribution sector, the trade sector, and in machinery and equipment (14%, 12%, and 12% of total FDI in 1997), it comes primarily into food beverages and tobacco, finance, and machinery sectors in Poland (21%, 21%, and 17% in 1997), into transport, storage and telecommunication, food beverages and tobacco, and automotive sectors in Czech Republic, and into finance and mining industry in Russia [World Investment Report, 1998].

Since 1996 domestic resource gap in Poland has been almost fully financed by foreign direct investment according to some of the FDI calculations [Liberda, 1998]. Hungary and Estonia experienced an excess of investment over saving since the beginning of the 1990s, Czech Republic since 1995, and relatively significant FDI inflows have been present in these economies since this time.

To what extent is FDI inflow beneficial for the host country?

FDI inflows can contribute to the rate of growth of the host country in two opposite ways. Even if FDI raises the level of national income, it can have opposite impact on its growth rate. Caves (1982) writes that these effects usually occur through saving rate. It is possible that foreign investment raises government savings through tax revenues thus raising saving rate. But it can also be true that such inflow reduces the private sector's rate of saving and thus the growth rate. Since saving rate in Poland

is below those for developed countries, its further growth is desirable.

The concern that domestic savings may be depressed as a result of FDI inflows have been widely discussed in economic literature, especially in the reference to low developed countries (LDCs). Caves (1982) provides possible explanations on a micro level. When foreign capital comes into a relatively capital scarce country, it usually lowers its rate of return. This means that the rate of return to domestic savers can also be lowered, and so the rate of saving. Alternatively, FDI may raise a return to domestic labour, lower the return to domestic capitalists, and lower the saving rate if only capitalists save. Caves (1982: 273–274) presents empirical evidence on LDCs in the 1970s which proves that too much capital inflow from abroad relative to domestic investment reduced saving. Sometimes, depressed saving rates can result from the foreign direct investment which is highly competitive with the domestic investment [Liberda, 1998].

On the contrary, FDI can append to the productivity growth in the host economy, due to favourable external effects. Then, domestic investors profits can increase, and so the saving rate. Because there exists alternative theoretical predictions about FDI's impact on domestic savings, so there is a need to examine it empirically.

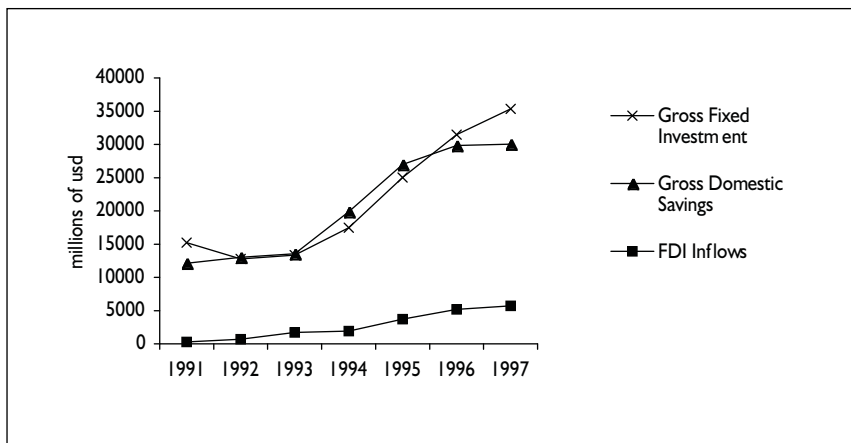
How much of FDI can Polish economy absorb?

It can be seen from the Figure 4 that since 1994 FDI flows have been growing form year to year by considerable amounts. During 1997 the inflow of foreign direct investment coming into Poland reached over 5 billion dollars, which amounted to 4% of Polish GDP. During this period, domestic savings – that have been rising till 1995 – stopped growing and stabilised at 21% of GDP.

Examples of Hungary, Czech Republic, and Estonia are clearly different in this respect. As can be seen from Figure 9 in Appendix, distinct situation took place in Hungary. While it is possible that the sharp growth of FDI inflows in 1995 slightly lowered the 1996 Hungarian saving rate, the saving rate itself has been growing steadily since 1993. Unlike in Poland, there has been no clear slowdown in the growth of domestic savings since 1995. So it is hard to asses whether fluctuations in FDI inflows have had any effect over Hungarian rate of saving. Domestic savings in Czech Republic (Figure 10 in Appendix) have been growing since 1994 irrespective of speed of FDI inflows. Estonian saving rates have been falling through mid 1990s while FDI inflows have stayed high.

