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Chapter 1 – External capital flows, international price competitiveness and short-term economic growth in Latvia

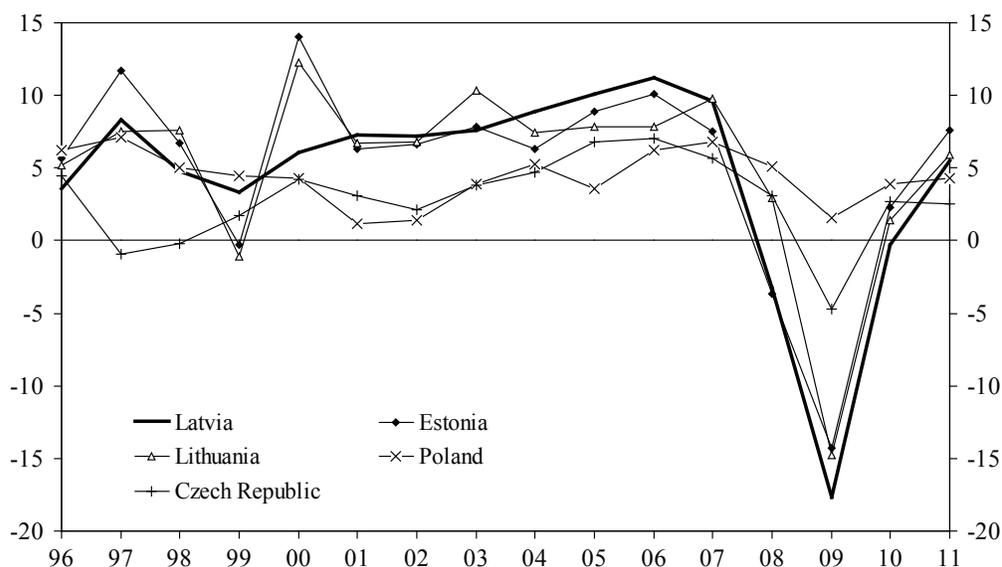
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I. Introduction

Latvia is one of the 10 countries from Central and Eastern Europe (CEE) which joined the European Union in 2004 or 2007. The country regained independence in 1991 and experienced a very deep recession during the first part of the 1990s. Positive growth rates returned from the mid-1990s when the transitional recession had run its course. Economic growth was held back in 1998-1999 following the Russian financial crisis, but the most dramatic event was the economic downturn in 2008-2010 following the global financial crisis. Latvia experienced an output drop of 17.7% in 2008 and positive full-year growth only returned in 2011.

Figure 1.1 shows the GDP growth rates for Latvia, Estonia, Lithuania, Poland and the Czech Republic for the period 1996-2011 (where the 2011 observation is a forecast of the European Commission). Three observations are in place. First, the average or trend growth rate has been high in Latvia. This is, however, a feature of most CEE countries, arguably connected with the catch-up process of these countries. Second, the GDP movements are rather similar across the three Baltic countries but are much more volatile than in Poland and the Czech Republic. Third, the Latvian economy experienced a pro-longed boom from the Russian crisis and until 2007. Remarkably the growth rate increased in every single year during this period.

Figure 1.1: Annual GDP growth in Latvia and four other CEE countries, percentage



Source: Eurostat

¹ Martins Bitans, Juan Carlos Cuestas, Francesco Di Comite and Radoslav Krastev provided useful comments to a previous version of the paper, but do not carry any responsibility for the final product. The views expressed are those of the author and not necessarily those of the institutions to which he is affiliated.

The long period of increasing growth rates during the boom period was accompanied by the build-up of macroeconomic imbalances. The inflation rate increased markedly and reached double digit levels in 2007 in spite of the Latvian lats being linked to first the SDR and later the euro. The high inflation levels in combination with the fixed exchange rate led to deteriorating international price competitiveness. Meanwhile, capital inflows grew throughout the boom period, especially after Latvia joined the European Union in 2004. The current account balance, a conventional measure of capital flows, exhibited deficits above 10% of GDP for each year during the period 2004-2008.² The crisis in 2008-2010 was characterised by a very substantial reversion of external capital flows, a sudden stop (Calvo, 1998). A current account deficit of 22% of GDP in 2007 was turned into a surplus of almost 9% of GDP in 2009. A range of other macroeconomic indicators show similar dramatic developments.

The pronounced pattern of short-term economic growth in Latvia and the highly volatile macroeconomic environment have affected the livelihood of Latvians in dramatic ways. Rapidly increasing incomes and lower unemployment during the boom was replaced by falling incomes, higher unemployment and increasing poverty. It is nonetheless certainly safe to argue that the underlying causes for the pronounced pattern of GDP growth have not been fully identified.³

The objective of this chapter is to ascertain the importance of two of the arguably most important factors driving short-term changes in economic growth in Latvia, viz. changes in external capital flows and changes in international competitiveness. The aim of the analysis is to provide quantitative information on the importance of two factors. For this purpose, the analysis is structured in two parts. The first part comprises panel data estimations in which the growth rate of the 10 EU members from Central and Eastern Europe is explained by measures of external capital flows and changes in international competitiveness in addition to various control variables. The second part uses the slope estimates from the panel data estimations to compute the contributions of, respectively, external capital flows and changes in international competitiveness to economic growth in Latvia since the late 1990s.

The two factors, external capital flows and international competitiveness, have been chosen because a substantial academic literature has focused on these measures and their impact on economic growth in the short term (see the review in Section II). The two factors may be proxied by variables that can be kept under surveillance and possibly affected through policy measures. The factors have also been singled out by the European Union as important gauges of economic performance. In the spring of 2011, the EU countries agreed to the Euro Plus Pact, which posits new policy commitments and an adjacent monitoring regime. EU countries must inter alia target unit labour costs to ensure that they are internationally competitive and also avoid the build-up of financial imbalances (European Council, 2011).⁴ Another piece of EU regulation, agreed in 2011, is the Excessive Imbalance Procedure (European Commission, 2012b). The Procedure comprises a scoreboard of different indicators of macroeconomic imbalances, which is monitored by the European Commission. A main indicator of macroeconomic imbalances in this framework is the current account balance.

Evidently the literature dealing with the growth performance of Latvia and other CEE countries is plentiful; space constraints imply that only a few studies can be discussed. The economic survey in OECD (2000) discussed impediments to economic growth in the Baltic States and stressed the importance of financial sector development. ECFIN (2010) provides a broad discussion of economic challenges in the Baltic States. Chapter 2 considers the accumulation of financial imbalances in the run-up to the global financial crisis and Chapter 3 provides a discussion of financial sector developments. Chapter 5 discusses the growth performance and the future prospects in the light of developments of international competitiveness, but there is little emphasis on financial flows in this

² The current account balance and the capital and financial account (including changes in international reserves) always sum to zero. This implies that, for instance, a current account deficit must be financed by a surplus on the capital and financial account (including changes in international reserves).

³ This point was also explicated in the Call for Papers for the European Commission Latvia Country Seminar, ECFIN/G/2011/020.

⁴ Competitiveness was also at the centre of the EU's Lisbon Strategy from 2000, according to which the European Union should strive to become "the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth..." (European Council, 2000).

context. Purfield and Rosenberg (2010) consider the three Baltic States and chronicle the developments during the boom in 2004-2007, the subsequent crisis and the adjustment process that followed the crisis. Developments in financial markets and international competitiveness are the two main factors discussed, but the effects on economic growth are not quantified.

Hansen and Kvedaras (2004) examine economic growth in the Baltic States and estimate growth rates consistent with different rates of capital inflow. For the period before EU entry, they find that whereas growth in Estonia and Lithuania might have been restrained by the availability of external capital inflows, this is not the case for Latvia. Bajo-Rubioa and Diaz-Roldanb (2009) undertake a similar exercise on a larger set of CEE countries and find that until 2007, Latvia, among other countries, attained growth rates substantially in excess of levels consistent with a sustainable path of the current account balance. Shelburne (2009) also stresses the large current account deficits in the CEE countries prior to the global financial crisis and argues out that the eventual assessment of the growth model in CEE depends on their ability to finance their often substantial current account deficits.

