The Measurement of Capital Flight and Its Impact on long-term Economic Growth: Empirical Evidence from a cross-section of Countries.

Master Thesis

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The Measurement of Capital Flight and Its Impact on long-term Economic Growth: Empirical Evidence from a cross-section of Countries.

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I declare this thesis was written on my own, with the only help provided by my supervisor and the referred-to literature.

I would like to express special thanks to my supervisor Dr. Menbere Workie Tiruneh, PhD. for all of the support and guidance he offered throughout the elaboration of this thesis. I would also like to thank my friend, Mikuláš Praščák, for I would surely be struggling with LaTeX at times without the advice he offered.

Abstract

Even though unobservable, capital flight still remains prevalent in many, especially developing, countries. This thesis aims at identifying the phenomenon of capital flight and its impact on long-term economic growth. Employing various methodologies, magnitudes of capital flight are estimated for a set of 75 countries and obtained estimates are analyzed. Second part of the thesis is dedicated to construction of empirical model. For this purpose we use Solow-Swan growth model as a starting point, but then control for other important variables as well. We perform a pooled cross-section analysis based on the fixed effects model estimated by feasible generalized least squares method and present the results. The results suggest that countries with higher capital flight to GDP ratio have experienced slower growth of GDP per capita, with poorer countries being punished more by the phenomenon.

Key words: capital flight, economic growth, pooled cross-section analysis

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Chapter 1

Introduction

"Why is it when an American puts money abroad it is called ***Foreign Investment*** *and when an Argentinian does the same it is called* ***Capital Flight****? Why is it when an American company puts 30 percent of its equity abroad it is called* ***Strategic Diversification*** *and when Bolivian businessman puts only 4 percent abroad it is called* ***Lack of Confidence****?"*
Source: [1]

In the time of the debt crisis in late 1970's and early 1980's a big attention was dedicated to the studies of the outflows of resident capital responding to the impact of unhealthy domestic policies and political instability. Plaguing many developing countries, this phenomenon, termed *capital flight*, happened to be one of the heated issues of the time. It was often considered to be a reasonably good indicator of the investment climate of a given country and also an indicator of the faith that domestic residents had in their economic system. We find in [10] that many are of the opinion, that when a capital flight is observed in a country with high indebtedness and poor economic performance its possibilities of development are gravely constrained. It was observed that in early 1980's, many countries that had a problem in servicing their external debt were also experiencing capital flight. Thus, capital flight measures could be viewed as crucial indicators of country's ability to repay

an international debt (for further reference on empirics on the growth-debt relationship see for example [1], [10] and [18] among others). Therefore, when capital flight numbers were high, international bank community could regard it as a warning of the possible risks; cautioning community not to lend any further to a flight burdened country.

As the world got over the worst of the debt crises, problems diminished and countries began a stabilization process. Consequently, there was no further need for such an extensive form of foreign lending to developing countries, which led to the lessening of a widespread interest in capital flight phenomenon. However, as we will explain later, this positive situation lasted only several years.[1]

In the era after the debt crisis of 1980's many of previously indebted and flight influenced countries were relieved by the emerging and development of new markets. The common feature of these markets was a possibility of high-return; as well as high risk; investment. It is believed that the relief from capital flight in many of these countries was not primarily driven by domestic reforms but was a reflection of temporary improvement of economic and political situation as well as a reflection of emerging markets attributes that allowed many investment opportunities. Big share of the investment in these markets was also caused by domestic investors reversing capital flight.

Indeed, events that occurred after relatively peaceful period confirmed the fears of those who argued that the relief might be only temporary. In 1994, Mexico went through such political and economic events, which led to serious devaluation of peso and investors; both domestic and international; reduced their investment in Mexico and other emerging markets. This led to

[1]It might be interesting to remark that towards the end of 1980's many of the countries previously burdened by the capital flight began to enjoy capital inflows of considerable magnitude.

the reoccurrence of capital flight.

Despite the lack of attention paid to the capital flight after the late 1980's, it undoubtedly still remains a serious problem in a number of developing/transitive economies. In the past years, interest in capital flight has slightly increased and there is yet again a strand of literature dedicated to this problem, focusing mainly on case studies of flight burdened countries.[2] In many of these countries, capital flight is taking away a substantial part of resources which could be otherwise used for reversing unwanted economic abnormalities[3] and financing economic growth. It is evident that capital flight is not a solved problem and still remains an important issue of nowadays.

We have already said that capital flight is a response to the unhealthy domestic policies and political instability of a given country but in truth, the term is not clearly defined by the economic theory. Various estimates can be obtained using different concepts because there is no agreement on which flows of capital should be included in the capital flight and which not. A short survey of definitions used in literature on capital flight is presented in Chapter 2 as well as a survey of main methods used to measure capital flight.

In this thesis we estimate values of capital flight for a set of 75 countries[4]

[2]In 1994-1995, Mexico and some Latin American countries experienced the Tequila crisis, in 1997-1998 several Asian countries experienced deep financial and economic crises. These were followed by crises in Russia (1998) and in Brazil (1999). All of the mentioned crises contributed to large outflows of capital from these countries and brought back attention to the phenomenon of capital flight.

[3]E.g. high indebtedness, foreign exchange shortages, high unemployment rates, high poverty rates over long periods of time etc.

[4]We produce capital flight estimates for four sets of countries - East European + Central Asia countries (EECA), Asian countries, Latin American countries and African countries during the period of 1991-2001. However, the final list of countries used for the analysis and also the time period will depend on the data availability. Detailed list of countries as well as capital flight estimates for all of available countries can be found in Appendix A

employing various methods to measure the phenomenon. Also, we analyze obtained estimates and choose two preferred measures (with corresponding sets of values) to be used throughout the rest of the thesis. This empirical study specifically attempts to examine the relationship between capital flight and long-run economic growth for the given set of countries. Taking into consideration the nature of the phenomenon, we are expecting to find a negative relationship between the flight and economic growth and are curious to see the extent to which they are correlated.

The empirical model of long-run economic growth is constructed with respect to principles often found in the literature on economic growth. The Solow-Swan growth model is used as a starting point, but at the end, we are controlling for other important long-run determinants of growth. Before we actually present the model and estimations, we provide a theoretical framework. The workings of the basic and modified Solow-Swan growth model allowing for technological progress are discussed. We also provide a short survey of literature on economic growth, describe data and sample and present a model. Finally, we present the results and suggest policy implications.

Contribution of this thesis is the estimation of magnitudes of capital flight for a specific set of countries and period of time employing various concepts. To our knowledge, there are no estimates for such a data set available at the moment and it is our hope to fill this gap. Our work is also one of the first to link capital flight with the concept of long-run economic growth. Previous empirical works on capital flight concentrated on finding determinants of the phenomenon instead of studying its impact on the economy. We present first estimates here and plan to continue in our research since this problem is clearly worth of further investigation.

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and Appendix B.

The thesis is organized as follows. Chapter 2 provides a short survey of definitions found in literature on capital flight and a survey of main methods used to measure capital flight. We adopt measures to be used and present our estimations. In Chapter 3 theoretical framework behind the economic growth is presented. Chapter 4 is dedicated to the empirical study of relationship between capital flight and economic growth for a given set of countries. We present a brief summary of empirics on long-run economic growth and what little could be found concerning the impact of capital flight on economic growth. We describe our data set and justify the choice of dependent variables used in the model. Finally we present the results, conclude and suggest a list of policy implications for the results.

Chapter 2

Capital Flight

"Capital flight still remains a serious problem in a number of countries. The most pronounced concern among policymakers, researchers and the key stakeholders in economic development is that in most developing countries which are riddled with heavy debt burdens, foreign exchange shortages, transient and chronic poverty, capital flight amounts to a substantial proportion of the very resources which are essential for financing economic growth and reversing the perverse economic trends."
Source: [12]

Since the term *capital flight* is not clearly defined by economic theory, short characteristics of the term is needed before we can move any further. At the beginning, it is crucial to understand the difference between one and two-way flows of capital and their determinants. We will also discuss the distinctions between true and intermediate capital flight.[1] This will help us to understand the principles of various definitions of capital flight found in the literature and also help us grasp why such differences in magnitudes of capital flight can be found in various studies.

This Chapter is organized as follows. First, we discuss the difference

[1]We adopt the distinction from [1].

between true and intermediate capital flight. Consequently, ways of financing capital flight are examined. After we have done this, we are ready to present a set of definitions found in the literature and measures derived from them. We embrace four capital flight measures and employ them to obtain capital flight estimates for a given set of countries[2] Finally, we present and analyze the estimates.

2.1 The Theory behind Capital Flight

2.1.1 True vs. Intermediate Capital Flight

It is important to begin with an explanation of the difference between true and intermediate capital flight so we can understand why employing different definitions produces different outcomes.

This difference is in [1] explained as follows:

> True capital flight is defined as a one-way flow of capital out of a country, while intermediate capital flight is characterized as two-way flows of capital, both into as well as out of country. Although the determinants of international capital flows provide an explanation for both one-way and two-way flows, the question remains as how these normal flows are distinguishable from flight motivated flows.

In Table 2.1 we provide a survey of determinants of both one-way and two-way international capital flows. The flows that arise due to the fact that there are various economic risks and returns in different countries are the so-called *normal* capital outflows. These we can find in the upper part of the table and they represent mainly differences in risk-adjusted returns across countries. The bottom part of the table summarizes the factors which arise due to government intervention. These are the *flight motivated* flows.

[2].

	One-way flows	Two-way flows
Economic risks and returns	• Natural resource endowments • Terms of trade • Technological changes • Demographic shifts • General economic management	• Differences in absolute riskiness of economies • Low correlation of risky outcomes across countries • Differences in investor risk preferences
Financial risks and returns, relative to economic risks and returns	• Taxes(Deviations from world levels) • Inflation • Default on government obligations • Financial repression • Taxes on financial intermediation • Political instability, potential confiscation	• Differences in taxes and their incidence between residents and nonresidents • Differences in nature and incidence of country risk • Asymmetric application of guarantees • Different interest ceilings to residents and nonresidents • Different access to foreign exchange denominated claims

Table 2.1: Factors Explaining International Capital Flows.Source: [1].

To summarize the table in terms of intermediate and true capital flight, we identify one-way flows resulting due to factors from the bottom part of the table as a true capital flight. On the other hand, bottom right-hand quadrant factors lead to asymmetric risks and generate two-way flows to arbitrage a yield differential. These flows are intermediate capital flight.

2.1.2 Sources of Financing Capital Flight

Capital outflows into acquirement of assets held abroad can be financed by various sources. For the purposes in hand, they can be divided into two groups. First, domestic savings can leave the country by the means of export and sale of valuables. This channel can be controlled by foreign exchange control, but even if foreign exchange control is employed, there are still ways how a capital can flee, e.g. illegally, through smuggling of goods or by underinvoicing of exports or overinvoicing of imports. Second, various types of countervailing inflows can also finance capital outflows. These countervailing inflows can take forms of government or other sector borrowing, loss of foreign exchange reserves, depreciation of currency and restrictive monetary policy. At the moment, foreign borrowing is considered to be the main source to finance capital outflows from developing countries.

2.2 Defining Capital Flight

The main problem when measuring capital flight is that there is no consensus on the definition of the phenomenon. It has been agreed, that the phenomenon is a response to political and economic uncertainty, but there is no further consensus. Some prefer to equal capital flight with all outflows of capital whereas others argue that it is only a subset of all outflows. Therefore, there are two categories of definitions of the term - those, that distinguish between flight motivated flows and normal flows of capital and those, that do not. There is a lot of definitions and concepts which can be found in the literature but to suit our needs, it is sufficient to limit ourselves to three most often used definitions. We therefore limit ourselves to the same set of definitions as does Schneider in [10]. We present selected definitions and their most characteristic features below.

2.2.1 Broad Definition of Capital Flight

The main idea behind this definition is that capital flight is considered to consist of all outflows of resident capital which, if invested in domestic economy, would yield a higher rate of social return. However, this definition, linking capital flight to lowering of national utility, has a serious drawback. Since it includes all reported and unreported increases in foreign assets of both sectors, domestic and public, it is a very broad measure and is believed to overestimate a real magnitude of the phenomenon. Despite this, it is still widely used mostly due to its simplicity. Because of the fact that broad measure overestimates capital flight phenomenon, some authors prefer a modified version of the definition - a narrow definition of capital flight. This definitions, often termed *hot money definition*, allows only for short-term capital movements to be considered as capital flight.

In [1] authors argue that linking the definition of capital flight to a notion of national welfare might not be the soundest idea. Not only there is a lot of subjectivity involved, this linkage is also contradictory in a way. The inconsistency lies in the fact that economic theory assumes that utility and profit maximizing behavior leads to a maximum welfare whereas when considering capital flight maximization of utility might lead to a lowering of welfare which is opposing to previous assumption.

2.2.2 Capital Flight - A Response to Discriminatory Treatment of Domestic Capital

While the first definition considered only one-way flows and represented true capital flight, this definition tries to capture two-way flows of capital and also to distinguish between the normal and flight motivated outflows. In that it is superior to the previous definition. In [10] Schneider argues that capital movements can occur in response to perceived changes and uncertainties which are not always captured by the portfolio theory and summarizes this

definition as:

> Capital flight is a subset of international asset deployments or portfolio adjustments undertaken in response to an unusual perceived deterioration in risk/return profile associated with assets located in a particular country that occur in presence of conflict between the interests of asset holders and governments. Two-way flows of capital occur because of the differential impact on domestic and foreign investors arising from asymmetries in information, risk, return and the impact of political risk.

Capital flight, defined as above, has many advantages. Not only it allows for the inflows of capital, but also they may be financing the flight. This two-way flows occur to arbitrage a yield or risk differential. Asymmetries can arise due to various reasons but they always result in discriminatory treatment of domestic capital.[3]

2.2.3 Capital Flight - an Illegal Transaction

When people, that have never heard about the capital flight before, are asked to express their notion of the term, they often assume that some sort of illegal transaction must be involved. In fact, this is really true for the definition we are to present now. The definition we lay out here can be found both in [1] and [10].