From 1993 to 1995, higher FDI inflows from year to year occur together with rising saving rate in Poland. This suggests that foreign direct investment coming here – and located mainly in food and financial sectors – was associated with substantial positive external effects. However, saving rate in Poland stopped to grow in 1996, and

Figure 4. Gross savings, gross investment, and FDI inflows in Poland, 1991–1997



Source: Liberda (1998), GUS (1999)

still growing FDI inflows may be seen as one of the factors preventing the saving rate from further augmentation.

1.5. Conclusions

Relations between domestic saving and investment rates, and their implications, have been extensively investigated in economic literature. Various studies show that savings and investments are correlated in the cross-sectional regressions, but it is hard to find a clear evidence of this high correlations at the individual country level.

The empirical analysis performed here shows that saving and investment rates have been indeed correlated in the EU during the last three decades, although the strength of this correlation has declined. Relations between domestic savings and investments for individual countries have been of different kinds. Data on S and I rates for the – so called – Southern European countries show that domestic resource gaps have been present there in the 1980s.

Transitional economies of Central Europe experienced a decline in their investment rates at the beginning of the 1990s. The process usually did not last longer than two years, and the following period brought significant increase in investment rates in the region, together with the growth of saving rates. However, an excess of

investments over domestic savings since the mid-1990s has been recorded in Poland, Hungary, Czech Republic, and Estonia, indicating large capital inflows.

The last decade brought also the reorientation of the foreign direct investment flows. While FDI flows coming to the Southern Europe have been growing in the 1980s and early 1990s, a decline of direct investment funds coming there was observed in the next years. On the contrary, the newly independent states of Central and Eastern Europe started to attract FDI. It is argued here, that FDI coming to CEECs is playing very important role in financing domestic investment. As examples of Poland and Estonia show, it is possible that quickly growing FDI inflows might lower domestic saving rates in the region or eventually hamper their further growth. However, data on Hungary and Czech Republic do not confirm this hypothesis.

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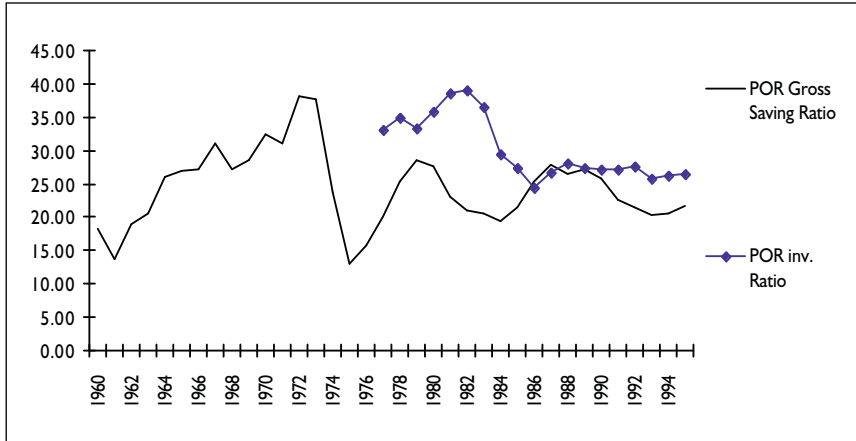
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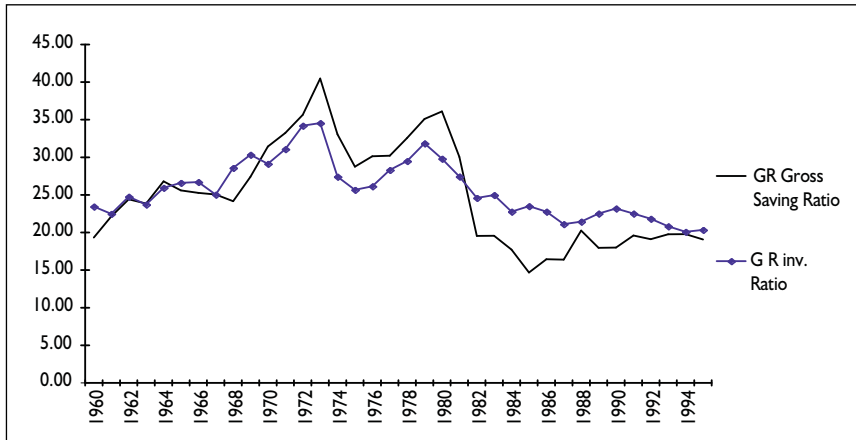
Appendix: Saving, Investment and FDI for Selected Countries