This chapter contributes to the literature in three ways. First, it discusses different factors of importance for short-term economic growth with particular emphasis on the short-term effects of external capital flows. Second, it estimates short-term growth regressions for the CEE countries in which capital flows and competitiveness are the main explanatory variables. This quantification is novel in the context of CEE countries and enhances the policy relevance of the chapter.⁵ Finally, the chapter discusses the Latvian economic development based on simulations seeking to uncover the contribution of capital flows and competitiveness. A better understanding of the causes is important for identifying the vulnerabilities of the Latvian economy and possibly also for forecasts of future growth.

The rest of the chapter is organised as follows: Section II provides a conceptual framework for explaining short-term economic growth in emerging economies. Section III presents the data and shows graphs to guide the empirical analysis. Section IV comprises the baseline panel data estimations along with a number of alternative specifications. Section V computes the contributions of capital flows and competitiveness to economic growth in Latvia. Finally, Section VI summarises the chapter and draws some policy conclusions.

II. Factors driving short-term economic growth

Economic growth has the potential to transform livelihoods and societies over time. Long-term trends in economic growth are typically measured as averages across over long time intervals (5 or 10 years or longer) so that the long-term growth data are not unduly affected by short-term fluctuations. Empirical research generally finds evidence of beta convergence, i.e. long-term growth is, *ceteris paribus*, faster in countries with low initial income than in countries with high initial income. Factors such as investment levels, education attainment and openness are other factors that most empirical studies find to have a positive effect on economic growth (Barro and Sala-i-Martin, 1995). The multitude of factors of potential importance for long-term economic growth, multicollinearity between the factors, and the limited number of observation points make it difficult to attain precise and robust results in empirical growth studies (Mankiw, 1995).

The factors seen to affect long-term economic growth are almost exclusively supply factors affecting the productive capacity of an economy. It is outside the scope of this chapter to analyse factors that drive long-term economic growth in the CEE region as the number of countries is small and reliable data are generally only available from the mid-1990s. Instead, the chapter focuses on the factors driving economic growth in the short and medium term. Given this perspective it is reasonable to focus on annual GDP growth.

⁵ The use of panel data estimations is necessitated by the low number of observations available for Latvia alone. Robustness analyses suggest that the marginal effects of external capital flows and international competitiveness for Latvia are likely fundamentally different from those estimated for the panel of 10 CEE countries.

Growth performance in the short and medium term is affected by both supply and demand factors. The supply factors are those affecting the production capacity, for instance the capital stock, the labour stock, education levels etc. These factors are likely to change relatively slowly and may therefore be of secondary importance for short-term growth performance. One exception may be sudden shifts in oil prices and other inputs, which make certain production processes uneconomical and, hence, affect the production capacity. Another possible exception may be changes in migration patterns, increasing or reducing the labour force.

In the short term, demand factors are likely to play a dominant role for changes in economic growth and for other business cycle indicators. Demand changes from year to year and leads to changes in GDP growth rate associated with changes in total factor productivity and/or the degree of capacity utilisation. Two factors have received particular attention in European policy-making and policy discussion, viz. international competitiveness and external capital flows. The theory and empirical evidence linking these two factors to short-term economic growth are discussed in turn.

International price competitiveness

There are many different definitions of competitiveness, often distinguished by the way they are measured (Boltho, 1996). In this context competitiveness refers to international price competitiveness, which is a measure of the cost of domestically produced goods relative to the costs of goods produced abroad. The level of competitiveness at a given point in time is dependent on the structure and quality of production. An improvement in international price competitiveness takes place when the relative cost of domestic production declines – given that the production structure and quality remain largely unchanged.

Changes in competitiveness can affect demand and output (Boltho, 1996; Romer, 2011). Improved competitiveness will stimulate demand from foreign markets or from domestic markets competing with import. The demand effect may, however, be subject to a lag due to long-term contracts, contracting in foreign currency, etc. (j-curve effect). The demand stimulus from improved competitiveness will increase production in the short term provided sufficient production capacity is available. Conversely, increased costs and/or lower productivity will lead to deterioration of international price competitiveness, which causes domestic production to lose market share at home and abroad and the end result is lower demand and downward pressure on economic growth.

The longer-term effects of changes in competitiveness shock are likely to hinge on the structural functioning of the economy. An improvement in competitiveness may have longer-term effects on output if additional production capacity is installed in anticipation of the increase in demand. Rodrik (2009) notes that several East Asian countries have successfully implemented development strategies that seek to retain a depreciated real exchange rate over long periods of time in order to stimulate export-driven economic growth.

The conception that international competitiveness effects output growth is alluring, but the operationalisation is not straightforward. First, it is an empirical regularity that the price level of a country measured in a common currency broadly follows the income level of the country. This holds whether consumer prices or the GDP deflator are considered. Moreover, as income increases over time, the price level also increases; a regularity which has been labelled the Dynamic Penn Effect (Ravallion, 2010).⁶ This effect has also been found to hold for the 10 EU countries from Central and Eastern Europe (Staehr, 2012). The upshot is that measures of international competitiveness computed as the domestic price level relative to the foreign price level (in common currency) will generally exhibit a positive co-variation with relative income levels. This issue must be addressed in empirical studies in order to avoid biasing the results unduly.

⁶ This tendency of income levels and price levels (in a common currency) to move in parallel is sometimes labelled the *Balassa-Samuelson effect*. This is, however, misleading as the Balassa-Samuelson effect is a *theoretical explanation* of an empirical regularity, the Dynamic Penn Effect. The Balassa-Samuelson effect, incidentally, receives very little empirical support in the case of the CEE countries (Egert, 2008).

Many studies have found that international competitiveness is important for growth performance, but studies generally focus on the medium- and long-term effects. Fagerberg (1988) is an early study regressing output growth on changes in unit labour costs and a number of control variables. The sample consists of 15 industrialised countries and the time sample is 1960-1983. The finding is that changes in unit labour costs affect economic growth, although rather modestly. Razin and Collins (1999) use a large sample of developing and high-income countries and find that moderate, but not extreme, real exchange rate undervaluation, is beneficial to economic growth.

Rodrik (2009) constructs a measure of real exchange misalignment as the actual real exchange rate minus the predicted real exchange rate given the income level. This variable is used as an additional explanatory variable in standard growth regressions and it attains a positive coefficient that is statistically and economically significant. The conclusion is that the real exchange rate is of importance for the long-term growth performance of emerging economies.

Krugman (1994) posits that the focus on international competitiveness is a "dangerous obsession" and argues that policymakers should instead focus on the trend productivity development as the production per capita will eventually determine the resources available. Eichengreen (2007a) discusses the use of the real exchange rate as a policy tool to maintain stable growth. He argues that the lack of compelling theories explaining the links between international competitiveness and economic growth is regrettable as it makes it difficult to assess the policy-relevance of the empirical studies finding such a link.

External capital flows

Capital flows take many forms, including foreign direct investment, portfolio investment, loans, etc. The standard neo-classical theory of international capital flows posits that capital flows from countries with a low return to countries with a high return. Capital import allows a country to expand its production capacity and to bring consumption spending forward in anticipation of higher income in the future. The standard one-sector neo-classical model typically posits that capital inflows have a positive supply effect, occurring with a certain lag (Obstfeld and Rogoff, 1996; Prasad et al. 2007).

The direction of capital flows predicted by standard neo-classical theory is often not supported in empirical studies. Lucas (1990) raises the question why capital in many cases flows from low-income countries with a small capital stock to high-income countries with abundant capital. Kaminsky et al. (2005) find that capital inflows are pro-cyclical, which is not immediately consistent with the neo-classical model. Kim (2000) uses VAR models for four middle-income countries and uses structural decomposition analysis to trace the causes of capital flows. The conclusion is in all cases that external factors, such as world interest rates and foreign business cycles, play a dominant role, while domestic factors are rather unimportant. Calvo et al. (1996) provide a broad discussion based on a sample of emerging market economies and reach similar conclusions. The overall conclusion may be that capital flows in practice are difficult to predict and often exhibit pro-cyclicality or result from external factors.