> Capital flight is often defined as an illegal transaction which occurs when traders keep capital abroad by the falsification of trade documents. Capital flight can be transacted by deliberately underinvoicing exports and/or overinvoicing imports.

[3] Asymmetries arise because of different taxation of domestic/foreign investment, due to different ability of investors to bear economic/political risks and also because of the different information that domestic/foreign investors have.

This kind of capital flight can be detected by comparing partner country trade statistics as was done in several studies.

It is important to note that capital flight defined as above occurs only when traders are transferring illegally earned foreign exchange abroad with the desire to avoid domestic market. A serious drawback of this definition is that, due to the calculation mechanism, transfers may include earnings kept abroad to evade quotas and tariffs, as well as earnings from smuggling and criminal activities that should not be included otherwise. Nevertheless, it can still be considered a good indicator of illegal concept of capital flight.

The question though is whether we can confine capital flight only to illegal transactions? Will it not mean that by employing such definition we will be underestimating actual capital flight? In reality, there is evidence that capital flight as an illegal transaction should be considered as a subset of total capital flight and should be added to the magnitude of capital flight obtained by different definition. It is important to note that this part of capital flight cannot be obtained by employing any other definition/measure and therefore has to be always measured separately.[4]

2.3 Measuring Capital Flight

As we have already said, there is a variety of definitions of capital flight which is resulting in even more capital flight measures that can be employed to obtain capital flight estimates. Obviously, employing different definitions results in differences in obtained magnitudes of capital flight.

Before we move any further, I would like to grasp the opportunity to present a remark made by the authors of [1]. I suggest we keep this in mind

[4]Another disadvantage of this definition is that the data needed for the calculation are difficult to come by and the procedure is time consuming.

throughout the rest of the thesis.

> Attempts to measure the magnitude of capital flight can at best only serve as an indicator of the actual amount. This is due to the problems associated with identifying the phenomenon. Capital can flee through channels which, one can safely assume, will not be reported to authorities who compile balance of payments statistics. Estimates of the scale of capital flight also vary with the type of definition employed. Furthermore, the data problems for its estimation also pose an additional constraint.

In the following sections we provide a short survey of capital flight measures that have been employed by other authors in their studies. The common feature of all estimating procedures of capital flight from developing countries is the framework starting with the data from balance of payments statistics[5].

2.3.1 Broad Measure of Capital Flight

This measure uses balance of payments statistics to provide a link between the increase in gross external debt and the portfolio and spending decisions of the economy. It measures capital flight indirectly by comparing the sources of capital flowing into the country on the one hand (i.e. net increases in foreign indebtedness and net inflows of foreign direct investment) with the uses of finance on the other (i.e. current account deficit, building up of official foreign reserves, private outflows of capital). Since the balance of payments statistics is not able to capture the true magnitude of the external debt flows, data on debt are taken from the World Bank statistics and are compared with the uses of these funds from the balance of payments statistics. If the sources, from the World Bank debt data, exceed the uses of capital inflows, this difference is often termed as capital flight. This method acknowledges the difficulty of separating normal from flight motivated flows of capital and therefore treats all outflows of resident capital as a capital flight.

[5]With the exception of illegal transaction based capital flight measure.

Erbe and The World Bank

$$CF_{WB} = \triangle ED + FDI + CAS + FR,$$

where CF denotes capital flight, ED external debt (from the World Bank data), FDI foreign direct investment, CAS current account surplus and FR change in foreign reserves.

This is the broadest capital flight measure that can be found in the literature. It takes change in gross external debt (World Bank) and net foreign direct investment as the sources of finance and subtracts current account deficit and building up of foreign reserves from it. The resulting residual includes assets of both the banking and non-banking sector in the estimate of capital flight.

Morgan Guaranty Trust Co.

$$CF_{MORGAN} = \triangle ED + FDI + CAS + FR + B,$$

where B stands for the banking system foreign assets.

This is slightly narrower measure of capital flight since the previous definition was modified by excluding the acquisition of foreign assets by banks. The reason behind this has not been explained by the authors of this measure but we assume that this was done to allow for portfolio adjustment of the banking sector.[6]

Narrow Measure

$$CF_{CUDDINGTON} = -(EO + STCO),$$

[6]It is interesting to note that when calculating estimates of capital flight using this methodology we found out that for a number of countries the estimates were higher than those obtained by using the previous methodology.

where EO is net errors and omissions and $STCO$ are the private short-term capital outflows.

This measure was first used by Cuddington(1986). It is based on the idea that capital flight goes unrecorded due to its illegal nature; this is captured by errors and omissions; and also on the idea that capital flight refers to short-term speculative outflows of capital. These short-term outflows of capital respond to political or financial crises, heavier taxes, foreseen tightening of exchange controls, substantial devaluation of currency and hyper-inflation.

Errors and Omissions

$$CF_{EO} = -EO$$

As a narrowest version of capital flight, capital flight can be equaled with the errors and omissions from the balance of payments statistics with the minus sign. Even though this measure is very restricted and undoubtedly underestimates the real magnitude of capital flight, it can give us an idea of the actual situation in times when data needed for other estimates is not available.[7]

2.3.2 Measuring Capital Flight as a Response to Asymmetric Risk

This measuring procedure aims at distinguishing between normal and flight motivated flows of capital and can be found in various studies, i.e. Dooley, Deppler and Williamson. This measure is assuming that capital flight can be explained by differences in risk perceived by residents and nonresidents in holding claims on residents of the country which is being scrutinized. Due to the fact that this method of measuring capital flight is very demanding on the data quality and the fact that estimates obtained by this method are of

[7]Especially external debt data.

subject to large measurement errors, we will only describe Dooley's method at this place. Dooley's method is summarized in [12] as follows:

> Dooley(1986) sees capital flight as the total amount of externally held assets of the private sector that do not generate income recorded in the balance of payments statistics of a country. Or, stated otherwise, capital flight is all capital outflows based on the desire to place wealth beyond the control of domestic authorities.

Now that we know what is the main idea of this measure, we can summarize procedure of measuring capital flight according to the Dooley's method. We first calculate a total amount of capital outflows:

$$TCO = FB + FDI + CAS + FR - EO - \triangle ED,$$

where FDI, CAS, FR, FB and EO denote foreign direct investment, current account surplus, change in foreign reserves, change in external debt(World Bank data) and errors and omissions respectively. TCO stands for the total amount of capital outflows and ED is foreign borrowing as reported in balance of payments statistics. Second, we calculate the stock of external assets corresponding to reported interest earnings:

$$ES = IE/r_{us},$$

where ES, IE and r_{us} denote respectively external assets, reported interest earnings and US deposit rate. Capital flight is then estimated as:

$$CF_{DOOLEY} = TCO - \triangle ES.$$

In short, this is how the estimates are obtained.

2.4 Capital Flight Estimates

After summarizing the definitions and measuring methodologies found in the literature we can present measures we adopted and lay out obtained capital

flight estimates. Subsequently, we analyze and compare acquired estimates.

We have decided to employ four methodologies to measure capital flight. To be more specific, we employed Erbe and the World Bank measure, Morgan Guaranty Trust Co. measure, Cuddington measure and Errors & Omissions. In general, these are all versions of broad measure of capital flight. We have decided against the Dooley's method mainly because of the reasons expressed below.

- Data that is needed to estimate capital flight using our choice methodologies is in general more easily obtained compared to other measures.
- Measuring capital flight as a response to asymmetric risk is very demanding on the data quality and is subject to many sensitivities.
- A substantial part of data needed for the Dooley's method is not available for the set of countries that we are analyzing.
- Lastly, since measuring capital flight is not the primary aim of the thesis, it is unnecessary to employ such a complicated measure which is at times ambiguous.

We estimated capital flight for a set of 75 countries which we divided into four groups depending on their geographical location.[8] In Figures 2.1, 2.4, 2.6 and 2.8 we present estimated magnitudes for each set of countries as a whole. To better describe the estimates we obtained, in Figures 2.2, 2.5, 2.7 and 2.9 we present average capital flight from a given set of countries expressed as a percentage of GDP.[9]

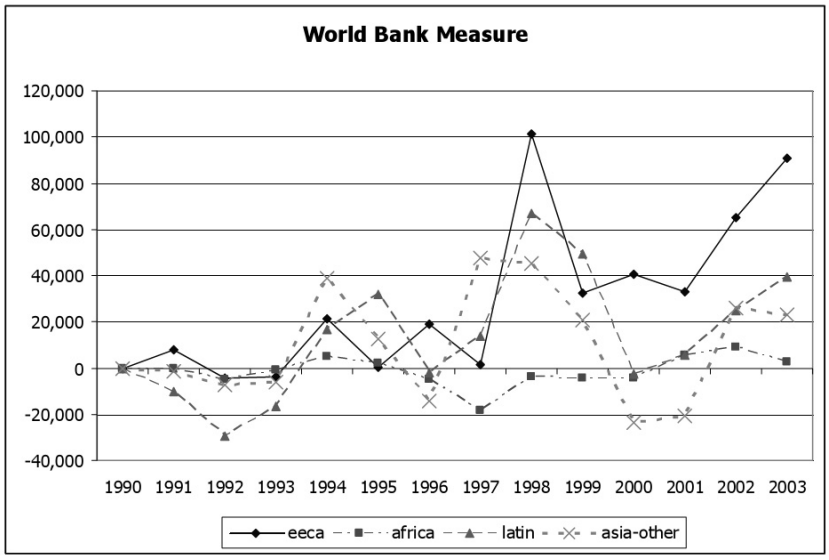

Figure 2.1: Estimated magnitudes of capital flight in millions of USD - The Erbe and World Bank Measure.

Source: the author

2.4.1 The Erbe and the World Bank Measure

We first look at the results obtained by employing The Erbe and The World Bank Measure. On the Figure 2.1 we can see that since 1998[10] group of EECA countries has been experiencing the most severe outflows of capital out of all groups. The main reason behind this is the Russian crisis and the magnitude of capital flight from Russia in crisis years.[11] We would also like to point out that obtained estimates reflect also other known crises: the East

[8]We present a list of countries as well as their division into the groups in the Appendix A. In the Appendix B we present our estimates.

[9]For those who are interested, in Appendix C we provide figures with net amounts of capital flight. If the flight reversal is taking place we simply consider it as if a zero flight occurred.

[10]With exception of 1999.

[11]To be more specific, Russia has been experiencing capital flight throughout the whole period under analysis reaching peak levels of approximately 58 and 23 billions of USD in 1998 and 1999.

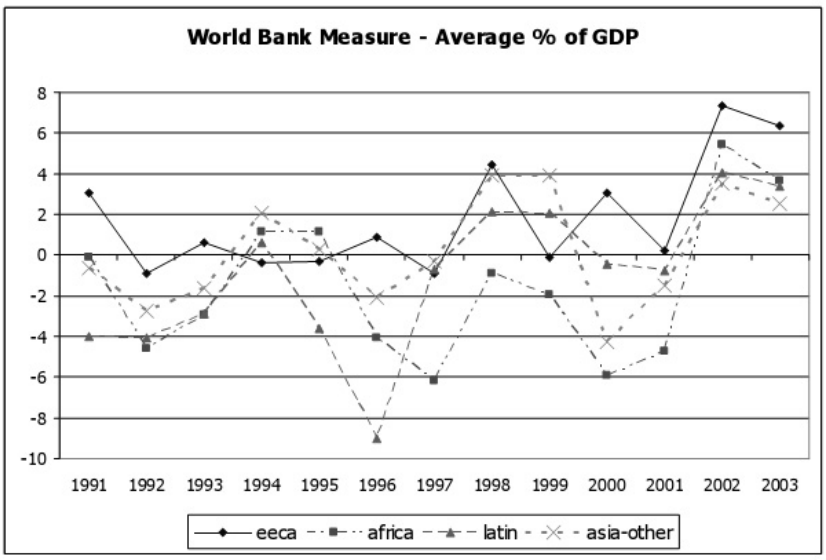

Figure 2.2: Capital flight - average % of GDP - The Erbe and World Bank Measure.

Source: the author

Asian financial crisis (1997), the crisis of Mexico (1994-1995) and Argentina financial crisis (1999-2002). We will discuss this in greater detail below.

Since the crisis in Mexico (1994 - 1995) was the first one to occur we will look at the group of Latin American countries first. It is interesting to note that according to the World Bank measure Mexico was not experiencing any capital flight until 1994. In 1994 capital flight amounted almost to 8 billions of USD reaching the magnitude of 25 billions in 1995 - almost 9 percent of GDP. This crisis undoubtedly influenced other countries of this region and brought doubts about the financial environment. Brazil experienced substantial capital flight in 1997-1999 and again in 2002 and 2003 - reaching 45 billions of USD in 1998. One of the most burdened countries, Venezuela, suffered from capital flight throughout the whole period with the only exception of 1993. It amounted to 9 percent of GDP in 1997, 2000, 2003 and to 10 percent in 2002. Influenced by its neighbors, Argentina experienced capital

flight even pre-crisis - in 1995 it amounted to 25,5 billions of USD - almost 10 percent of GDP and reaching 16 percent of GDP in 2003.

East Asian countries underwent financial crises in 1997. According to the World Bank measure Indonesia was experiencing capital flight throughout the whole period with few exceptions - reaching highest magnitudes in 1994, 1995, 1997 and 1998. Capital flight from Indonesia amounted to 17 percent of GDP in 1998. Another member of a group of heavily burdened countries, Malaysia, suffered from capital flight that was amounting to 10 billions of USD in 1997, 1999, 2002 and to 11 billions in 2000 - exceeding 10 percent of GDP in all of the mentioned years. Korea went through a flight of 23 billions USD in 1997. We can not forget Philippines and Thailand - influenced by the crises, these countries were also heavily burdened by the flight of capital. In Philippines it amounted up to 18 percent of GDP and in Thailand almost to 14 percent of GDP.