Figure 5. Portuguese S and I ratios, 1960–1995



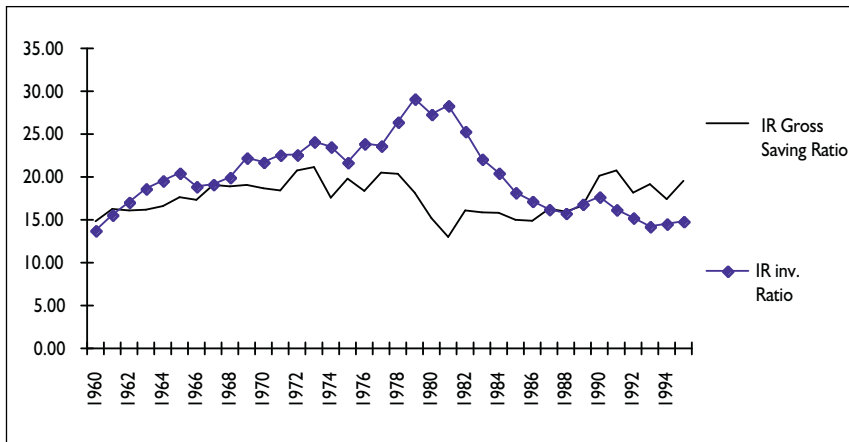
Source: OECD Economic Outlook Database

Figure 6. Greek S and I ratios, 1960–1995



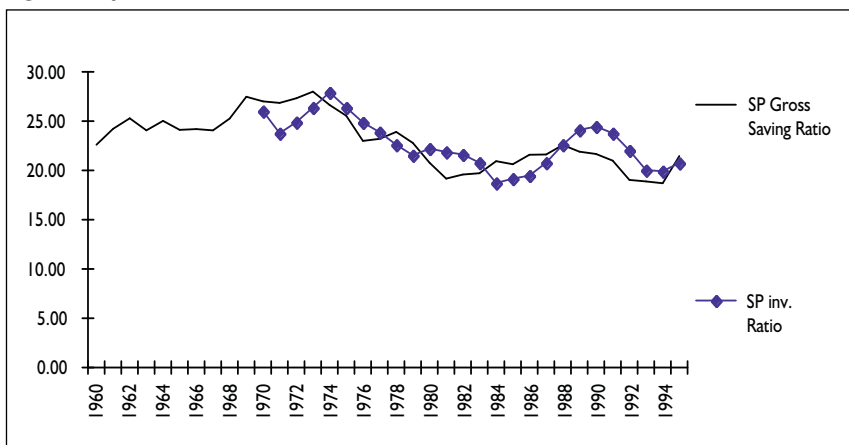
Source: OECD Economic Outlook Database

Figure 7. Irish S and I ratios, 1960–1995



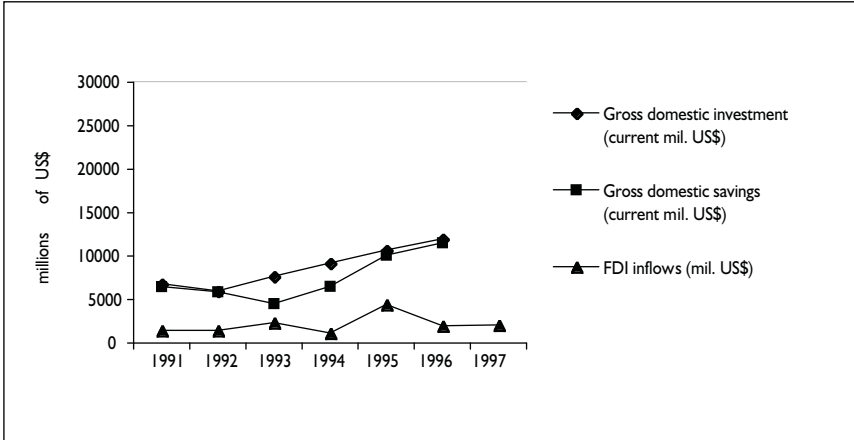
Source: OECD Economic Outlook Database

Figure 8. Spanish S and I ratios, 1960–1995



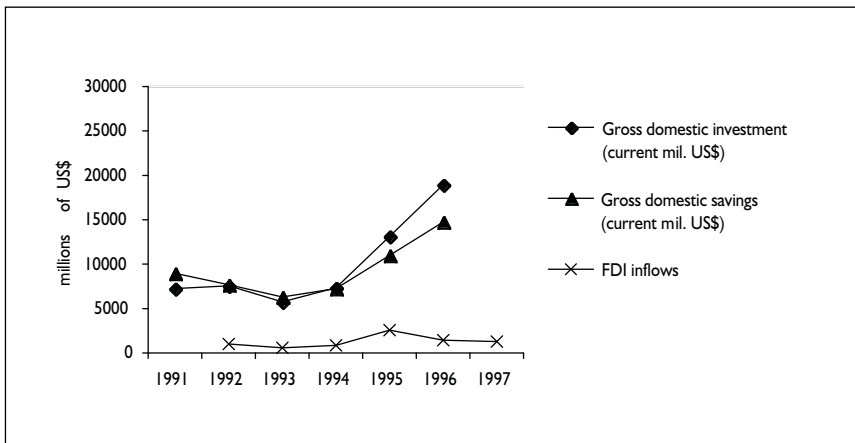
Source: OECD Economic Outlook Database

Figure 9. Gross Savings, Gross Investment, and FDI Inflows in Hungary, 1991–1997



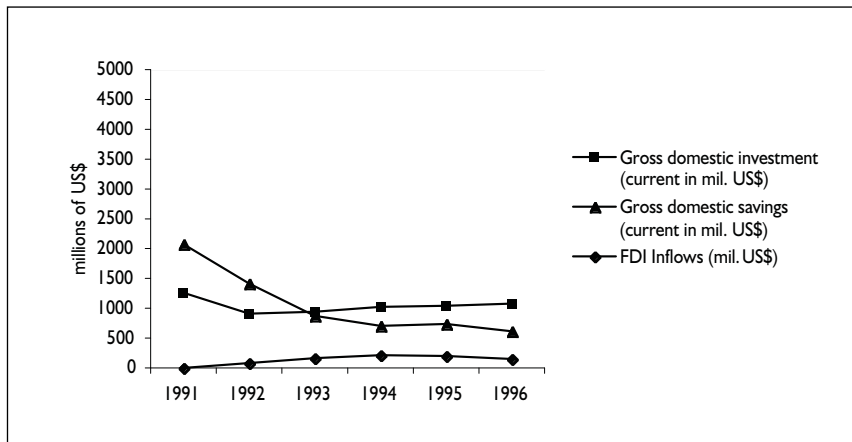