Notwithstanding the long-term effects, capital flows present a number of macroeconomic adjustment issues in the short term, potentially complicating short-term macroeconomic management. The implied macroeconomic adjustment has been the focus of economic analysis in several directions, the transfer problem, the Dutch disease and foreign aid effectiveness (Cardoso and Dornbusch, 1989; Bosworth and Collins, 1999).

The most straightforward link between international capital flows and short-term economic growth is that capital flows may affect demand such as private consumption, investment and government spending (Obstfeld, 1998; Bosworth and Collins, 1999). We consider cases of capital inflow and capital outflow separately. Inflow of capital increases demand. The increase of demand for traded goods can be met externally, but the increase of demand for non-traded goods can only be met by domestic production. If nominal rigidities are present in the short term, the effect is increased non-traded production, while traded production keeps up. The short-term net effect of capital inflow is a

demand-driven boom in the non-tradable sector.⁷ Outflow of capital reduces demand. This will lead to a lower demand for tradable and non-tradable products, which will harm production in the non-tradable sector in the presence of sluggish adjustment. Calvo (1998) drew attention to sudden stops, where a period of capital inflow is followed by an abrupt stop of a capital inflow or possibly a reversal leading to an outflow. Emerging-market economies appear to be especially prone to sudden stops, frequently followed by very substantial output losses (Edwards, 2004).

The literature on the balance of payments constraint stemming from the 1970s also stressed the importance of external capital flows for economic growth (Thirlwall, 1979; Thirlwall and Hussain, 1982). The main argument was that net export (export minus import) is closely related to the income level in the short term. If income increases, net export drops, potentially leaving a current account deficit. A current account deficit requires, however, that external financing is available. The implication is that the balance of payments constrained income growth, at least in the short term.⁸ This demand-view on the linkage between capital flows and economic growth is also a main component of the Two-Gap Model formulated by Chenery and Strout (1966).

The balance of payments constraint was often circumscribing or even engulfing economic policy in Western European countries in the period until liberalisation of the capital account in the 1970s. Governments were repeatedly forced to implement contractionary policies as current account deficits were difficult to finance and therefore threatened to exhaust foreign currency reserves (Eichengreen, 2007b).

Empirical studies on data from the 1960s and 1970s gave support to the hypothesis that availability of external financing had a substantial impact on economic performance. Thirlwall and Hussain (1982) conclude for instance that: "...it is difficult to believe that the growth process, and constraints on it, can be understood properly in most countries without reference to the balance of payments."

Empirical challenges

The discussion above suggests that it is reasonable to hypothesise that improved price competitiveness as well as net capital inflows stimulate economic growth in the short run. This is essentially the model which will be estimated in Section IV. It is also clear that an empirical implementation of this model poses some challenges.

First, measures of competitiveness and capital inflows are likely endogenous with respect to economic growth. Rapid increases in output may lead to inflation and an appreciating real exchange rate with deteriorating price competitiveness as the result. Economic growth may also increase import demand and lead to a deterioration of the current account balance. Second, competitiveness and capital flows might be mutually interdependent (Calvo et al., 1993; Aherne, 2008; Bakardzhieva et al., 2010). Large capital inflows may lead to an appreciation of the real exchange directly through nominal exchange rate appreciation or indirectly through domestic inflation. Deteriorating competitiveness may also lead to external imbalances. It may, up to a point, be possible to address the endogeneity and multicollinearity issues through the choice of appropriate lag structures and/or instrumentation of the explanatory variables.

III. Sample and data

The empirical analysis is carried out on a panel consisting of the 10 countries from Central and Eastern Europe that joined the EU in 2004 or 2007. The data are annual and the sample generally runs from 1996 to 2010, but sometimes forecasts for 2011 are used in descriptive presentations and in simulations. Missing observations for Bulgaria and Romania imply that the sample generally is

⁷ In the longer term the increased demand for non-traded goods might be met by transferring resources from the traded sector, which will be facilitated by a real appreciation. The academic debates on the *transfer problem*, the *Dutch disease* and foreign aid effectiveness relate to the size and the consequences of such real appreciation following an inflow of resources.

⁸ Other contributions to the literature include *inter alia* McCombie and Thirlwall (1994), McCombie and Thirlwall (1997), McCombie and Roberts (2002), McGregor and Swales (2006) and Moreno-Brid (1998).

unbalanced. All data are downloaded from the web-based database of Eurostat and are current as of 18 April 2012.

The dependent variable is annual percentage output growth, GY. The variable is downloaded from the Eurostat database (classifier: nama_gdp_k). The dataset contains a number of additional variables, of which two are the main explanatory variables, viz. the annual percentage growth in relative unit labour costs, GRULC, and the current account balance as percentage of GDP, CA.

The unit labour cost is used as a proxy for international competitiveness for two reasons. First, the variable is subject of monitoring by the European Commission (as discussed in Section I). Second, the variable is computed as remuneration per time unit divided by production per time unit. The Dynamic Penn effect posits that price and income levels co-vary over time. The division of the remuneration by the production implies that the unit labour cost does not necessarily drift in case of high trend productivity growth.

An index of nominal unit labour cost is downloaded from the Eurostat database (classifier: nama_aux_ulc). For the countries using their own currencies, the index is converted to common European currency units (ECU/EUR) using the annual average exchange rate from the Eurostat database (classifier: ert_bil_eur_a). For the countries participating in the euro area (Estonia, Slovenia, Slovakia), the index is denominated in "euro fixed" units (i.e. the index values prior to the adoption of the euro are converted to EUR/ECU using the irrevocably fixed rate). To ensure comparability across the sample countries, the indices are converted into EUR/EUR terms using the time-varying conversion factors reflecting the exchange rate of the national currency against the EUR/EUR (Eurostat classifier ert_bil_conv_a). The variable GRULC is then calculated as the percentage change in the unit labour cost in the CEE country relative to the unit labour cost in the EA12 euro area. A positive GRULC signifies that the unit labour cost increases faster in the CEE country than in the EA12, and the CEE country is therefore losing competitiveness vis-à-vis the euro area. A negative GRULC indicates improved competitiveness vis-à-vis the euro area.

International capital inflows make resources available for domestic absorption, while outflows remove resources. This makes it logical to use the current account balance as the measure of capital flows in the empirical analysis. The current account balance depicts the difference between production and absorption in a country. In the balance of payment statistics, the current account balance is equal to the sum of the capital account balance, the financial account balance and changes in international reserves.⁹ The financial account is of greater importance as it comprises foreign direct investment, portfolio investment and loans and other debt-related transactions. The CEE countries have often had substantial current account deficits financed by a net capital inflow, and this inflow has typically taken the form of a financial account surplus. The current account balance, CA, as a percentage of GDP is taken from the Eurostat database (classifier: bop_q_gdp).

Beyond the dependent variable and the two main explanatory variables, a number of other variables are occasionally used as control variables or instruments. The variable YPPP denotes the purchasing power parity adjusted per capital income as a percentage of the EU15 average. The source is the Eurostat database (classifier: nama_aux_gph). The Latvian GDP per capita adjusted for purchasing power was 28.1% of the EU15 average in 1996, peaked at 50.5% in 2008 and reached 46.8% in 2010. The variable GYEU15 depicts the average rate of economic growth of the EU15. The source is the database of Eurostat (classifier: nama_gdp_k). Finally, the dataset contains a dummy variable, DUM2009, which is equal to one in 2009 and zero otherwise; the variable equals one in the year in which the fallout of the global financial crisis peaked.

IV. Panel data estimations

The panel data analysis is based on annual data for the 10 new EU members from Central and Eastern Europe with data which generally cover the sample period from 1996 to 2010. The aim is to explain

⁹ A bit confusingly, the capital account is usually of little importance as it only comprises certain types of foreign aid and transactions related to intangible assets.

the dependent variable, economic growth, using measures of external capital flows and international competitiveness as explanatory variables. Early experimentation made it clear that it is infeasible to reach one superior model encompassing all other specifications. Instead the estimation strategy will entail the estimation of a number of models using different samples, variables, estimation methodology etc., in order to attain a broad picture of the effect of the two dependent variables on short-term economic growth in the CEE countries.