East European and Central Asian (EECA) countries need to be studied separately since they have been going through a special phase. Most of them are *transitive economies* - countries that had to change their political as well as economic systems after the collapse of communism. Many of these countries did not even exist prior to 1990 and emerged only in 1993 or even later. It is evident that these countries had to face very complicated situation at the beginning of transition process. Economic situation was characteristic with collective ownership as well as huge over-employment. There were no competitive forces, low labor force productivity and international trade was only oriented on other communist countries. Since capital flight is a response to political and economic uncertainty, there is no doubt why these countries were more vulnerable to the phenomenon.

Out of this group of countries, it can be concluded that Russia and Kazahstan have been suffering from capital flight the most. There is no doubt why

Russia has been experiencing such a capital flight and obtained estimates only prove the theory behind the capital flight. In 1998 Russia experienced a serious crisis and in the same year the most severe capital flight occurred - it amounted almost to 22 percent of GDP - more precisely, 58,5 billions of USD. Kazahstan has been experiencing capital flight since 1997. Even though it amounted only to 7 billions of USD on the peak, it was totalling 41 percent of GDP. To conclude this part, we present additional flight burdened countries - Estonia (19,5 percent of GDP), Latvia (almost 27 percent of GDP) and Malta (almost 38 percent of GDP). For further reference, refer to Annexes B and C.

Slovakia

In this place we would like to give few notes on the capital flight estimates we obtained employing the Erbe and the World Bank measure in case of Slovakia. In Figure 2.3 we present capital flight estimates along with percentages of GDP they were amounting to. Note that Slovakia experienced increases in flight of capital in 1994, 1998, 2002 and 2003.

Three out of these years were also election years.[12] There was only a slight flight of capital in 1994, when Mečiar was reelected, since a lot of people still trusted him and there was not that much of instability. However 1998 was very different. Mečiar was often criticized by Western political organizations as well as his opponents in Slovakia for having an autocratic style of administration and lack of respect for democratic order. Big political pressures culminated during the elections in September. Even though HZDS; with Mečiar on its lead; won the elections they were unable to form a coalition and Dzurinda became a new Prime minister. All doubts prior to elections led to substantial increases in flight of capital but Slovakia enjoyed substantial capital reflows in the following year. It is interesting to find that all election years tend to bring capital flight back to life. On the other hand, 2003 high

[12]Note that elections were always held in September.

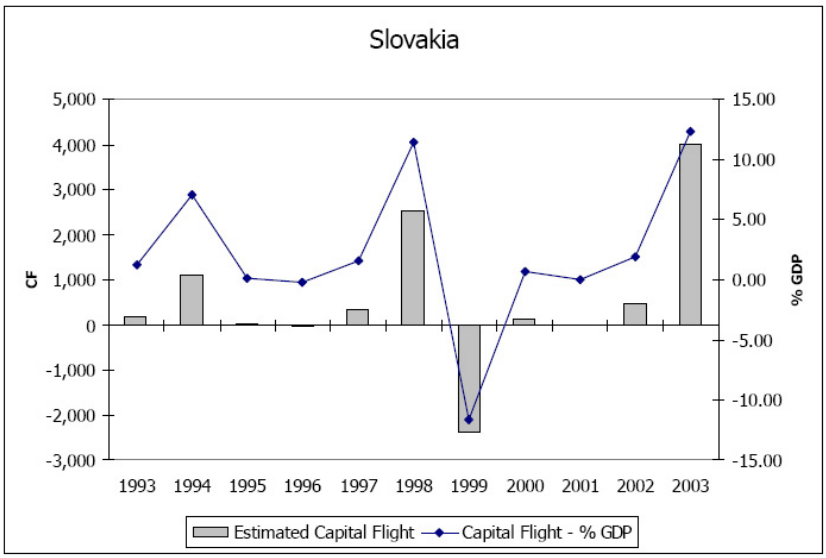

Figure 2.3: The Erbe and World Bank Estimate - Slovakia.
Source: the author.

flight estimates are a bit of a puzzle. One of the reasons behind this might be situation in other countries closely related to Slovakia, but we think that this flight was more probably caused by the political situation. In 2003 the government began the year by implementing a number of major reforms in the economic and social field. Many of these measures had negative effects on the population's standard of living and the government was repeatedly criticized by the political opposition and the trade unions. It might be that people fearing the impact of new reforms decided to take capital away from the country. To conclude this section, we can see on a case of one country that there can really be found a link between the capital flight and political instability(uncertainty).

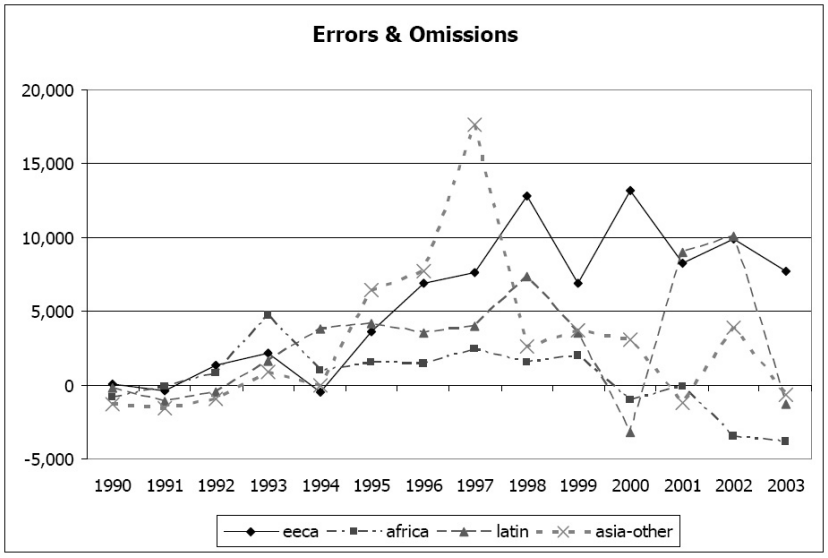

Figure 2.4: Estimated magnitudes of capital flight in millions of USD - Errors & Omissions.

Source: the author.

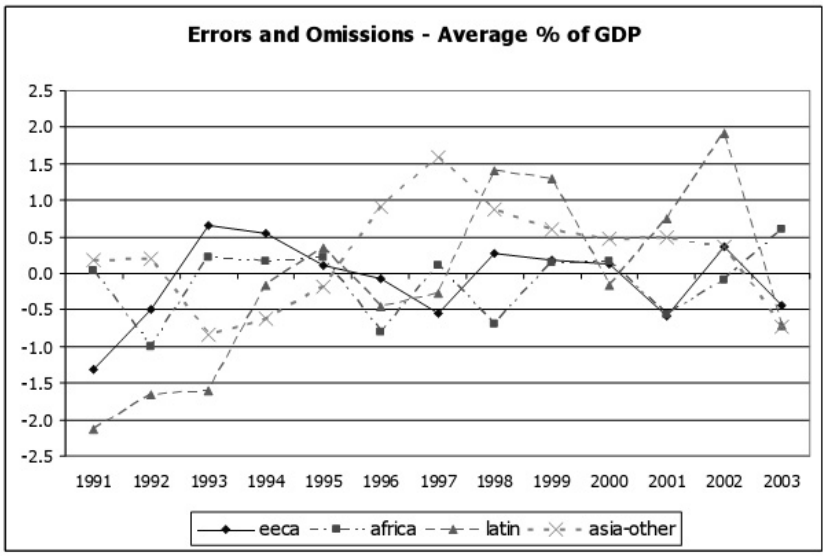

Figure 2.5: Capital flight - average % of GDP - Errors & Omissions.

Source: the author.

2.4.2 Errors and Omissions, Morgan Guaranty Trust Co. and Cuddington Measure

In this section we discuss results obtained employing other three measures in smaller detail. The reason behind this is as follows. First, if we go back to the section where capital flight measures were described we can see that Morgan Guaranty Trust Co. measure is similar to World Bank measure - they differ only in the banking system foreign assets item - and that Errors & Omissions measure is similar to Cuddington measure - these two differ only in the private short-term capital outflows item. Second, since there is a lot of data missing for some countries, Cuddingnon measure is missing considerable amount of estimates. This is also true for Morgan Guaranty Trust Co. measure, but fortunately to smaller the extent. This and comparison of estimates allows us to focus only on the Erbe and The World Bank measure - which we have already done and on Errors & Omissions which we will to now.

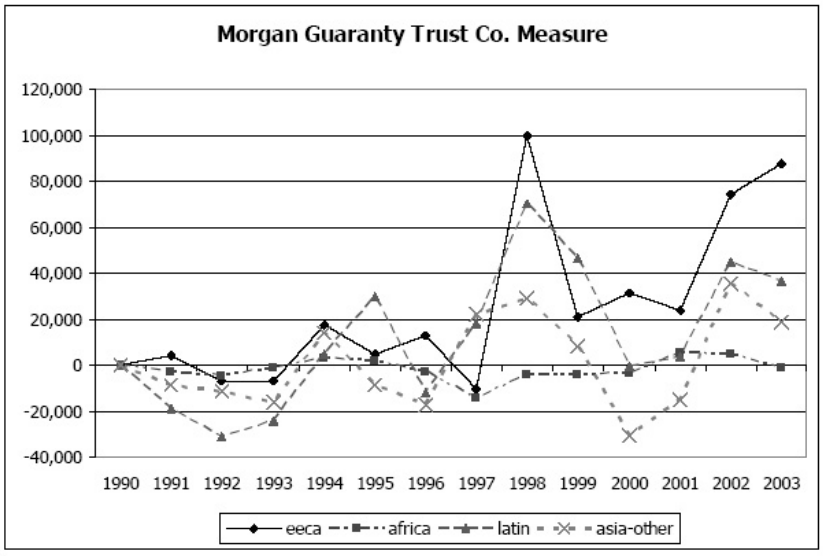

Figure 2.6: Estimated magnitudes of capital flight in millions of USD - Morgan Guaranty Trust Co.

Source: the author.

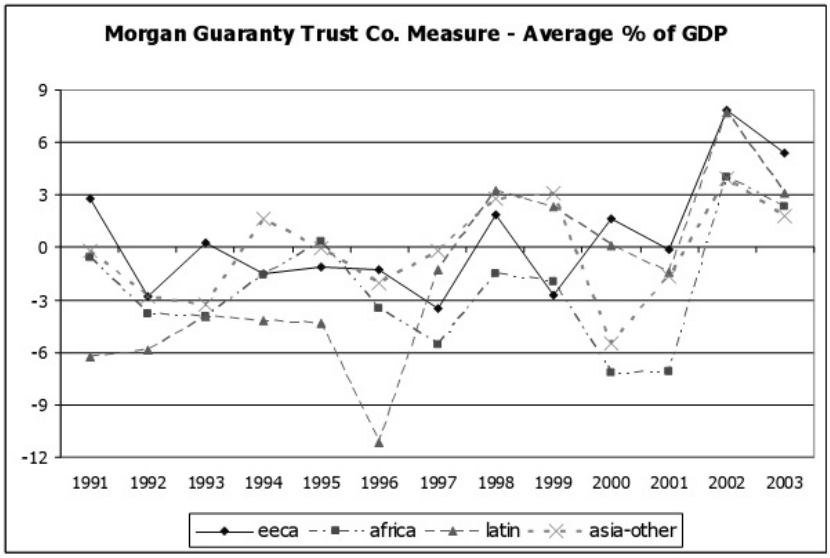

Figure 2.7: Capital flight - average % of GDP - Morgan Guaranty Trust Co.
Source: the author.

As it was said before, Errors & Omissions can not be actually equaled with capital flight since it is a very narrow measure and fails to capture the real magnitude of the flight.[13] It can however, give us some insight of the actual situation since it reflects all unrecorded movements of capital.

In this section we begin with Latin American countries again. Looking at the figures, it can be seen that Mexico has reached peak levels again in crisis years - 1994 and 1995. What is more interesting though is Argentinian case. When employing World Bank measure we could see that Argentina was experiencing capital flight most of the time but there was no real connection to the crisis. On the contrary, when employing Erorrs & Omissions, even though Argentina was experiencing capital flight since 1996; and high magnitudes; it attained its maximum during crisis years in 1999 -2002.[14] Venezuela suffered

[13]There is no doubt that it underestimates real magnitude.

[14]In 2002 it amounted to almost 2 percent of GDP which is a considerable magnitude taking into account definition employed.

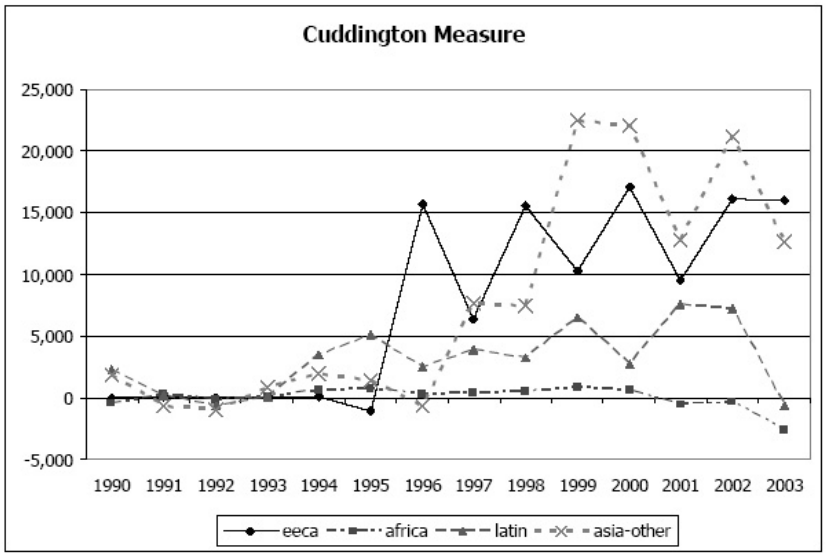

Figure 2.8: Estimated magnitudes of capital flight in millions of USD - Cuddington Measure.