Source: World Development Indicators 1998 and World Investment Report 1998 (FDI)

Figure 10. Gross Savings, Gross Investment, and FDI Inflows in Czech Republic, 1991–1997



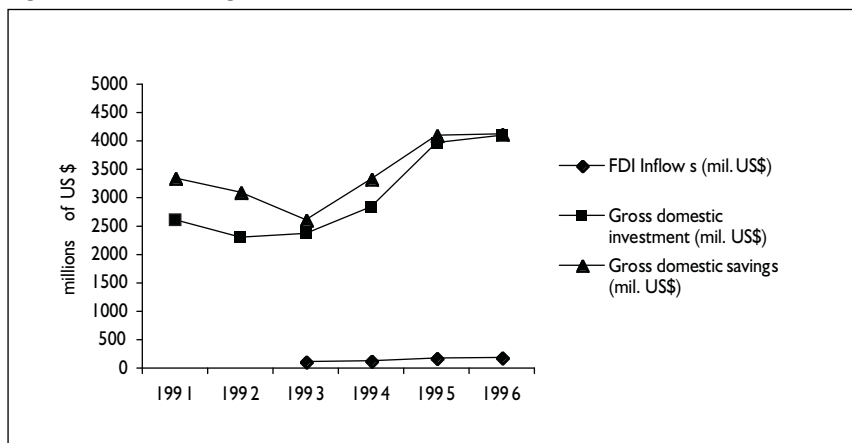
Source: World Development Indicators 1998 and World Investment Report 1998 (FDI)

Figure 11. Gross Savings, Gross Investment and FDI Inflows in Estonia, 1991–1996



Source: World Development Indicators 1998 and World Investment Report 1998 (FDI)

Figure 12. Gross Savings, Gross Investment, and FDI Inflows in Slovenia, 1991–1996



Source: World Development Indicators 1998 and World Investment Report 1998 (FDI)