The baseline estimation is a relatively parsimonious specification in which economic growth, *GY*, is regressed on the change in relative unit labour cost, *GRULC*, and the current account balance, *CA*. The estimation includes country fixed effects, which control for country-specific factors that do not vary over time. It follows from the discussion in Section II that it is reasonable to assume that the variable enters with a lag, since it will take time before changes in international competitiveness lead to changes in export and import quantities and, hence, output (j-curve effect). It turned out that the estimation results in all cases were better when the variable *GRULC* was lagged two years than if it was lagged one year, so *GRULC* is in all cases entered with a two-year lag.¹⁰ The contemporaneous value of the current account balance should enter in order to capture the short-term demand effect of capital flows.¹¹ This gives rise to a potential endogeneity problem, an issue which will be addressed at the end of the section.

Table 1.1 shows the first set of results using Fixed Effect OLS estimation (FE-OLS). Columns (1.1) and (1.2) show the results when the change in relative unit labour costs and the current account balance are included separately (along with country fixed effects). Column (1.3) shows the baseline estimation with both explanatory variables and country fixed effects. The estimated slope coefficients have small standard errors, attain the expected sign and are of substantial magnitudes. If the unit labour cost increases one percentage point faster than in the EA12 euro area, economic growth is reduced by 0.16 percentage points after a couple of years. An increase by one percentage point in the contemporaneous current account balance as a share of GDP is associated with a reduction of economic growth of slightly less than 0.5 percentage point. These point estimates are broadly in line with those found in Columns (1.1) and (1.2).

Table 1.1: Estimation of economic growth in the CEE

| | (1.1) | (1.2) | (1.3) | (1.4) | (1.5) | (1.6) |
|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| GRULC(-2) | -0.168*** (0.047) | .. | -0.160*** (0.046) | -0.155*** (0.047) | -0.322*** (0.079) | -0.359*** (0.104) |
| CA | .. | -0.472*** (0.119) | -0.482*** (0.108) | -0.453*** (0.091) | -0.562*** (0.142) | -0.480** (0.147) |
| Constant | 4.561*** (0.452) | 1.010 (0.911) | 1.670** (0.802) | 1.816** (0.651) | 2.514 (1.544) | 2.494 (1.611) |
| R² | 0.121 | 0.270 | 0.364 | 0.330 | 0.530 | 0.757 |
| Countries | 10 | 10 | 10 | 10 | 3 | 1 |
| Time | 1998-2011 | 1998-2011 | 1998-2011 | 1998-2011 | 1998-2011 | 1998-2011 |
| Observations | 133 | 140 | 133 | 133 | 42 | 14 |
| Method | FE-OLS | FE-OLS | FE-OLS | OLS | FE-OLS | OLS |

Notes: Robust standard errors are shown in brackets. Superscripts ***, **, * denote that the coefficient estimate is statistically different from 0 at the 1, 5 and 10% level of significance, respectively

¹⁰ An increase in the relative unit labour cost increases, ceteris paribus, the level of the relative unit labour cost in the following periods. It is therefore not unreasonable that economic growth subsequently reacts to the changed level of international competitiveness. Experiments in which (the logarithm of) the *level* of relative unit labour cost was used as an explanatory variable were unsuccessful. The estimated coefficient of the level was usually statistically insignificant and the sign very sensitive to specification changes.

¹¹ Table A1 in Appendix A provides estimations of GDP growth in which different lag structures of the two explanatory variables, *GRULC* and *CA*, are used. It follows that contemporaneous *GRULC* has no explanatory power, while the effect *GRULC*(-1) is negative but estimated imprecisely. The coefficients of the lagged *CA* are positive and statistically significant. The latter result may suggest that changes in the current account, *CA* – *CA*(-1), has explanatory power, an issues which will be pursued below.

The estimated country fixed effects are generally small (with the partial exceptions of Bulgaria and Poland). Column (1.4) shows the results when the baseline model is estimated using OLS without country fixed effects. The estimated slope coefficients remain largely unchanged and the coefficient of determination is only reduced marginally. This suggests that the two explanatory variables explain a very substantial part of the variation in rates of economic growth across the sample countries. Different country performance may to a large extent be explained by different development of competitiveness and capital flows.

The overall results of baseline model (1.3) also apply to samples consisting of subsets of the 10 CEE countries. Column (1.5) shows the results when only the three Baltic countries are included. The slope coefficients retain their statistical significance and actually increase in numerical terms; the coefficient of the two-year lagged growth in relative competitiveness is -0.322 (higher in numerical terms), while the coefficient of the current account balance is -0.562 (essentially unchanged). The upshot is that international price competitiveness matters not only for the whole CEE sample but also, and possibly more, for the Baltic countries. Column (1.6) shows the results, when the reduction of the country numbers is taken to the extreme and the sample includes only Latvia. Surprisingly the results are broadly the same as in model (1.5). The sample in model (1.6) is clearly very small, but the results nevertheless suggest that the drivers of short-term economic growth in Latvia are not fundamentally different from those in the full CEE sample.

Results that in qualitative terms are very similar to those in Table 1.1 can also be attained if the change in the unit labour cost is replaced by the change in the real exchange rate (not shown). This suggests that the specific choice of variable proxying international price competitiveness is of secondary importance.

Table 1.2 shows the results when the time sample is shortened and additional control variables added. Column (2.1) repeats the baseline estimation but shortens the sample to end in 2006 and, thus, excludes the years covering the global financial crisis. The estimated coefficients are substantially smaller in numerical terms, suggesting that the gyrations of the global financial crisis affected the estimated coefficients markedly. This hypothesis is examined further in model (2.2) which uses the full time sample, but includes a dummy variable taking the value one for 2009. The estimated coefficient of the dummy is -10.6, reflecting the severity of the global financial crisis in most of the CEE countries. An arguably better way to account for external economic developments is to include the rate of economic growth in the EU15 as a control variable. The result is shown in Column (2.3). It is noticeable that the estimated coefficient of GYEU15 is more than one; almost all the CEE countries were more severely affected by the global financial crisis than the Western European EU countries. If the coefficient of GYEU15 is restricted to one (not shown), the slope estimates of GRULC(-2) and CA are close to those in Column (2.3).¹²

The conclusion from the sensitivity analyses in Table 1.2 is that the estimated coefficients in the baseline specification in (1.3) may be rather large in numerical terms, in particular the coefficient of the current account balance. Still, when controls for the global financial crisis are included, the coefficients estimates retain their sign, magnitude and statistical significance. It may be argued that the estimates in Columns (1.3) and (2.1) span the likely range of marginal effects, which are reasonable given the available data.

Column (2.4) shows the results when the current account balance is replaced by its change, i.e. CA – CA(-1). The estimated coefficient of the new explanatory variable is -0.794 and it is highly significant. At the outset it might be difficult to discriminate between the baseline estimation in Column (1.3) and the present one. The coefficient of CA – CA(-1) is, however, very sensitive to sample changes and inclusion of additional control variables. It may also lead to unreasonably large contributions from the current account balance during times of large changes in the balance.

Column (2.5) suggests that the lagged growth rate is without explanatory power; there is no persistence left in the rate of GDP growth when changes in the unit labour cost and the current

¹² If the baseline model in Column (1.3) is estimated using time fixed effects in addition to country fixed effects the estimated slope coefficients are very close to those in Columns (2.2) and (2.3).

account balance are taken into account. The lagged income level, YPPP(-1), attains a coefficient estimate that is statistically significant, but its size is unreasonably large (in numerical terms). It is noticeable, however, that the estimated marginal effects remain very similar to those in the model without the lagged income.