Source: the author.

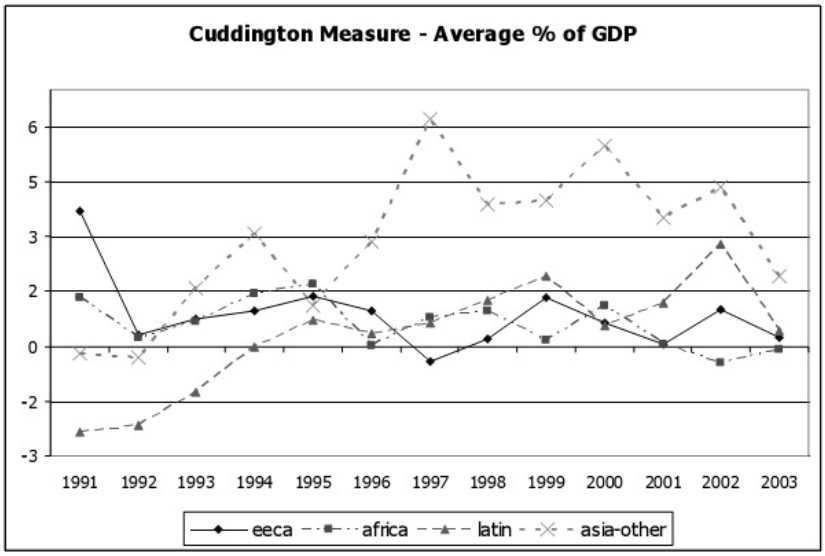

Figure 2.9: Capital flight - average % of GDP - Cuddington Measure.

Source: the author

from more substantial flight of capital at the end of period under analysis amounting almost up to 3 percent of GDP. Other interesting cases from this region are Bolivia - 5 percent in 1994 and 8 percent in 2002, Nicaragua - almost 15 percent in 1990 and 8 percent in 1999 and Uruguay - 18,6 percent of GDP in 2002.

In case of East Asian countries as well as EECA, situation is very similar to the one with the World Bank measure. Indonesia, Thailand and Philippines experienced the highest outflows in 1997 - the crisis year. Another heavily burdened country is Lao PDR which suffered from capital flight that was amounting to 6, 8 and 11 percent of GDP in years 1997, 1998 and 1999. As for the EECA countries, in 1998 Russia experienced almost 10 billion USD outflow of capital and along with Kazahstan remains one of the most burdened countries. Other values worth noting - in 1993 and 1994 Croatia lost almost 11 and above 8 percent of GDP to the flight and Latvia 11 and 12 percent of GDP in 1994 and 1995.

To conclude this Chapter, we showed that obtained estimates are mostly in agreement with what we have expected to find. There is a strong link between the capital flight and the political and economic instability. We found that in most cases substantial capital outflows corresponded with financial and economic crises that the countries were experiencing. Looking at the figures presented in this section we can see that even though African countries tend to experience smaller amounts of capital flight in terms of millions of USD compared to other countries, it is not true when looking at the average percentage of capital flight to GDP. This is to be expected, since the GDP of African countries is much lower than that of others - turning to percentages reveals this fact.

Going back to the section where capital flight measures are described, we can see that Morgan Guaranty Trust Co. measure and the World Bank mea-

sure have most elements in common - differing only in one item. The same is true for Errors & Omissions measure and Cuddington measure. Studying the estimation results, it can be seen that they really do not differ that significantly and obtained results are mostly similar. Even though magnitudes in real terms are not the same we can see that in most cases estimates have similar courses. Taking into account all stated above, we have decided that for the purposes of analysis in hand we will use both the World Bank and Errors & Omissions measures since they are conceptually different from each other, but we will drop remaining measures due the amount of data missing and strong correlation between these and the measures adopted.

Chapter 3

The Link Between the Capital Flight and the long-term Economic Growth: Theoretical Model

We mentioned in the Introduction that the aim of this thesis is to study the impact of capital flight on economic growth. It is very common in the literature on economic growth to use basic Solow-Swan growth model as a starting point. Hence, we start by description of this and modified model which allows for the technology to improve over time in this Chapter. Models presented in this section are the same as those described in [2]. We consider [2] to be a recognized and accepted publication on economic growth and therefore we only provide a short insight of what is presented there. For further reference, see the indicated source.

3.1 Basic Solow-Swan Growth Model

3.1.1 Basic Assumptions

First of all, we assume small closed economy - no government or international trade - with only single good produced. There are only two possible inputs, physical capital K, and labor, L. Output, Y, is a homogenous good that can be consumed, C, or invested, I, to create new units of physical capital, K. In closed economy, output equals income, and the amount invested equals the amount saved. Let us denote s as a part of output that can be saved; that is, the marginal propensity to save; and $c = 1 - s$ as fraction of output that is consumed; that is, the marginal propensity to consume. The simplest savings function possible; the one used by Swan and Solow in their classic articles; is $s = const, s \in (0, 1)$. All factors of production are fully employed and initial values for capital K_0 and labor L_0 are given. Capital depreciation is constant over time and $\delta > 0$. Thus, the net increase in the stock of physical capital at a point in time is equal to the gross investment less the amount of depreciated capital. This can be written as:

$$\dot{K} = I - \delta K = s.F(K, L) - \delta K, \tag{3.1}$$

where $\dot{K}$ denotes differentiation with respect to time and $s \in (0, 1)$ as mentioned above.

We simply assume that population grows at a constant rate, which is given exogenously, $\frac{\dot{L}}{L} = n \geq 0$, and that everyone works at given intensity. Normalizing the number of people at time 0 to 1 and also work intensity per worker to 1, the population at time t equals labor force at the same time. Labor force at time t equals:

$$L(t) = e^{nt}. \tag{3.2}$$

In this section, we neglect technological progress. Given that, the production function takes form

$$Y = F(K, L) \tag{3.3}$$

We assume that production function satisfies three conditions. First, for all $K > 0$ and $L > 0$, $F(.)$ exhibits positive and diminishing marginal products with respect to each input:

$$\begin{aligned} \frac{\partial F}{\partial K} &> 0, & \frac{\partial^2 F}{\partial^2 K} &< 0 \\ \frac{\partial F}{\partial L} &> 0, & \frac{\partial^2 F}{\partial^2 L} &< 0. \end{aligned} \tag{3.4}$$

Second, $F(.)$ exhibits constant returns to scale:

$$F(\lambda K, \lambda L) = \lambda F(K, L) \text{ for all } \lambda > 0. \tag{3.5}$$

Last, $F(.)$ satisfies *Inada conditions*:

$$\begin{aligned} \lim_{K \to 0} (F_K) &= \lim_{K \to 0} (F_L) = \infty \\ \lim_{K \to \infty} (F_K) &= \lim_{K \to \infty} (F_L) = 0 \end{aligned} \tag{3.6}$$

Production function satisfying properties mentioned above is *neoclassical* production function.

Given that production function satisfies condition (3.5), we can rewrite (3.3)

$$Y = F(K, L) = L.F(K/L, 1) = L.f(k), \tag{3.7}$$

where $k \equiv K/L$ is capital-labor ratio, $y \equiv Y/L$ is output per capita. The production function $f(k)$ is production function per capita and is defined to equal $F(k, 1)$. Thus, the production function can be expressed in *intensive form* as

$$y = f(k). \tag{3.8}$$

It can be shown that the neoclassical properties (3.4)-(3.6) suggest that each input is essential for the production[1].

3.1.2 Analysis of the Model

Now that we have described basic assumptions of Solow-Swan growth model we can analyze its dynamics. In order to be working in per capita terms

[1]That is, $F(0, L) = F(K, 0) = f(0) = 0$

we divide studied equations by L. We start by looking at the change in the stock of physical capital. Dividing (3.1) by L we get

$$\dot{K}/L = s.f(k) - \delta k. \tag{3.9}$$

In order to have both sides of (3.9) in per capita terms we can rewrite it by substituting $\dot{K}/L$ from the equation

$$\dot{k} \equiv \frac{d(K/L)}{dt} = \dot{K}/L - nk.^{2} \tag{3.10}$$

Rearranging (3.9) as mentioned above we obtain fundamental differential equation of Solow-Swan growth model[3]

$$\dot{k} = s.f(k) - (n + \delta).k. \tag{3.11}$$

Expression $n + g$ can be considered as the effective depreciation rate for the capital/labor ratio, k. Suppose that the savings rate is equal to zero, k will decline both due to depreciation of capital K at the rate δ and growth of labor L at the rate n.

In Figure 3.1 we illustrate the workings of the Equation (3.11). The curve for the gross investment, $s.f(k)$, is proportional to the production function $f(k)$.[4] Consider an economy with initial capital stock per person being positive, $k(0) > 0$. On the Figure 3.1 we can see that gross investment per person is equal to the height of the $s.f(k)$ curve at this point. Consumption per person equals the vertical difference between the $f(k)$ and $s.f(k)$ at this point. Note that effective depreciation rate for k is straight line from the origin. It is clear that change in k is given by the vertical distance between $s.f(k)$ and $(n+\delta).k$. The steady-state level of capital k^* can be found on the intersection of $s.f(k)$ curve and $(n + \delta).k$ line. The corresponding value of k is denoted k^*. Steady state in the Solow-Swan growth model corresponds to

[2]Note that $n = \dot{L}/L$

[3]Fundamental differential equation is nonlinear and dependent only on k

[4]Since $s \in (0, 1)$ is a constant.

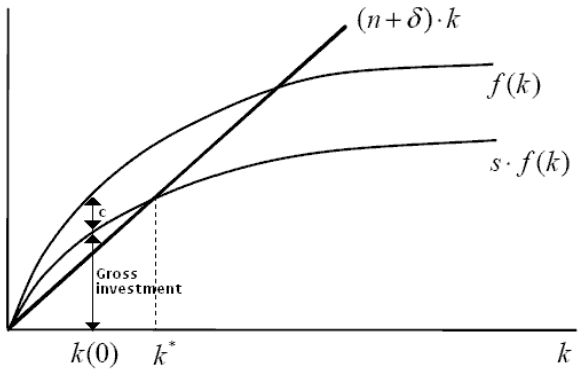

Figure 3.1: Workings of Solow-Swan growth model.Source: [2].

$\dot{k} = 0$ in Equation (3.11).[5] [6] Algebraically, k^* satisfies the condition

$$s.f(k^*) = (n + \delta).k^*. \tag{3.12}$$

Having achieved a steady state k remains constant as well as y and c do.[7] Therefore, in basic Solow-Swan model there is no growth of per capita variables in steady state and variables K, Y and C grow in the steady state only at the rate of population growth, n. It can be proven that the changes in the savings rate s, in the growth of population n and in the depreciation rate δ as well as changes in the level of technology have all effects on per capita levels of various quantities in the steady state.[8] However, it is important to

[5]It can be easily shown that $\dot{k}$ has to be equal to 0 in order for k to be in a steady state. Since s, n and δ are all constants we divide (3.11) by k. We can see now that $f(k)/k$ must be a constant too. Deriving this expression in respect to time we get $-\frac{f(k)-kf'(k)}{k}.\frac{\dot{k}}{k}$. Knowing that $f(k) - kf'(k)$ is equal to the marginal product of labor, which is strictly positive, $\dot{k}/k$ must be equal to zero (This holds as long as k is finite. We also assume that $k \neq 0$).

[6]Due to practical reasons we consider only the case with $k > 0$ and neglect the case where $k = 0$.

[7]Steady state values of c and y are respectively $c^* = (1 - s).f(k^*)$ and $y^* = f(k^*)$.

[8]For example, an increase in n or δ leads to decrease in k^*. On the other hand, increase in s or level of technology leads to increase in k^*. This can be easily illustrated of the Figure 3.1

note that they do not affect growth rates of per capita output, labor and consumption. To conclude, this model cannot provide acceptable background for our analysis concerning determinants of long-run per capita growth which is a serious drawback. In light of facts stated above we will have to improve this model by allowing for technological progress. This we do in Section 3.2

3.1.3 Transitional Dynamics

Before we move on to the modified Solow-Swan growth model which allows for the technological progress it is interesting to have a look at the transitional dynamics of the basic model. We mentioned in the previous section that the model has serious drawbacks concerning long-run determinants of the growth rates, however, it not entirely useless especially when studying transition. From this it can be seen how an economy's per capita income converges to its own steady state value as well as that of other economies.

First, we look at the growth of physical capital. Dividing (3.11) by k we get

$$\gamma_k \equiv \dot{k}/k = s.f(k)/k - (n + \delta), \tag{3.13}$$

where γ_k is a growth rate of physical capital.

From the equation (3.13) can be implied that when term $s.f(k)/k$ exceeds term $n+\delta$ the growth rate of k is positive and k increases. This causes growth rate do decrease over time and leads k to steady state. Likewise, when term $n + \delta$ exceeds term $s.f(k)/k$ the growth rate of physical capital is negative and k decreases. As a consequence, growth rate slightly increases and this leads k to steady state. We illustrate this mechanism in figure 3.2.

Second, we analyze how does the transition dynamics influence the output. Similarly as in the previous case, we divide $\dot{y}$ by y to obtain the growth rate of output per capita. Doing so we get

$$\gamma_y \equiv \dot{y}/y = f'(k).\dot{k}/f(k) = [k.f'(k)/f(k)].\gamma_k. \tag{3.14}$$

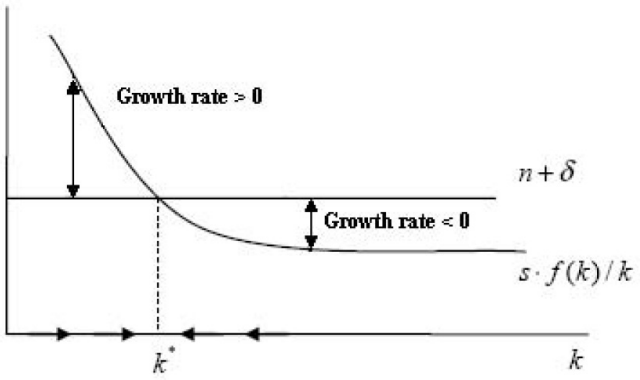

Figure 3.2: Workings of Solow-Swan growth model.
Term $s.f(k)/k$ is a downward-sloping curve while $n + \delta$ is vertical line. The point where they intersect is a steady state.
Source: [2].