Table 1.2: Estimation of economic growth in the CEE, alternative specifications

| | (2.1) | (2.2) | (2.3) | (2.4) | (2.5) | (2.6) |
|----------------------|---------------------|-----------------------|----------------------|----------------------|----------------------|----------------------|
| GRULC(-2) | -0.096** (0.039) | -0.098*** (0.033) | -0.126*** (0.034) | -0.075** (0.034) | -0.160*** (0.046) | -0.167*** (0.042) |
| CA | -0.197** (0.094) | -0.304*** (0.054) | -0.296*** (0.061) | .. | -0.461*** (0.132) | -0.424** (0.090) |
| DUM2009 | .. | -10.598*** (1.442) | .. | .. | .. | .. |
| GYEU15 | .. | .. | 1.422*** (0.186) | .. | .. | .. |
| CA – CA(-1) | .. | .. | .. | -0.794*** (0.101) | .. | .. |
| GY(-1) | .. | .. | .. | .. | 0.036 (0.089) | .. |
| YPPP(-1) | .. | .. | .. | .. | .. | -0.238*** (0.060) |
| Constant | 4.419 (0.765) | 3.252*** (0.420) | 0.313 (0.599) | 4.444*** (0.297) | 1.646** (0.795) | 13.973*** (2.821) |
| R² | 0.447 | 0.664 | 0.661 | 0.569 | 0.365 | 0.474 |
| Countries | 10 | 10 | 10 | 10 | 10 | 10 |
| Time | 1998-2006 | 1998-2011 | 1998-2011 | 1998-2011 | 1998-2011 | 1998-2011 |
| Observations | 83 | 123 | 123 | 123 | 123 | 123 |
| Method | FE-OLS | FE-OLS | FE-OLS | FE-OLS | FE-OLS | FE-OLS |

Notes: Robust standard errors are shown in brackets. Superscripts ***, **, * denote that the coefficient estimate is statistically different from 0 at the 1, 5 and 10% level of significance, respectively

The final issue to be addressed is the possibility of reverse causality. Given the two-year lag of GRULC, the main problem relates to the current account balance, CA, which enters the estimations in contemporaneous form. The discussion in Section 2 suggested that whereas the current account balance might affect economic growth, economic growth might also affect the current account balance.¹³ The use of instrumental variables may facilitate identification of the effect from the current account balance to economic growth, provided good instruments are available. Two different instrumentation schemes will be applied to judge the sensitivity of the results to different sets of instrumental variables. The results are presented in Table 1.3.

Column (3.1) in Table 1.3 shows the results when baseline model (1.3) is estimated using Two-Stage Least Squares in which the current account balance is instrumented. The additional instruments chosen are the one period lagged purchasing power parity adjusted income level of the country and the contemporaneous, the one period lagged and the two period lagged EU15 growth rate. The choice of instruments are guided by studies showing that both external and internal factors play a role for capital movements to CEE countries and other emerging markets (Lipschitz et al., 2002; Kaminsky et al., 2005; Lane and Milesi-Ferretti, 2007; Jevcak et al., 2010).¹⁴ The estimated coefficient of changes

¹³ The direction of causality is not of vital importance for the main finding of this chapter, namely that the availability of external financing has played a major role for economic growth in the CEE countries. Assume for the sake of the argument that the causality goes from economic growth to the current account balance. Rapid economic growth would then lead to current account deficits, but such deficits would need to be financed, i.e. economic growth is subject to a balance of payments constraint (Thirlwall, 1979; Chenery and Strout, 1966).

¹⁴ The results of the first stage estimation of the current account balance were plausible; the coefficient of GRULC(-2) was statistically and economically insignificant, the coefficient of YPPP(-1) was positive and statistically significant, and the coefficients of GY, GY(-1) and GY(-2) were all negative and statistically significant.

in the relative unit labour cost is little changed, but the coefficient of the current account balance has become larger in numerical terms and is relatively large.¹⁵ The exercise nevertheless shows that the negative relationship between the current account balance and economic growth is robust to instrumentation of a potentially endogenous explanatory variable.

Table 1.3: Estimation of economic growth in the CEE, instrumental variable estimation

| | (3.1) | (3.2) | (3.3) | (3.4) |
|----------------------|----------------------|----------------------|----------------------|---------------------|
| GRULC(-2) | -0.156*** (0.044) | -0.094** (0.045) | -0.157*** (0.043) | -0.095** (0.042) |
| CA | -0.740*** (0.149) | -0.503*** (0.156) | -0.711*** (0.132) | -0.361** (0.161) |
| Constant | 0.116 (1.006) | 2.399** (1.083) | 0.294 (0.932) | 3.333*** (1.153) |
| R² | 0.294 | 0.345 | 0.309 | 0.417 |
| Countries | 10 | 10 | 10 | 10 |
| Time | 1998-2011 | 1998-2006 | 1998-2011 | 1998-2006 |
| Observations | 133 | 83 | 133 | 83 |
| Method | FE-IV | FE-IV | FE-IV | FE-IV |

Notes: Robust standard errors are shown in brackets. Superscripts ***, **, * denote that the coefficient estimate is statistically different from 0 at the 1, 5 and 10% level of significance, respectively

Column (3.2) presents the result when the time sample is shortened and ends in 2006 (cf. model (2.1)). The estimated coefficients retain their signs and approximate size, but they become smaller in numerical terms. The same pattern was seen in the OLS estimations. Columns (3.3) and (3.4) show the results when the EU15 growth rates are replaced as instruments by year dummies for each of the sample years. The new set of instruments leads to results that are very close to those in Columns (3.1) and (3.2). Other experiments (not shown) have confirmed that the findings using instrumental variable estimation are qualitatively similar to those attained using OLS and they are not very sensitive to the specific choice of instruments.

The econometric analysis in this section can be summarised as follows. Both capital flows and competitiveness have been important for the short-term output performance of the 10 EU countries from Central and Eastern Europe. Changes in competitiveness as proxied by unit labour costs appear to affect economic growth with a lag of around two years (see also Appendix A). At times capital inflows have made high rates of economic growth possible; at times capital outflows have constrained growth. Overall the results were very robust in qualitative terms, as changes in the number of countries in the sample, additional control variables and the use of instrumental variables estimation did not change the results in pronounced ways. The main exception is that the size (but not the sign or significance level) of the estimated coefficient of the current account balance seems to vary depending on whether or not the global financial crisis is included in the sample. The state or time dependence of the coefficient of the current account balance is a robust finding across different specifications and is likely to reflect that the global financial crisis amounted to a marked and sudden regime change in which relations between macroeconomic variables are prone to change. The different estimates of the slope estimates constitute a complication in the simulations of the impact of different factors on economic growth in Latvia.

V. Economic growth in Latvia 1996-2011

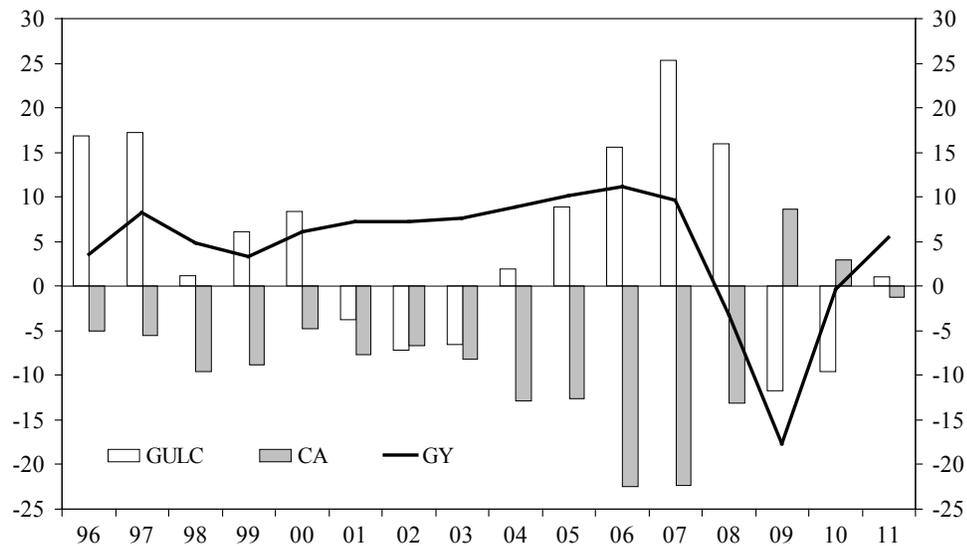
This section seeks to assess the contributions of capital flows and competitiveness to economic growth in Latvia based on the estimation results in Section 4. The methodology is straightforward.

¹⁵ It is somewhat surprising that the instrumentation leads to the increase in the coefficient of the current account balance (in numerical terms). Economic growth might lead to a deterioration of the net trade balance which may be financed through capital inflows. Instrumentation might be expected to remove this effect and, hence, lower the estimated coefficient relative to the result of the OLS estimation.

The slope coefficients from the estimations along with measures of "normal levels" of the change in the relative unit labour cost and the current account balance will be used to compute the contribution of the two variables. The results will form the basis for a broad-based discussion of factors driving growth in Latvia and other countries in Central and Eastern Europe.

Figure 1.2 shows economic growth (GY), growth in relative unit labour costs (GRULC) and the current account balance for Latvia (CA). The extent of fluctuations in all three variables is remarkable; the developments of the first two variables will be discussed in some detail.

Figure 1.2: Growth in relative unit labour cost in per cent (GRULC), current account balance in per cent of GDP (CA), economic growth in per cent (GY), Latvia



Source: author's calculations

The unit labour cost relative to the EU12 euro area increased dramatically in the period 1996-1997, which in part reflects catch-up after the transitional recession. The relative unit labour cost fell significantly or remained stable in the period 2001-2004. The Latvian lats was pegged to the SDR from 1994 and until the end of 2004 and the dollar depreciated in the beginning of this period substantially vis-à-vis the euro and, thus, contributed to the development. Another factor was an upshot in unemployment after the Russian financial crisis, which restrained wage demands.

The relative unit labour cost figuratively exploded during the boom period from 2005-2008, the growth peaked in 2007 at more than 25%. The lats was pegged to the euro from the beginning of 2005 so the development cannot be explained by nominal exchange rate movements. The economic boom, easy access to capital after the membership of the EU and some migration pressure were among factors driving up wages and other production costs (Purfield and Rosenberg, 2010). The crisis led to an improvement in competitiveness in 2009 and 2010.

Turning to capital flows, developments are relatively stable until 2004 with the current account deficit fluctuating in the area of 5-8% of GDP. The deficit dropped somewhat in 2000, in part due to capital flight after the Russian financial crisis. The deficit increased markedly in 2004 in connection with Latvia joining the EU and the world experiencing a savings glut in which capital increasing went to new borrowers (Purfield and Rosenberg, 2010). The deficit increased further in 2006-2007 and reached levels above 22% of GDP. The capital flows reserved in the course of 2008 as Latvia experienced a sudden stop after the outbreak of the global financial crisis. The current account exhibited a substantial surplus in 2009, but the surplus was reduced markedly in 2010 and turned into a small deficit in 2011.

The econometric analysis in Section IV showed that both capital flows and competitiveness have played an important role in the short-term output performance of the 10 EU countries from Central and Eastern Europe. Two issues must be addressed when the estimation results can be used for simulations of the contribution of changes in unit labour costs and the current account balance to economic growth in Latvia.

First, the results were robust in qualitative terms, but the quantitative estimates varied somewhat across different specifications, in particular depending on whether or not the global financial crisis was included in the sample. We address this issue by producing two different simulation scenarios based on different values of the marginal effects. Scenario 1 adopts the coefficients of baseline estimation (1.3); the marginal effect of GRULC(-2) is -0.160 and the marginal effect of CA is -0.482. Scenario 2 is based on estimation (2.3) which controls for demand effects from Western Europe; the marginal effect of GRULC(-2) is -0.126 and the marginal effect of CA is -0.296.

Second, in order to compute the contributions of changes in the relative unit labour cost and of the current account balance, it is necessary to establish "normal" levels of the two variables, i.e. levels at which their contributions are zero. The straightforward choice is to choose the average values of the two variables for Latvia. In the estimation sample, the average value of the change in the relative unit labour cost is 6.3% (1996-2009) and the average value of the current account balance is -8.5% of GDP (1998-2011). This parameterisation is labelled (a) and is used in two simulations. The average values are, however, rather extreme and may not reflect "normal" long-term levels from which the actual values deviate. In other simulations, it is therefore assumed that the "normal" change in the relative unit labour cost is 3% and the "normal" value of the current account balance is -4% of GDP.¹⁶ (The assumed "normal" current account deficit is still large in comparison with the experience of Western European countries when they rebuilt their economies after World War II.) This parameterisation is labelled (b).

Figure 1.3a shows the contributions in Scenario 1 with "normal" parameterisation (a), i.e. when the "normal" values are taken to equal the averages for Latvia during the estimation period. The contributions are the results of the deviation of the change in the relative unit labour cost and the current account balance from their assumed "normal" values. In this simulation, the current account balance plays a major role, which is reasonable given the numerically large slope coefficient used in the simulation.

The peak of the boom in 2006-2007 coincided with large contributions from capital inflows, while the recession in 2009-2010 conversely coincided with large contributions from capital outflows. Competitiveness nevertheless played an important role. In 2004-2005, during the early stages of the Latvian boom, improvements in competitiveness helped increase growth and, thus, indirectly contributed to the optimism surrounding the economy after accession to the European Union (Purfield and Rosenberg, 2010). The deterioration of international competitiveness during the boom period subsequently contributed negatively to GDP growth in 2009-2010, likely by a couple of percentage points in 2009.

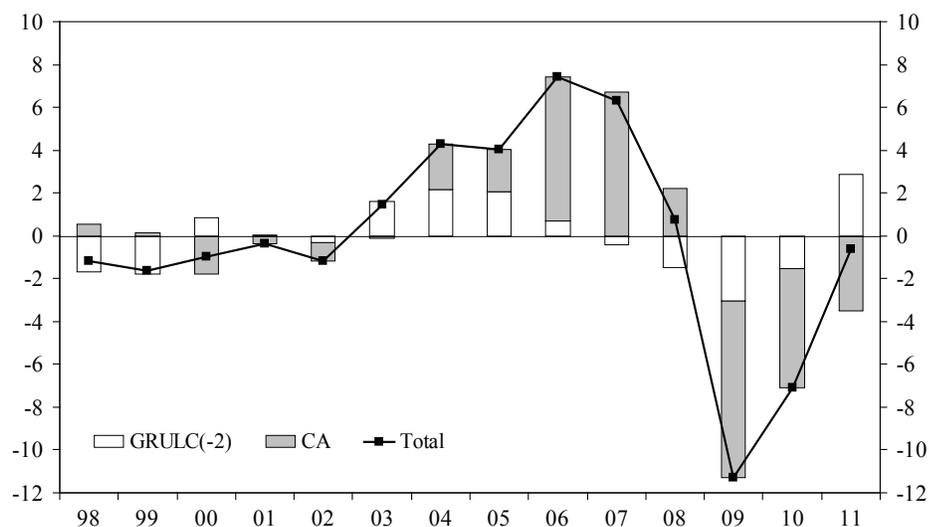
For 2011 the two counter-acting forces were at play. Competitiveness improved markedly during the recession in 2009-2010 and this contributed to higher economic growth (Purfield and Rosenberg, 2010). On the other hand, capital outflow had the opposite effect on economic growth, largely neutralising the effect of the improved competitiveness.

Figure 1.3b presents the contributions when the slope coefficients of Scenario 1 are retained, but the "normal" values of the variables are assumed to be less extreme than their averages in the estimation period. The contribution of capital inflows during the boom is somewhat larger, while their contribution during the recession is correspondingly smaller. The overall picture of the drivers of growth in Latvia during the period 1998-2011 is, however, relatively unchanged.

¹⁶ The Macroeconomic Imbalance Procedure of the EU posits a threshold of the three-year backward moving average of the current account balance of -4% of GDP (European Commission, 2012a).