The expression in the brackets on the far right is often called *capital share*, i.e. the share of the rental income on capital in total income. Equation (3.14) shows that the relation between γ_y and γ_k depends on the behavior of the capital share.

3.1.4 Employing Cobb-Douglas Production Function

In this section we illustrate workings of the Solow-Swan growth model by employing Cobb-Douglas production function. Due to its simplicity and satisfactory properties, Cobb-Douglas production function (3.15) is often considered to provide reasonable description of actual economies.

$$Y = AK^{\alpha}L^{1-\alpha}, \tag{3.15}$$

where $A > 0$ is a level of technology, and $0 < \alpha < 1$ is a constant. Is a *Cobb-Douglas production function.* Intensive form of Cobb-Douglas production function is as follows

$$y = Ak^{\alpha}. \tag{3.16}$$

Cobb-Douglas production function satisfies the properties of a neoclassical production function.

Using equation (3.12) and employing Cobb-Douglas production function we get steady-state capital/labor ratio

$$k^* = [sA/(n+\delta)]^{\frac{1}{1-\alpha}}. \tag{3.17}$$

and steady-state output per capita

$$y^* = A^{\frac{1}{1-\alpha}}.[s/(n+\delta)]^{\frac{\alpha}{1-\alpha}}. \tag{3.18}$$

Thus, y^* is a positive function of s and A and a negative function of n and δ.

Along the transition, the growth rate of k is given from Equation (3.13)by

$$\gamma_k = sAk^{-(1-\alpha)} - (n+\delta). \tag{3.19}$$

If $k(0) < k^*$, they γ_k is positive. This growth rate declines as k rises and approaches 0 as k approaches k_*.

3.2 Modified Solow-Swan Growth Model - Allowing for Technological Progress

Due to simplicity reasons, we did not allow for technology to progress over time. This is clearly an unnatural assumption and results in per capita variables being constant in the long run. Allowing technology to improve will grant us an escape from diminishing returns and will let economy to grow in per capita terms in long run.

Process of introducing technological progress into the model can take various forms. For this study we will adopt a natural labor augmenting technological progress, the same as authors of [2] did. The production function then takes form

$$Y = F[K, L.A(t)], \tag{3.20}$$

where $A(t)$ is an index of technology and is positive. It raises output in a same way as is the increase in the stock of labor.

We now follow the same process as we did studying the basic model. Lets assume constant positive rate of technological progress $\dot{A}/A = g$, which is given exogenously, and also let us define $\hat{L}$ as the physical quantity of labor multiplied by its efficiency as $\check{L} = L.A(t)$.[9] Moving towards per capita terms, $\hat{k} = K/L.A(t)$ is the capital per unit of effective labor and $\hat{y} = Y/L.A(t)$ is output per unit of effective labor. Intensive form of production function allowing for technological progress is in our case

$$\hat{y} = F[\hat{k}, 1] = f(\hat{k}). \tag{3.21}$$

Thus, fundamental differential equation of the modified model takes form

$$\dot{\hat{k}} = s.f(\hat{k}) - \hat{k}.(n + g + \delta). \tag{3.22}$$

The steady-state value of capital $\hat{k^*}$ algebraically satisfies the condition

$$s.f(\hat{k^*}) = (n + g + \delta).\hat{k^*}. \tag{3.23}$$

Naturally, variables $\hat{k}$ and $\hat{y}$ are constant in steady-state but as a result variables k and y grow at the exogenous rate g in steady-state. Furthermore, growth rate of $\hat{k}$ is

$$\gamma_{\hat{k}} \equiv \dot{\hat{k}}/\hat{k} = s.f(\hat{k})/\hat{k} - (n + g + \delta). \tag{3.24}$$

It can be seen that transitional dynamics of $\hat{k}$ is qualitatively similar to that of k in basic model. The relation between the initial value of $\hat{k}$ and its growth rate can be repeated accordingly.

To conclude this Chapter it can be said that s can be considered to be a capital deepening element and l and δ to be capital widening elements.

[9] $\hat{L}$ is then effective amount of labor.

Chapter 4

The Link Between the Capital Flight and the long-term Economic Growth: Empirical Exploration

From now on we will be concentrating on the empirical exploration of the impact of capital flight on long-term economic growth. First of all, we discuss previous empirical research on economic growth - determinants of long-run growth mostly. Second, we look at the attempts to investigate the impact of capital flight on economic growth. Afterwards, we will describe data and sample used and present empirical model.

4.1 Review of Literature on Economic Growth

Exploration of sources of long-run economic growth and development has always been an interesting topic for economists. This is not surprising at all, since the observed pattern in economic growth across countries and time leads us to ask ourselves, why are some countries better of than others? This interest has even increased since the late 1980's and a vast amount of the-

oretical and empirical literature has been emerging. Most empirical studies in the literature consider a set of exogenous factors influencing economic growth. In the following paragraphs we summarize this field's major results. For further reference, see [3], [4] and [5].

At the earliest stage, the theory on economic growth was mostly founded on neoclassical assumptions. This theory, developed by Ramsey (1928), Solow (1956), Swan (1956), Cass (1965), and Koopmans (1965) has become a starting point for many empirical works on economic growth in recent years. The main reason behind this "rediscovery" is the convergence property of the model - the lower the starting level of real GDP per capita the higher the growth rate.[1] To illustrate this, we cite from [3]:

> If all economies were intrinsically the same, except for their starting capital intensities, then convergence would apply in an absolute sense; that is, poor places would tend to grow faster per capita than rich ones. However, if economies differ in various respects including propensities to save and have children, willingness to work, access to technology, and government policies - then the convergence force applies only in a conditional sense. The growth rate tends to be high if the starting per capita GDP is low in relation to its longrun or steady state position; that is, if an economy begins far below its own target position. For example, a poor country that also has a low longterm position-possibly because its public policies are harmful or its saving rate is lowwould not tend to grow rapidly.

Other assumptions of this model are constant returns-to-scale, diminishing marginal productivity of capital, exogenous production technology, substitutability of capital and labor, and lack of an independent investment function. The standard neoclassical growth model implies that the steady state

[1] This property is derived from diminishing returns to capital.

growth rate, aside from exogenous technological progress, is zero. That is, conventional macroeconomic policies such as government investment can affect the level of per capita income but they have no effect on the long-run growth rate of the economy. The exogenous technological improvements, if continuous, can compensate for the negative effect of decreasing marginal productivity of capital thereby leading to long run growth. Finally, the exogenously determined constant population growth rate is the main determinant of per-capita real income level in many neoclassical models.

In the neoclassical model, the concept of capital can be broadened from physical goods to include human capital. This can be done in various forms e.g. education, experience, and health. (See Lucas (1988), Rebelo (1991), Caballe and Santos (1993), Mulligan and Sala-i-Martin (1993), and Barro and Sala-i-Martin (1995a) In his works, Barro (1991, 1995) concludes that growth rate of GDP per capita relates positively to human capital proxied by the school enrolment and that the education and health are also important elements determining economic growth. We find similar conclusions in Sach and Warner (1997) as well. They conclude that a rapid boost in human capital proxies results in a rapid transitional growth. In Gallup's work (1998) it is argued that a well developed labor force[2] is able to use available resources better and produce more from a same resource base compared to the unskilled one. The authors of this work use variables suggested by Barro, with life expectancy at birth in place of health proxy. The empirical evidence of the association of health improvement with faster economic growth is found. However they were unsuccessful in finding significant relationship between the education level and the growth.

Another key determinants of the long-run economic growth found in the literature are government policies. For example, favourable public policies - including better maintenance of law, fewer distortions of private markets,

[2]In terms of education and health.

less non-productive government consumption and greater public investment in high-return areas - lead, in the long run, to higher levels of real per capita GDP - Barro (1995). Similarly, a greater willingness of the private sector to save, raises living standards in the long-run. Favourable settings of government policies and private sector choices are essential for poor countries to grow quickly. Hall and Jones (1997) study the differences in institutions and government policies among countries and its impact on growth. Gallup et al. (1998) focuses on three government policies - openness, government saving and composition of goverment expenditures. Finally, Brunetti et al. (1998) argues that efficiency and reliability of policy implementation are the channels through which policy may influence long-run economic growth.

Many studies examine the role of government fiscal surpluses and deficits in affecting economic growth. The general view is that high levels of government deficits are bad for growth. Works supporting this view are e.g. Fischer (1993)[3] and Easterly and Rebelo (1992). According to Barro (1991), growth is inversely related to the share of government consumption in GDP.

Political instability has also an impact on growth. Gallup et al. (1998) find a strong negative relationship between political instability and economic growth. The proxy used to account for political instability is based on the number of assassinations per million people per year and the number of coups per year. They conclude that political instability is a statistically significant deterrent to economic growth.

Another factor believed to have serious impact on the long-run growth is inflation. Fischer and Modigliani (1978) argue that the reason behind the negative relationship between inflation and growth is caused by firms and

[3]Among other variables such as inflation and distorted foreign exchange markets, he emphasises the importance of a stable and sustainable fiscal policy, to achieve a stable macroeconomic framework.

workers devoting productive resources to deal with inflation and also by the fact that inflation uncertainty reduces efficiency by discouraging long-term contracts and increasing relative price variability. However, there are authors who arrived at different results.

> Clark (1993) in a sample of 85 countries attempts to provide a summary of inflations effects on growth. He concludes that theory provides little or no guidance for specifying the empirical relationship between growth and inflation. Levine and Zervos (1993) conclude that marginal changes in moderate inflation rates may not be negatively associated with growth.
> Source: [5].

Authors that believe that there is a negative relationship between inflation and growth: Cozier and Selody (1992), Dewan, Hussein and Morling (1999), Jarrett and Selody (1992) Buck and Fitzroy (1988). Barro (1995) uses data for around 100 countries from 1960-1990 to assess the effect of inflation on economic performance. He concludes that if a number of country characteristics are held constant, then the regression results suggest that an increase in average inflation of 10 percent a year reduces the growth rate of real GDP by 0.2-0.3 percent yearly.

The financial system is also considered to be a factor influencing the long-run path of economic growth in a country. According to Levine and Zervos (1993), economies with more developed and more efficient financial systems will be able to more effectively allocate savings to the best investments, which in turn leads to increased productivity, potentially higher savings rates, and faster growth. Their results show that countries with larger per capita growth rates tend to have larger financial systems.

4.2 A Short Review of Literature on the Impact of Capital Flight on Economic Growth

It was surprising to find that there has scarcely been any studies concerning the impact of capital flight on economic growth done. The surprise is even bigger since the inclusion of structural and policy variables into empirical models has been very popular recently. We summarize here what little could be found.

In [14], two major ways, in which capital flight may have detrimental effects on future economic growth have been identified as follows. First, capital that is transferred abroad from the country can not contribute to the domestic investment. This is diminishing possibilities for further economic development. Second link is through imports. If scarce foreign exchange is used to finance capital flight, it is clearly not available for financing imports that may be crucial for economic growth (Lessard and Williamson 1987). If flight capital had been invested in the production of either domestically-produced intermediates or export goods that could finance imports, the import constraint on growth could have been relaxed.

Another summary can be found in [18]. In this work we find that capital flight may directly undermine economic growth via several channels (See, Erbe (1985), Cuddington (1986), Ajayi (1997), Schneider (1991), Williamson (1987) and Dooley et al (1994)).

> First,capital flight retards growth by eroding the domestic tax base. Capital that is held abroad illegally cannot contribute to domestic economic growth as it is beyond the reach of tax authorities of the countries of origin. Second, capital flight may hinder growth by increasing the marginal cost of foreign debt. The central argument here is that if capital held abroad by citizens was legally recognized by creditors, this would serve as collateral and

> the marginal cost of foreign debt would have been much lower as creditors could seize that in case of default by a borrowing country. Third, capital flight may negatively contribute to growth by exacerbating the balances of payments problems. Finally, capital flight may reduce growth by destabilizing the financial system as sudden outflows of large resources would call for adjustment in interest and exchange rates policies.

In his work([18]), Workie looks whether external debt and capital flight could be potential explanations for growth rate differences across the developing world. In regressions, he adds other covariates that always appear in the augmented Solow growth framework to the capital flight and debt variables. In his model, the government behavior is captured by total general government consumption. The percentage change in the consumer price index is included to capture the impact of macroeconomic instability on growth. The percentage change in the terms of trade is included to control for the exogenous shocks resulting from changes in export prices and other patterns of international trade, which give rise to welfare gain or loss. Apart from education, population and labor force growth, the percentage of time a country was at violent crisis is added to control for the impact of political instability on growth. Moreover, the growth in the volume of exports is included for various reasons. Results of the regressions indicate that impact of capital flight is growth retarding both in the random effect and fixed effect model. However, obtained estimations are mostly with statistically insignificant capital flight. This, to a large extent could be due to measurement errors and correlation between other regressors.

4.3 Data and Sample

As we have already said our aim is to identify the impact of capital flight on economic growth. Therefore, the dependent variable is the growth rate of real GDP per capita and the most important controlling variable capital flight

- more specifically, capital flight as a percentage of GDP. We treat capital flight as a policy variable, because most of the countries experiencing capital flight have bad policies. Hence, we believe it can serve as an explanation of variation of the growth. We justify this inclusion not only by the studies mentioned in the previous section but also by the very definition of capital flight, since it is mostly a response to political and economic instability and discriminatory treatment of capital. For this purpose, we will use estimates that we have already calculated. As for the additional explanatory variables, we begin with a brief discussion of the variables that have been recognized as significant determinants of economic growth.

It can be found in the literature that initial level of GDP has become an important proxy when investigating long-run economic growth. Even though it is employed mainly to assess the issue of conditional convergence, it can also be interpreted as a proxy for the variation of initial capital stocks across countries. According to the Solow-Swan growth model, which is based on diminishing returns to capital assumption, we are expecting negative relation between initial level of GDP per capital and economic growth.

Another explanatory variable that is to be included into the model is either gross capital formation or gross fixed capital formation depending on the data availability and obtained results. Gross capital formation is in [28] listed as:

> Gross capital formation (formerly gross domestic investment) consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. Fixed assets include land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings. Inventories are stocks of goods held by firms to meet temporary

> or unexpected fluctuations in production or sales, and "work in progress." According to the 1993 SNA, net acquisitions of valuables are also considered capital formation.

This variable represents capital, K, from neoclassical production function and we are anticipating for it to have growth boosting effect.

Labor, L, is another factor entering production function of the theoretical model. Since there is no better indicator of labor available, we will use either life expectancy at birth (in years) or literacy rate of adults (percentage of population aged 15 and above) at this place. Again, the choice will depend on availability and consistency of data. As for the expected sign, obviously, there has to be the same relationship between growth and labor as was the one with capital.

Population growth is also closely related to the economic growth. Since we are talking about the measures of growth of GDP per capita, it is clear that we should observe negative correlation between these two variables. [4]

In the model, we also include additional explanatory variables that are - according to already mentioned studies - no less important than variables mentioned above. There is no doubt that inflation, government expenditures, openness of a country, terms of trade, stock of M2 and real effective exchange rate significantly influence economic growth. Higher rates of inflation discourage investment(while investment is necessary for sustainable economic growth), therefore the inflation is negatively related to the economic growth. The same relation is also valid for government consumption - proxied by the general government final consumption expenditure (percentage of GDP) - since excessive government expenditures have detrimental effects on economy. On the other hand, openness[5] as well as improvements

[4]Its detrimental effects on economic growth follow also from the Solow-Swan growth model - where we concluded that population growth is a capital widening element.

[5]Openness is defined as a sum of exports and imports to GDP.

in terms of trade, are expected to have positive effects on economic growth. There is also a positive correlation between money-supply growth and economic growth, but the correlation is based on real (inflation-adjusted) M2 growth. Increases in the money supply that cause goods and services prices to increase are negatively correlated with real economic growth. The last variable to be included is real effective exchange rate (reer). We are expecting negative relationship here, since the appreciation of 'reer' has negative impact on exports (and consequently on growth) and significant appreciation leads to expected devaluation.

Countries included in the analysis are foremost the transitive economies but also other countries that have been experiencing substantial capital flight in the period under analysis are included. These are the former Soviet Union countries, the transitive countries of Central and Eastern Europe, countries of Eastern Asia, African countries and Latin American countries[6]. From the original set of countries that we used when calculating capital flight estimates we excluded Maldives, Georgia and Sudan due to the lack of data. As we have already said, we will first run regression on a whole set and then disaggregate according to the geographical location of the countries. We will also try to leave out new member states of European Union since they are further in their development and there should be a better political and economic stability comparing to the others. We also plan to test heavily flight burdened countries and countries that experienced financial crises for the impact of capital flight on economic growth.

The period under analysis is the longest we were able to obtain all the necessary data for. Even though we intended to study the impact of capital flight on economic growth during the 1990's, many of the EECA countries did not exist at the beginning of that period. Therefore, we restricted our analysis to the period of 1994-2003.

[6]We remind the reader that the tables of countries used can be found in the Appendix A.

4.4 Specification of the Model

Considering data sample we have decided that pooled cross-section analysis will suit our needs the best. Pooled analysis combines time series for several cross-sections. Pooled data are characterized by having repeated observations (most frequently years) on fixed units (most frequently states and nations). This means that pooled arrays of data are one that combine cross-sectional data on N spatial units and T time periods to produce a data set of $T \times N$ observations.

We can write the generic pooled linear regression model estimable by Ordinary Least Squares (OLS) procedure

$$y_{it} = \beta_0 + \Sigma_{k=1}^{K} \beta_k x_{kit} + e_{it},$$

where $i = 1, 2, ..., N$ refers to a cross-sectional unit; $t = 1, 2, ..., T$ refers to a time period and $k = 1, 2, ..., K$ refers to a specific explanatory variable. Thus, y_{it} and x_{it} refer respectively to dependent and independent variables for unit i and time t, e_{it} is error term and β_0 and β_k refer, respectively, to the intercept and the slope parameters. Estimating this kind of model and some of its variants (e.g. GLS, FGLS), solves many problems of traditional methods of the comparative research (i.e. time series analysis and cross-sectional analysis).

However, there tend to be problems when using OLS estimation on pooled data. Data designs often violate the standard OLS assumptions about the error process. In fact, the OLS regression estimates are likely to be biased, inefficient and/or inconsistent when they are applied to pooled data. To sum up the complications: errors tend to be no independent from a period to the next, the errors tend to be correlated across nations, errors tend to be heteroskedastic, errors may contain both temporal and cross-sectional components reflecting cross-sectional effects and temporal effects and errors might be non-random across spatial and/or temporal units because parame-

ters are heterogeneous across subsets of units.

The use of OLS in the joint pooled procedure would be optimal if the residuals e_{it} were cross-sectionally uncorrelated, and if they were homoskedastic across nations and over time. However, it seems that the residuals are cross-section heteroskedastic (but contemporaneously uncorrelated). Therefore, we have decided to use GLS method which is incorporated in Eviews package - the cross-section weighting. Eviews will estimate a feasible GLS specification assuming the presence of cross-section heteroskedasticity. Eviews performs FGLS with $\hat{\sigma}^2$ estimated from a first-stage pooled OLS regression. The estimated variances are computed as:

$$\hat{\sigma}^2 = \Sigma_{t=1}^{T_i}(y_{it} - \hat{y_{it}}^2/T_i),$$

where y_{it} are OLS fitted values. The estimated coefficients values and covariance matrix are given by the standard GLS estimator. For further reference on generalized least squares refer to the [27].

Variable	Description	Source	Expected Sign
g	growth rate of the logarithm of GDP per capita (annual %)	WDI	N/A
gdppc	the logarithm of GDP per capita, PPP	WDI	negative
cfwb	capital flight - The World Bank measure (% of GDP)	WDI	negative
cfeo	capital flight - Errors & Omissions (% of GDP)	WDI	negative
gcf	the logarithm of gross capital formation (% of GDP) - formerly gross domestic investment	WDI	positive
gfcf	the logarithm of gross fixed capital formation (% of GDP)	WDI	positive
le	the logarithm of life expectancy at birth, total (years)	WDI	positive
lr	the logarithm of literacy rate, adult total (% of people ages 15 and above)	WDI	positive
l	population growth (annual %)	WDI	negative
cpi	consumer price index change (annual %)	WDI	negative
m2	the logarithm of money and quasi money (M2) as % of GDP	WDI	negative
fce	the logarithm of general government final consumption expenditure (% of GDP)	WDI	negative
reer	real effective exchange rate index change (annual %)	WDI	negative
t	the logarithm of trade (% of GDP) - opennes	WDI	positive

Table 4.1: Variables Entering Regressions

The model that we are about to estimate takes the form:

$$\begin{aligned} g_{it} = \alpha + \beta_1 gdppc_{it} + \beta_2 cf_{it} + \beta_3 gfcf_{it} + \beta_4 lr_{it} + \beta_5 l_{it} \\ + \beta_6 cpig_{it} + \beta_7 m2_{it} + \beta_8 fce_{it} + \beta_9 t_{it} + \varepsilon_{it}, \end{aligned} \tag{4.1}$$

where $i = 1, ..., N$ refers to the cross-sections(countries) and $t = 1, .., T$ refers to time. Table 4.1 introduces variables entering the regressions. Data used are described, their source indicated, and expected signs of regression coefficients specified there. Note, that variables entering regressions are mostly logarithms with exception of capital flight, growth of consumer price index, growth of real effective exchange rate and population growth. These are all data that could not be converted into natural logarithms. We are expecting linear relationship between the growth rate of logarithm of GDP and the logarithms of explanatory variables, thus, the growth rate of logarithm of real GDP per capita is regressed on logarithm of initial GDP per capita, choice capital flight measure(as a percentage of GDP), logarithm of gross capital formation(or gross fixed capital formation), either logarithm of life expectancy or literacy rate, population growth, inflation, logarithm of M2, logarithm of general government final consumption expenditures, real effective exchange rate and logarithm of openness.

Our aim was also to include a change in terms of trade as a structural variable, since it was often found to be of significant influence on the economic growth. Unfortunately, we were not able to obtain data covering our set of countries and period under examination and therefore had to abandon this intention. Furthermore, we do not control for other institutional and structural variables found in studies on economic growth - such as size of government, governance, security of property rights, political freedom, etc. Though we do not control for political stability and democracy or institutional quality, we believe that part of that is controlled by the fixed effects model we employ.

Chapter 5

Results

The results for regressions are summarized in Tables 5.1 and 5.2. First, we present estimates obtained by employing World Bank capital flight measure - these results are presented in Table 5.1. The regressions suggest that, most of the times, capital flight has detrimental effects on long-run economic growth of countries under analysis. It can be seen that estimated coefficients are mostly significant and of negative sign. The exceptions are African countries and East European and Central Asian countries - with only a small improvement when New Member States of European Union (NMS) are excluded. What was puzzling at first, is the relationship between the logarithm of initial value of GDP per capita and the growth rate of logarithm of GDP per capita. According to the theory derived from Solow-Swan growth model - as well as empirical studies mentioned in previous Chapter - we were expecting negative correlation between these two. Despite this, there were only two regressions using the World Bank capital flight estimates that behaved as expected in respect to the initial value. Though, it does not mean anything else than that there was no conditional convergence across the groups of countries. On the other hand, very satisfactory results were obtained for the gross fixed capital formation, openness, stock of money, change in consumer price index and the growth rate of population. Here, we obtained relationships as expected. To sum the results of these regressions, we may say that the

	eeca+ao+ latin+africa	eeca+ao+ latin+africa	eeca+ao+ latin+africa-nms	eeca	eeca-nms	ao	latin	africa
cfwb	-0.0265**	-0.04119	-0.05375*	0.21748*	0.0849	-0.0862*	-0.0695	0.0591*
	(-2.2217)	(-3.2822)	(-3.8511)	(11.6396)	(1.5226)	(-2.7424)	(-1.5757)	(3.0227)
gdppc	3.1143*	2.4971	4.73984*	4.4360***	15.8587**	-4.32836	4.8534***	-0.0632
	(2.9559)	(2.31077)	(3.9377)	(1.67715)	(2.3808)	(-1.2673)	(1.6865)	(-0.0287)
gfcf	3.1764*	3.5911	3.68315*	4.3035*	-6.6723***	7.8325*	7.7053*	2.2104**
	(7.3145)	(7.6581)	(7.7889)	(2.6419)	(-1.9803)	(4.1128)	(7.8136)	(2.5661)
lr	0.845635	3.4549	-1.6855	-28.539	-28.1667	-3.1925	-13.569	8.17497*
	(0.4776)	(2.007)	(-0.8851)	(-1.1006)	(-0.8737)	(-0.4866)	(-1.0202)	(3.0362)
m2	-5.9165*	-5.1555	-6.53777*	1.637879	-3.9291	-2.2707	-4.2711	-8.4762
	(-8.5273)	(-6.86798)	(-8.7188)	(1.1976)	(-0.9435)	(-1.2)	(-1.5347)	(-3.6583)
t	0.0772	0.92242	0.32009	4.8901*	13.4458*	2.7141	2.1764***	1.0677*
	(0.1689)	(1.7584)	(0.63718)	(2.9465)	(3.1803)	(1.1203)	(1.8026)	(0.6724)
fce	-0.11342	-0.5165	0.02729	-1.7845	-1.2599	1.5861**	-1.5742	1.6912
	(-0.3498)	(-1.439)	(0.082)	(-0.83362)	(-0.4073)	(2.125)	(-1.395)	(2.7068)
cpig	-0.0016*	-0.001688	-0.00157*	-0.00237*	-0.0158*	-0.0311**	0.00045***	-0.0093*
	(-3.2577)	(-3.6667)	(-3.2202)	(-7.2049)	(-4.2457)	(-2.022)	(1.9053)	(-0.6718)
l	-1.0129*	N/A	-1.09685*	-1.1942*	-0.9037*	0.9622	3.27377**	-1.9413*
	(-8.3906)	N/A	(-8.9084)	(-4.07224)	(-2.9076)	(1.0141)	(2.093)	(-3.3066)
Obs.	485	485	454	129	83	86	158	92
R^2	0.7745	0.7397	0.7910	0.8878	0.6551	0.861	0.6795	0.83

Table 5.1: Long-run Economic Growth - World Bank Measure Capital Flight

Numbers represent estimated coefficients, t-values are given in the brackets.

* significant at 1% level.

** significant at 5% level.

*** significant at 10% level.

Source: the author.

model performed quite well. Coefficient are mostly significant and comparable to those obtained by other authors. We also obtained high values of R^2.

Comparing results by groups of countries we can see that the model performs the best for a set that includes all the available countries. Variables are significant and with exception of initial level of GDP per capita of desired sign - but as we have already said, this is not an issue. From the Table 5.1 it follows that a 1 percent increase in capital flight decreases the growth

of GDP per capita by almost 3 percent. Additional variables with growth diminishing effects are the stock of money - a percentage increase in the stock of money will, according to the regression, result in almost 6 percent decrease in growth, inflation - even though it has negative significant impact on the growth the decrease it actually causes is almost negligible, population growth and lastly the general final government expenditure. On the other hand, according to the regression, growth boosting factors are gross fixed capital formation - a percentage increase in investment will result in 3 percent increase of growth, literacy rate (almost 1 percent change to a 1 percent increase) and the openness.