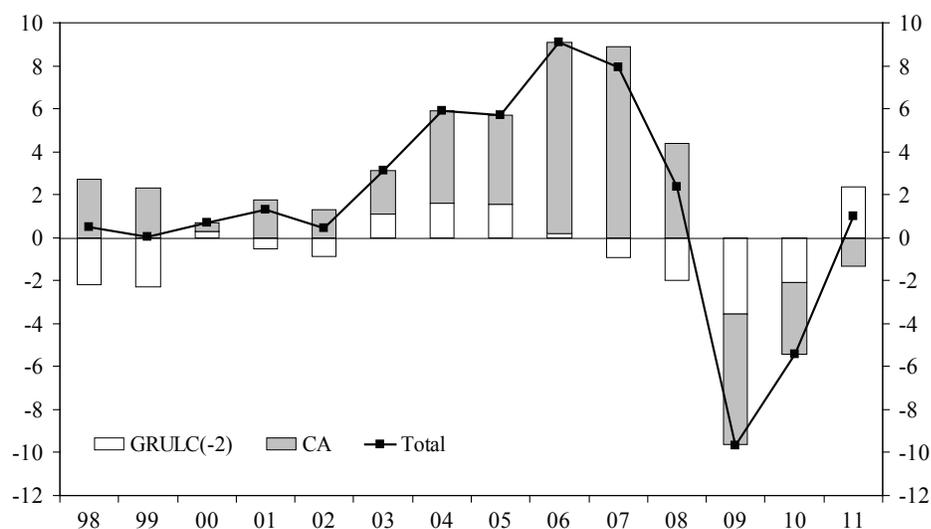
Figures 1.4a and 1.4b show the simulation results according to Scenario 2, where the slope coefficients from model (2.3) are used. Figure 4a uses assumption (a) that the "normal" values of the variables are equal to their means in the estimation sample. The findings from Figures 1.3a and 1.3b are largely retained, but the contributions from the current account balance are now smaller. Still, the extreme capital inflows in 2006-2007 appear to have contributed by around 5 percentage points to economic growth each year. Capital outflows and weakened competitiveness can explain much of the downturn in 2009 and 2010. The counter-acting forces of improved competitiveness and continued capital outflow are apparent for 2011. Finally, Figure 1.4b provides the results when the "normal" values of the focus variables are assumed to be 3% and -4% of GDP, respectively. All main conclusions remain.

Figure 1.3a: Simulation of contributions to economic growth in Latvia, Scenario 1 (a)



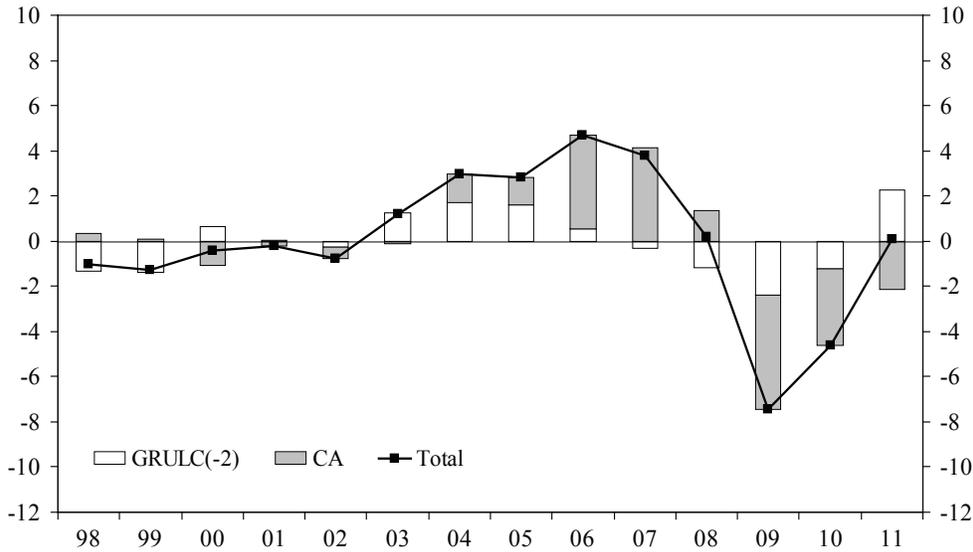
Source: author's calculations. Notes: Simulations based on the following assumptions: Coefficient of GRULC(-2) = -0.160, coefficient of CA = -0.482, "normal" value of GRULC(-2) = 6.3%, "normal" value of CA = -8.5% of GDP

Figure 1.3b: Simulation of contributions to economic growth in Latvia, Scenario 1 (b)



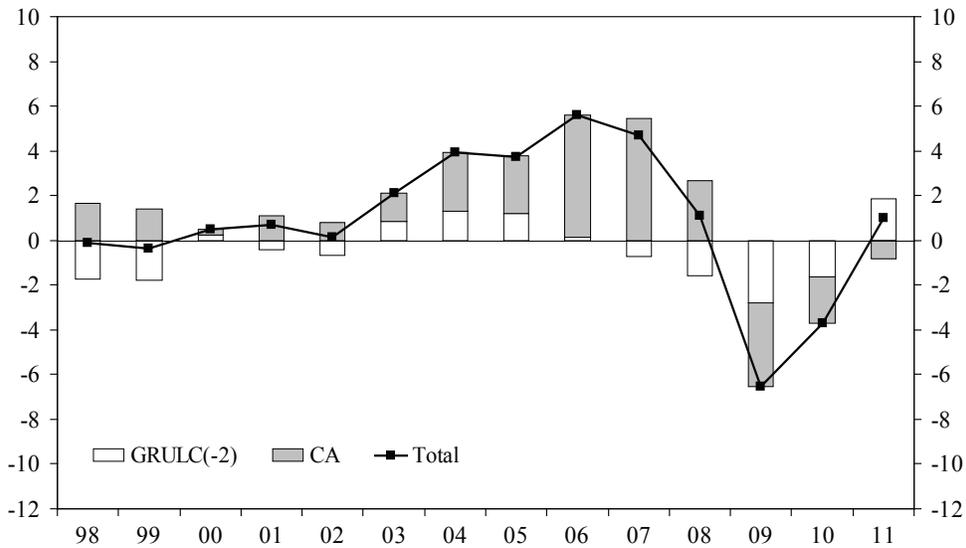
Source: author's calculations. Notes: Simulations based on the following assumptions: Coefficient of GRULC(-2) = -0.160, coefficient of CA = -0.482, "normal" value of GRULC(-2) = 3%, "normal" value of CA = -4% of GDP

Figure 1.4a: Simulation of contributions to economic growth in Latvia, Scenario 2(a)



Source: author's calculations. Notes: Simulations based on the following assumptions: Coefficient of GRULC(-2) = -0.126, coefficient of CA = -0.296, "normal" value of GRULC(-2) = 6.3%, "normal" value of CA = -8.5% of GDP

Figure 1.4b: Simulation of contributions to economic growth in Latvia, Scenario 2(b)



Source: author's calculations. Notes: Simulations based on the following assumptions: Coefficient of GRULC(-2) = -0.126, coefficient of CA = -0.296, "normal" value of GRULC(-2) = 3%, "normal" value of CA = -4% of GDP

The simulation results presented in Figures 1.3-1.4 provide additional insights into the impact of international competitiveness and external capital flows on growth performance in Latvia during the period 1998-2011. In spite of some differences across the simulations, the overall picture is relatively clear. Changes in international competitiveness and capital flows seem to have played rather modest roles until around 2003. In 2004-2005 the Latvian economy was blessed by higher growth stemming from a combination of improved competitiveness and increasing capital inflows. This strong performance set off two years of frenzied capital inflows, which only came to an end with the

outbreak of the global financial crisis. Thus, the relatively "balanced" economic performance in 2004-2005 was replaced by extreme current account deficits and exploding relative unit labour costs in 2006-2007.

The global financial crisis unfolded in the second half of 2008 and massive capital outflow in combination with the hangover from increases in the relative unit labour cost of the previous years were major contributors to the downturn in 2009-2010. Latvia is clearly a paramount example of a country experiencing a sudden stop (Calvo, 1998; Purfield and Rosenberg, 2010). It is also clear that the growth reversion was larger than what can be explained by international capital flows. Weak international competitiveness was one factor which pulled down GDP growth in 2009-2010, but other factors, such as a rapid drop in export demand and financial instability, affected Latvia adversely from the autumn 2008.

The relatively benign growth performance in 2011 appears in part to result from two counter-acting contributions, viz. a positive and substantial contribution the improved competitiveness attained during the crisis and a negative contribution from continued capital outflow. The continued capital outflow was clearly restraining post-crisis recovery in Latvia.

VI. Concluding remarks

This chapter has considered the impact of external capital flows and international price competitiveness on economic growth in Latvia since the end of the 1990s. The analysis was built on (short-term) growth regression on a sample of EU countries from Central and Eastern Europe. The econometric analysis suggested that both capital flows and competitiveness have played important roles in the short-term output performance of the 10 EU countries from Central and Eastern Europe. Changes in relative unit labour costs appear to affect economic growth with a lag of two years and the estimated marginal effect is between -0.2 and -0.1. The current account balance enters contemporaneously and the estimated marginal effect is between -0.5 and -0.2. The results are fairly robust, but the global financial crisis appears to have strengthened the effects of the competitiveness variable and, particularly, the capital flow variable.