Regressions also suggest, that the Asian countries are those that suffer from capital flight the most. It can be seen that using the World Bank measure capital flight estimates, an Asian country will suffer from almost a 9 percent slowing of growth due to 1 percent change in the flight estimate. Compared to the impact of capital flight on economic growth when regressing through all available countries - almost 3 percent - Asian countries are no doubt affected more by the detrimental effects of capital flight then are the others. In this regard, Asia is followed by the Latin American countries - with almost 7 percent impact on growth.

When controlling for the Errors & Omissions capital flight, the regressions imply negative correlation between the flight and growth as well. We present these estimations in Table 5.2. Yet again, coefficients are negative and significant, with only a few exceptions. Repeatedly, African countries along with EECA countries (with NMS excluded) are those that fail to exhibit expected relation, but this time Asian countries belong here as well. These groups of countries exhibit positive relationship between the flight and the growth, whereas African and EECA(no NMS) show other peculiarities too. First of all, they both relate negatively to gross fixed capital formation. This is again in conflict with the theoretical framework where we were expecting

	eeca+ao+ latin+africa	eeca+ao+ latin+africa-nms	eeca	eeca-nms	ao	latin	africa
cfeo	-0.07667* (-2.617)	-0.0662*** (-1.9653)	-0.1849*** (-1.8805)	1.0081* (3.4663)	0.05895* (5.4818)	-0.1152 (-1.3810)	0.22075* (1.25E+14)
gdppc	2.407707** (2.4196)	2.3597** (2.0774)	9.7163* (3.0186)	16.8417* (3.1110)	1.98837* (6.1056)	4.6122 (1.5952)	-0.59245* (-5.3E+12)
gfcf	3.251249* (7.3288)	3.5053* (7.5830)	-5.2280*** (-1.9364)	-7.7117*** (-1.7781)	1.05976* (8.1654)	7.38558* (7.87698)	-7.6551* (-5.6E+14)
lr	2.043286 (1.2897)	2.3067 (1.3684)	-10.3625 (-0.3163)	-47.1083 (-1.0946)	2.20921 (0.7347)	-9.6464 (-0.7871)	0.58434* (1.82E+12)
m2	-5.51556* (-8.1320)	-5.8882* (-7.6623)	-0.9561 (-0.5383)	2.16878 (0.6689)	-11.1448* (-72.563)	-5.3758*** (-1.9719)	-2.49879* (-1.2E+14)
t	0.729576*** (1.6500)	1.0076** (2.1050)	4.5626*** (1.7034)	18.4991* (4.6162)	2.26196* (13.9423)	1.89726 (1.41687)	3.90599* (3.36E+14)
fce	-0.56515*** (-1.7290)	-0.3201 (-0.9550)	0.7718 (0.2740)	4.6206 (1.47019)	3.31622* (10.2909)	-1.0803 (-0.9491)	0.10953* (7.98E+12)
cpig	-0.00181* (-3.6347)	-0.0018* (-3.6003)	-0.002* (-3.270)	-0.00216** (-2.4112)	-0.0661* (-24.526)	0.00039 (1.5821)	-0.0188* (-1.5E+14)
I	-1.04097* (-9.0629)	-1.0690* (-8.4969)	-1.1957* (-7.4289)	-0.51347 (-0.6886)	-6.9528* (-40.227)	3.55848* (2.3891)	N/A N/A
Obs.	490	459	130	90	80	159	108
R^2	0.7525	0.7532	0.6254	0.8144	0.3272	0.6786	1

Table 5.2: Long-run Economic Growth - Errors & Omissions

Numbers represent estimated coefficients, t-values are given in the brackets.

* significant at 1% level.

** significant at 5% level.

*** significant at 10% level.

Source: the author.

for investment to boost economic growth and also is opposing to what we have found for other groups. Furthermore, unlike others, both EECA groups displays negative growth - literacy rate relationship. This is in conflict with the assumptions of theoretical model and previous empirical studies.

In this case, estimates are similar to the case described above. The relationship between the logarithm of initial value of GDP per capita and the growth rate of logarithm of GDP per capita is yet again opposing to what we have been expecting to find, with the only exception of African group. This once again implies, that the conditional convergence did not occur across groups of countries other than Asian. On the other hand, anticipated coefficients were obtained for growth of consumers price index, openness, population growth and money stock. Literacy rate, gross fixed capital formation and general final consumption expenditure of government appear in regressions either with expected or unexpected sign.

To follow the example from the beginning of this Chapter we will again describe results for the pool consisting of all countries. Estimated coefficients are once again mostly significant and of expected sign. Not returning to the initial value of GDP per capita, the other variables results are: openness became more significant this time, having almost 1 percent positive impact on the growth. The remaining growth raisers are literacy rate - a percentage change in literacy rate will lead to 2 percent increase in growth and gross fixed capital formation - with more than 3 percent impact on growth. The negative determinants of economic growth can be - according to this regression - summarized as follows. The stock of money (M2), final consumption expenditures of government and population growth have all significant detrimental effects. Even though growth of consumer price index is negatively related to the long-run economic growth, the magnitude of the impact is smaller.

Analyzing the impact of capital flight on economic growth, the flight coefficients are in general higher compared to previous estimates. In this case the group of Latin American countries is affected by the flight the most - 1 percent change of flight in this group amounts to 11.5 percent decrease in

economic growth. Compared to set of all countries it is almost 4 percent more.

Though our intention was also to run regressions for a group of countries influenced by serious financial crises (i.e. Mexico, Argentina, Brazil, Venezuela, Indonesia, Malaysia, Philippines, Thailand and Russia) this did not materialize due to the insufficient data set covering this set of countries. We also recognize that the Errors & Omissions methodology does not have to necessarily indicate capital flight (In some cases it might capture simply statistical discrepancy in data.) and hence the results of regressions presented in the Table5.2 should be considered with caution.

To conclude this Chapter, we performed the GLS estimation of pooled cross-sectional data trying to find the relationship between capital flight and the economic growth. Regression estimates prove our hypothesis of detrimental effect of capital flight on economic growth in most cases. Coefficients are mostly negative and significant with only a few exceptions.

In our regressions we have controlled not only for the capital flight but for other crucial determinants of the long-term economic growth as well. We obtained mostly satisfactory results in agreement with theory and previously done empirical studies. The only surprising element proved to be the initial value of GDP per capita indicating that no conditional convergence across the groups of studied countries occurred. Some of the estimation problems can be attributed to the poor quality of the data from the countries of African region. Due to the problem of missing data we even had to completely drop the reer variable since we could not find any homogenous group of countries to with this data available.

Chapter 6

Conclusion and Policy Implications

The aim of this thesis was to measure capital flight and then to measure its impact on the long-term economic growth. Since the definition of the term is not agreed upon and there exist various concepts that can be employed to obtain estimates, the thesis begins with the description of the phenomenon.

To suit our needs, we have chosen to apply four different methodologies for measurement of the flight - the Erbe and the World Bank measure, Errors & Omissions measure, Morgan Guaranty Trust Co. measure and Cuddington measure. We estimated capital flight magnitudes for a set of 75 countries and clustered them according to their geographical location. Obtained estimations prove that the capital flight phenomenon is still prevalent in many developing/transitive economies and should not be underestimated. Indeed, even as late as 2002 and 2003 many of the countries under analysis experienced substantial outflows of capital.

We also found a link between the capital flight and the crises that countries from our sample experienced in 1990's. For example, we point out the Mexican case. According to the World Bank measure, Mexico did not

experience any capital flight until the 1994 - when the first signs of crisis surfaced. In 1994 capital flight amounted almost to 8 billions of USD and reached 25 billions in 1995 - almost 9 percent of GDP. However, this is not the only case, Brazil, Argentina, Venezuela, Indonesia, Malaysia, Philippines, Thailand and Russia - the most crises influenced countries - experienced substantial; if not the peak; magnitudes of capital flight during the crisis years. This is consistent with previously stated fact that capital flight is a response to political and economic instability and/or discriminatory treatment of domestic capital. Furthermore, for the case of Slovakia, we provided analysis of the evolution of capital flight since the foundation of the country. Experience from this country suggests that capital flight responds to political cycles as well, since these often go hand in hand with the political instability.

Second part of the thesis is dedicated to the empirical exploration of the impact of capital flight on economic growth. First the theoretical framework was presented, followed by the survey of literature on economic growth and what little could be found on the impact of capital flight on the growth.

The growth rate of logarithm of real GDP per capita is regressed on logarithm of initial GDP per capita, capital flight measure (as a percentage of GDP), logarithm of gross fixed capital formation, logarithm of literacy rate, population growth, inflation, logarithm of M2, logarithm of general government final consumption expenditures and logarithm of openness. The period under consideration is 1994-2003. We perform a pooled cross-section analysis based on the fixed effects model estimated by feasible generalized least squares method.

Regression estimates prove the hypothesis of detrimental effects of capital flight on economic growth in most cases. For regressions with capital flight estimated using either the World Bank measure or Errors & Omissions measure, obtained coefficients are mostly negative and significant, with only

a few exceptions. Example of such an exception is Africa, though in this case it is caused mostly due to unreliable data rather than other factors. Our intention was also to run regressions for a set of countries influenced by serious financial crises (i.e. Mexico, Argentina, Brazil, Venezuela, Indonesia, Malaysia, Philippines, Thailand and Russia) but this did not materialize due to the insufficient data covering this set of countries. Despite the significance of coefficients and obtained results, we would like to warn the reader that the results obtained by employing the latter measure should be considered with a caution.

In the regressions, we have controlled not only for the capital flight but for other crucial determinants of the long-term economic growth as well. Coefficient of the logarithm of initial value of GDP per capita turned out be of unexpected sign, implying that no conditional convergence occurred across the given groups of economies. Aside from this, another reason might also be the fact that we did not control for political stability, property rights or political systems. Non inclusion of these proxies might have caused insufficient explanatory power of the regression. Other coefficients, on the other hand, behaved as expected and we obtained results comparable with other previous empirical studies on economic growth. To sum this up, economic growth boosters are found to be gross fixed capital formation, literacy rate and openness, whereas growth punishers are capital flight, stock of money (M2), inflation, population growth and general final consumption expenditures of government.

The Policy Implications of This Work

As we have already said our empirical exploration suggests that capital flight is harmful for long-run economic growth. Since this is true, it is worth fighting against this phenomenon. Not only are the countries loosing substantial amounts of funds that could be otherwise used for development and further

stabilization, capital flight also punishes long-term economic growth. For a flight relief or even reversal of capital flight to occur, steps should be taken to avoid the causes of capital flight, which includes economic policies, political stability and institutional developments.

Moreover, other key issues that should be taken care of include stabilization of inflation rate - since this one is an important determinant of both flight and growth, transparent taxation, treatment of domestic capital in a same way as foreign, supporting domestic market, and also the stabilization of government expenditures.

Appendix A

List of Countries

Europe and Central Asia	Asia - Other	Latin America	Africa
Albania	Bangladesh	Argentina	Angola
Armenia	Cambodia	Bolivia	Botswana
Azerbaijan	India	Brazil	Burundi
Belarus	Indonesia	Chile	Cape Verde
Bulgaria	Korea R.	Colombia	Egypt
Croatia	Lao PDR	Costa Rica	Ghana
Czech R.	Malysia	Dominican R.	Guinea
Estonia	Maldives	Ecuador	Kenya
Georgia	Mongolia	El Salvador	Lesotho
Hungary	Nepal	Guatemala	Madagascar
Kazahstan	Pakistan	Haiti	Mali
Kyrgyz R.	Phillippines	Honduras	Mauritania
Latvia	Sri Lanka	Mexico	Nigeria
Lithuania	Thailand	Nicaragua	Senegal
Macedonia	Vietnam	Panama	South Africa
Malta		Paraguay	Sudan
Moldova		Peru	Tanzania
Poland		Uruguay	Tunisia
Romania		Venezuela	
Russia			
Slovakia			
Turkey			
Ukraine			

Table A.1: Country Groups

Appendix B

Capital Flight Estimates

In this annex, we provide complete set of tables with capital flight estimates that we calculated. Note, that positive numbers mean that the capital flight phenomenon is taking place. Also note that all the values are in millions of American dollars. Places without numbers mean that either a country was not founded at the moment or that some data were not available .