The estimated country fixed effects are generally small and the slope estimates change only marginally if they are removed. This suggests that most of the differences in growth performance across the 10 CEE countries during since 1998 may be attributed to differences in competitiveness and capital flows. This may be a reasonable conclusion as the countries entered the 1990s with a rather similar economic structure, undertook transition reforms and subsequently changed their legal and institutional systems to adhere to the *acquis communautaire*.

Another tentative result is that the marginal effects of changes in the relative unit labour cost and the current account balance are higher for the Baltic countries than for the whole sample of 10 CEE countries. This may suggest that the very large fluctuations in output growth in the Baltic countries stem not only from large fluctuations in capital flows and competitiveness, but also a larger sensitivity of economic growth to such changes. The underlying reasons for this finding cannot be ascertained within the present empirical framework, but the small size of the economies might be a contributing factor.

Simulations sought to ascertain the impact of capital flows and changes in competitiveness on economic growth in Latvia. The simulations were based on the coefficients from two different estimations and also assumed different value for the equilibrium or "normal" values of the two variables. The simulations showed that the boom period, which started immediately before Latvia joined the European Union in 2004 and lasted until the after global financial crisis four years later, can be divided into two sub-periods. Improved competitiveness and capital inflows stimulated growth during the first two years of the boom, but extreme capital inflows subsequently became the sole driver. The downturn which started in 2008 as the global financial crisis hit Latvia was in large part driven by a massive capital outflow, but the deterioration in competitiveness during the later stages of the boom also contributed to lower GDP growth in 2009-2010. Improved competitiveness helped increased growth in 2011, but the continued (albeit modest) capital outflow had the opposite effect.

It is noticeable that the current account balance has generally played a larger role in short-term changes in economic growth than changes in competitiveness. This illustrates the vulnerability of the Latvian economy to changes in capital flows. Capital inflows might stimulate growth and raise the growth rate above levels otherwise achievable, but outflows may also have severe contractionary effects. It is unfortunately not possible to provide a precise point estimate of the marginal effect due to uncertainty regarding the model specification. The simulations also reveal, however, that changes in cost competitiveness have the potential to affect short-term growth in Latvia.

The immediate policy implication of the estimations and simulations in this chapter is connected with the great importance of capital flows and competitiveness on economic performance in Latvia. Capital inflows played a major role for the post-accession boom, but also for the succeeding crisis. Changes in international competitiveness have also affected economic growth substantially at different times. In a nutshell these results summarise the challenges of a small open economy in a world economy, which changes rapidly and exhibits phases of euphoria and gloom.

This vulnerability suggests that policymakers should monitor developments on financial markets carefully, in particular the current account balance. It may also be possible to take measures that would help reduce excessive fluctuations in capital flows, in part by measures meant to affect the domestic demand for credit. It may, in a similar vein, be useful to monitor the relative unit labour cost carefully and possibly to take measures in case the variable deviates markedly from its trend path. Such a scheme of more active monitoring and adjustment is at the heart of the Pact for the euro adopted by the EU in 2011 (European Council, 2011).

At a deeper level, this chapter casts some doubt on the standard "neoclassical growth model" adopted by all the CEE countries, at least as part of their preparations of EU membership. The model posits that the liberalisation of financial markets will lead capital to flow to the countries with capital scarcity and therefore high returns to investment. The additional investment financed by capital inflows increases growth rates. The developments until 2007 largely confirmed the model as the CEE region experienced substantial capital inflows (Lipschitz et al., 2002; Lane and Milesi-Ferretti, 2007; Shelburne, 2009). The events during and after the global financial crisis showed, however, that capital flows can be erratic and highly dependent on developments outside the CEE countries. The doubts have two anchor points.

First, empirical research has shown that fast-growing emerging market economies, especially in Asia, often experience a pattern in which the rate of economic growth is positively correlated with the current account balance (Prasad et al., 2007). In this group of countries, current account surpluses are typically associated with high rates of growth. This arguably reflects that the countries pursue an economic model based on export-led growth and the results have generally been encouraging (Rodrik, 2009).

Second, the vulnerabilities of the CEE countries have led scholars and policy-advisors to rethink economic and structural policies for the region (Fabrizio et al., 2009; Atoyán, 2010; Ghosh et al., 2011). The objective is to reduce the vulnerability to external shocks while sustaining high trend growth. Typical policy recommendations include new rounds of deeper and more "qualitative" reforms within education, justice, etc., but there are also calls for measures to reduce the degree of financial integration and increase domestic saving (Fabrizio et al., 2009; Atoyán, 2010).

The main contribution of this chapter was the estimation of simple regressions, which allowed a quantification of the effect of external capital flows and international competitiveness on (short-term) economic growth. The novelty of the exercise and the problems differentiating between different empirical models imply that the quantitative results should be interpreted with some caution.

Further work may provide additional insights. First, it may be useful to include additional control variables in the regressions. One possibility might be the rate of partner growth, i.e. the rate of GDP growth of the trading partners weighted by their share of the trade of the individual CEE country (Blanchard et al., 2010). The addition of more control variables is constrained by the relatively small sample size and the need to avoid over-parameterisation of the estimations. Second, it might be worthwhile using quarterly data in order to gain additional data points. Some preliminary work along

this line has suggested, however, that the additional noise of quarterly data may outweigh the benefits of more degrees of freedom.

Third, it might be useful to distinguish between different types of capital flows, for instance foreign direct investment flows, portfolio flows and flows from loans etc. It may also be useful to consider in detail the allocation of capital flows within the country as, for instance, increased lending to households may affect the economy differently from increased lending to the enterprise sector. Although potentially very important, such decomposition exercises are complex both in conceptual terms and in practical terms. Fourth, simultaneous modelling of economic growth, external capital flows and international competitiveness may provide additional knowledge on the linkages between the three variables. Some preliminary work suggests that the modelling of capital flows, in particular, is a difficult exercise, which may, however, be an additional argument for pursuing this direction of research in future work.

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Appendix A

Table 1.A1. Estimation of economic growth in the CEE, different lag structures of explanatory variables

| | (A1.1) | (A1.2) | (A1.3) | (A1.4) | (A1.5) | (A1.6) |
|----------------------|----------------------|----------------------|----------------------|---------------------|---------------------|----------------------|
| GRULC | 0.014 (0.022) | .. | -0.036 (0.036) | .. | .. | .. |
| GRULC(-1) | .. | -0.098 (0.068) | -0.114** (0.057) | .. | .. | .. |
| GRULC(-2) | .. | .. | -0.144*** (0.036) | -0.162** (0.078) | -0.092* (0.052) | -0.070** (0.028) |
| CA | -0.460*** (0.101) | -0.514*** (0.114) | -0.553*** (0.140) | .. | .. | -0.806*** (0.102) |
| CA(-1) | .. | .. | .. | 0.064 (0.051) | .. | 0.525*** (0.102) |
| CA(-2) | .. | .. | .. | .. | 0.446*** (0.067) | 0.191** (0.075) |
| Constant | 1.227** (0.549) | 1.324** (0.614) | 1.677** (0.766) | 4.938*** (0.287) | 7.184*** (0.378) | 3.922** (0.321) |
| R² | 0.275 | 0.303 | 0.401 | 0.124 | 0.261 | 0.619 |
| Countries | 10 | 10 | 10 | 10 | 10 | 10 |
| Time | 1998-2011 | 1998-2011 | 1998-2011 | 1998-2011 | 1998-2011 | 1998-2011 |
| Observations | 153 | 153 | 153 | 153 | 153 | 153 |
| Method | FE-OLS | FE-OLS | FE-OLS | FE-OLS | FE-OLS | FE-OLS |

Notes: Robust standard errors are shown in brackets. Superscripts ***, **, * denote that the coefficient estimate is statistically different from 0 at the 1, 5 and 10% level of significance, respectively