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Albania	:	22.90	63.00	111.40	-62.50	-398.70	-30.30	-244.40	31.50	-154.20	206.30	-123.90	-276.00	34.70
Armenia	:	:	:	:	-36.62	-112.90	-183.63	-210.09	-83.59	-108.24	-126.39	-118.94	-74.31	-35.95
Azerbaijan	:	:	:	:	:	-24.00	-179.50	23.20	-121.30	12.00	-76.70	76.40	567.20	446.20
Belarus	:	:	:	:	-164.60	-329.70	-224.40	-308.60	-454.00	95.30	-435.70	-341.70	404.80	-50.00
Bulgaria	:	513.00	-858.60	-473.00	-2698.50	373.90	609.80	-951.80	192.70	-334.10	30.10	-1095.50	1327.70	599.50
Croatia	:	:	:	:	551.90	109.32	34.20	-757.80	1578.40	179.40	891.40	-301.80	2780.50	6288.50
Czech R.	:	:	:	-159.00	-741.00	-722.30	1980.80	2432.80	1640.40	1782.30	271.90	-54.20	3262.10	3747.70
Estonia	:	:	:	66.90	62.70	31.20	904.00	238.80	409.20	-197.20	49.30	530.60	1269.40	1605.70
Georgia	:	:	:	:	:	:	:	-181.30	239.50	-120.30	-133.60	-23.30	41.00	45.20
Hungary	:	594.40	465.50	-2110.70	1630.70	714.50	-2454.40	-2435.00	1761.10	-2725.20	-3786.60	65.70	4378.60	4035.20
Kazahstan	:	:	:	:	:	966.50	-735.70	1135.90	2254.70	1376.80	7511.80	3836.20	3843.20	6019.20
Kyrgyz R.	:	:	:	173.50	77.00	24.20	131.30	66.40	-84.70	29.50	-11.20	-143.20	67.30	126.10
Latvia	:	:	:	262.30	450.50	288.40	684.90	1638.60	24.60	489.90	715.80	-5.00	823.20	1297.40
Lithuania	:	:	:	-86.20	-72.50	-506.30	-97.40	1139.10	-292.40	274.90	-99.30	-60.50	974.40	3.50
Macedonia	:	:	:	:	:	:	272.00	-879.70	41.80	-196.90	-125.70	80.60	90.10	-58.80
Malta	:	164.20	12.00	-20.80	-298.20	229.90	-60.90	-61.90	836.00	106.30	186.90	-219.90	:	:
Moldova	:	:	:	:	51.40	46.70	-72.50	-11.70	-45.00	-122.20	202.10	-16.40	629.10	-1.50
Poland	:	3031.20	-7967.90	-7491.20	-1308.50	-2207.70	-1195.10	-2337.00	14353.70	11281.30	9846.60	3883.60	17479.70	15794.20
Romania	:	-69.50	-440.30	-70.30	617.70	73.50	-964.70	-1395.60	354.50	-1203.60	-205.90	-1079.60	1871.60	2916.80
Russia	:	:	:	:	21829.00	-654.80	21215.79	3999.01	58412.70	22753.19	18767.70	20602.70	12456.40	34298.80
Slovakia	:	:	:	162.10	1097.60	22.00	-53.60	333.40	2529.00	-2372.30	129.80	:	453.20	4012.50
Turkey	:	3708.30	4066.40	5945.90	336.40	1071.90	-410.70	6.80	15064.60	-1185.70	6822.60	6207.20	9231.30	4660.10
Ukraine	:	:	:	:	228.20	1439.30	-448.30	498.20	2718.30	2746.90	-85.20	1206.10	3492.10	5087.20

Table B.1: World Bank Measure - Europe and Central Asia

Source: the author.

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Albania	2.00	-125.20	-47.40	-10.30	-123.90	-53.70	-96.90	-158.40	-71.10	-206.20	-9.80	-136.30	-108.50	-147.40
Armenia	:	:	:	-15.60	-4.83	-12.36	-15.06	-10.83	-18.39	-13.11	-17.05	-12.14	3.23	1.69
Azerbaijan	:	:	:	:	:	-59.70	-23.60	27.00	20.10	-42.40	:	0.90	87.40	111.80
Belarus	:	:	:	-3.40	41.60	-168.60	178.10	-53.00	-172.30	246.30	-238.90	-35.10	126.90	-145.30
Bulgaria	-70.00	-232.00	-15.00	-18.00	-72.00	-144.00	105.30	-256.40	299.20	-29.90	-34.50	-694.70	208.30	-349.90
Croatia	:	:	:	1163.10	1204.36	191.11	946.10	-173.70	0.90	1130.70	779.40	580.30	782.80	1206.40
Czech R.	:	:	:	-71.00	243.00	-596.00	901.00	-730.00	-288.00	-27.00	296.00	-499.00	-266.00	-251.00
Estonia	:	:	4.40	45.90	-17.20	-8.70	35.60	25.10	-5.90	5.50	-12.20	-22.30	-15.30	8.60
Georgia	:	:	:	:	:	:	:	-136.00	170.50	-55.70	-187.40	-34.90	-6.00	-6.60
Hungary	-10.00	82.00	-2.00	-724.00	-209.00	-1298.00	-802.00	307.00	285.00	389.00	149.00	-61.00	-327.00	-466.00
Kazahstan	:	:	:	:	:	-35.10	780.00	1114.10	1078.40	641.60	1122.70	926.10	6.50	984.10
Kyrgyz R.	:	:	:	16.20	-48.00	76.90	-58.40	57.40	-63.40	3.00	-9.80	-20.90	18.30	-71.60
Latvia	:	:	44.00	186.00	508.00	653.00	46.00	-87.00	-97.00	-38.00	26.00	-47.00	57.00	-85.00
Lithuania	:	:	:	7.40	46.90	-287.20	-66.70	-195.80	-282.90	42.20	-128.30	-153.60	-78.50	-181.20
Macedonia	:	:	:	:	:	:	-18.80	29.90	15.10	-159.90	-61.00	-2.30	29.70	-90.40
Malta	-2.50	84.70	12.70	-17.40	-33.40	-16.10	-58.60	-93.70	-91.80	92.30	-22.30	-275.30	-138.20	-241.80
Moldova	:	:	:	:	115.30	31.70	-15.50	7.90	22.80	3.80	6.70	3.40	8.40	-89.50
Poland	-162.00	745.00	181.00	-219.00	98.00	564.00	-321.00	-1309.00	520.00	-2126.00	-349.00	-1695.00	1518.00	2879.00
Romania	-147.00	-15.00	12.00	-152.00	-91.00	-456.00	-359.00	-1062.00	-193.00	-794.00	-125.00	-731.00	856.00	289.00
Russia	:	:	:	:	438.00	7857.00	7712.00	8808.00	9808.00	8555.00	9158.00	9350.00	6502.00	7430.00
Slovakia	:	:	:	-183.00	-398.00	-198.00	-162.00	-280.00	333.00	14.00	-51.00	:	-298.00	-27.00
Turkey	469.00	-948.00	1190.00	2222.00	-1766.00	-2355.00	-1498.00	988.00	703.00	-1719.00	2699.00	1634.00	21.00	-3978.00
Ukraine	:	:	:	:	-423.00	-48.00	-259.00	781.00	818.00	953.00	148.00	221.00	895.00	965.00

Table B.2: Errors and Omissions - Europe and Central Asia

Source: the author.

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Albania	:	:	13.00	85.90	-85.40	-467.10	-140.80	-162.90	-59.70	-251.00	203.80	-256.20	-233.80	-10.60
Armenia	:	:	:	:	-36.35	-113.10	-176.30	-227.66	-77.42	-142.66	-140.50	-138.64	-112.52	-88.66
Azerbaijan	:	:	:	:	:	-43.60	-496.40	28.50	-58.90	-32.20	-69.60	-1.30	548.90	429.50
Belarus	:	:	:	:	-258.80	-271.10	-264.60	-321.20	-435.00	78.90	-427.30	-324.20	423.90	-111.10
Bulgaria	:	229.00	-921.60	-420.00	-2997.50	485.90	723.50	-1392.40	295.60	-308.40	-465.70	-1225.30	1590.80	863.30
Croatia	:	:	:	:	362.40	-357.78	-555.00	-1129.60	1984.50	348.00	-7.70	-1913.00	4104.40	3977.40
Czech R.	:	:	:	-123.00	-904.00	-946.30	-336.20	-1728.20	-11.60	-859.70	1282.90	-1353.20	7106.10	5216.70
Estonia	:	:	:	22.20	-40.10	-9.90	924.90	42.90	470.50	-251.00	-27.70	311.30	1241.10	1518.70
Georgia	:	:	:	:	:	:	:	-196.30	216.30	-111.00	-141.30	-47.90	-18.30	45.70
Hungary	:	710.40	1081.50	-2237.70	1821.70	839.50	-3583.40	-3224.00	1428.10	-3155.20	-3031.60	-1397.30	4906.60	3084.20
Kazahstan	:	:	:	:	:	814.10	-561.30	1069.90	2186.80	1171.00	7666.20	3772.60	3218.50	5706.20
Kyrgyz R.	:	:	:	160.10	78.30	23.00	132.90	47.70	-75.10	28.10	-12.80	-159.70	25.00	76.60
Latvia	:	:	:	143.30	50.50	387.40	423.90	1385.60	91.60	214.90	345.80	-112.00	339.20	662.40
Lithuania	:	:	:	22.70	-89.80	-524.30	-236.90	1051.00	-235.20	149.20	-241.50	-218.70	1187.10	-157.50
Macedonia	:	:	:	:	:	:	297.30	-937.20	10.50	-311.80	-187.80	-157.00	249.50	-86.10
Malta	:	242.00	-87.70	125.60	-218.60	-49.70	-642.10	-996.40	-1241.10	-1498.80	-77.10	884.60	:	:
Moldova	:	:	:	:	41.30	:	-79.00	-1.10	-55.90	-137.60	185.60	-15.20	613.40	-21.10
Poland	:	2051.20	-8790.90	-6842.20	-3026.50	-1150.70	-742.10	-3413.00	16560.70	8587.30	6831.60	485.60	20586.70	16145.20
Romania	:	-106.50	:	-238.30	-3.30	327.50	-1279.70	-1535.60	533.50	-967.60	-559.90	-1181.60	2407.60	3145.80
Russia	:	:	:	:	19948.00	4053.20	19243.79	2915.01	58914.70	19130.19	15435.70	18950.70	11781.40	33461.80
Slovakia	:	:	:	-367.90	753.60	-226.00	-715.60	-788.60	2639.00	-494.30	-618.20	:	1022.20	4126.50
Turkey	:	1113.30	1592.40	2715.90	2777.40	790.90	1037.30	-969.20	14122.60	-3024.70	5248.60	6440.20	9874.30	5008.10
Ukraine	:	:	:	:	-550.80	1111.30	-365.30	-37.80	2672.30	2797.90	-149.20	1343.10	3406.10	4632.20

Table B.3: Morgan Guaranty Trust Co. Measure - Europe and Central Asia

Source: the author.

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Albania	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Armenia	:	:	:	:	-46.69	:	:	:	:	6.95	4.77	10.20	38.31	25.05
Azerbaijan	:	:	:	:	:	:	:	:	:	:	:	94.10	171.30	154.70
Belarus	:	:	:	:	:	:	272.00	-112.60	-360.20	255.10	-294.70	1.40	248.30	-182.80
Bulgaria	:	:	:	:	:	:	106.30	-256.20	:	-29.30	-155.30	:	209.70	:
Croatia	:	:	:	:	:	:	909.70	-191.80	20.40	1402.10	684.00	531.90	859.80	1366.10
Czech R.	:	:	:	:	-2.00	295.00	-450.00	936.00	-427.00	-273.00	115.00	462.00	-501.00	214.00	-1067.00
Estonia	:	:	:	:	132.60	28.80	-3.10	82.40	86.10	62.60	9.20	-6.50	10.70	-90.20	48.00
Georgia	:	:	:	:	:	:	:	:	:	:	:	:	:	2.50	-4.90
Hungary	:	:	:	:	:	:	-1343.00	3.00	828.00	433.00	224.00	-819.00	-243.00	721.00	-94.00
Kazahstan	:	:	:	:	:	:	:	:	:	:	:	1170.90	875.50	360.20	1566.20
Kyrgyz R.	:	:	:	:	:	:	:	:	:	-52.10	4.00	-9.30	-21.90	15.10	-68.40
Latvia	:	:	:	:	:	:	676.00	-8.00	-28.00	-101.00	-58.00	44.00	-22.00	74.00	-79.00
Lithuania	:	:	:	:	:	:	-222.90	-33.50	-129.10	-139.20	-43.10	-202.80	-73.70	-34.10	-242.70
Macedonia	:	:	:	:	:	:	:	139.70	45.50	:	:	:	:	:	:
Malta	12.40	92.30	8.50	-28.80	13.00	-1.80	-63.90	-69.30	-119.00	136.80	-41.60	-299.20	-123.30	-264.10
Moldova	:	:	:	:	180.90	163.60	22.60	16.60	97.10	75.40	22.70	22.80	42.20	-38.00
Poland	:	:	:	:	-28.00	683.00	-97.00	-1479.00	614.00	-1553.00	193.00	-950.00	2734.00	5001.00
Romania	:	:	:	:	:	-350.00	-399.00	-1157.00	-206.00	-778.00	-145.00	-829.00	690.00	305.00
Russia	:	:	:	:	:	:	13932.00	9504.00	15196.00	11877.00	13404.00	8875.00	8199.00	11442.00
Slovakia	:	:	:	:	-364.00	-200.00	-158.00	-290.00	381.00	192.00	88.00	:	-186.00	110.00
Turkey	:	:	:	:	:	:	:	:	:	-1613.00	2725.00	2079.00	942.00	-3068.00
Ukraine	:	:	:	:	:	:	:	:	:	:	:	:	985.00	1152.00

Table B.4: Cuddington Measure - Europe and Central Asia

Source: the author.

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Bangladesh	:	223.8	-66.1	421.5	940.4	52.9	-1064.4	-812.3	1077.0	1004.3	-793.6	-712.9	2222.7	1111.6
Cambodia	:	:	-86.2	-82.9	-70.8	266.9	110.0	-11.4	100.4	22.2	14.5	35.2	92.6	150.0
India	:	-4465.0	-1618.1	-1910.9	-1882.7	-9600.0	-7442.6	-3287.5	-3654.5	-6790.0	-7345.9	-7311.5	-826.9	:
Indonesia	:	5688.3	5542.4	117.7	16576.0	12313.4	-2033.6	11947.1	16585.9	385.8	-8542.6	-3057.6	309.4	5335.0
Korea R.	:	-2714.5	-3677.9	275.8	15080.5	-3925.9	3106.7	23266.1	12208.2	-2093.1	-9366.6	-16732.0	:	:
Lao PDR	:	-28.5	-73.9	-65.1	-135.7	-239.3	-77.5	-33.1	114.3	271.0	-34.9	-58.3	:	:
Malysia	:	330.4	-663.9	-3204.4	7169.4	1482.7	3433.7	10631.9	-3145.0	9859.1	11152.4	8128.3	10314.2	4545.1
Maldives	:	1.7	-4.2	-23.2	3.2	3.2	-13.1	-42.4	-8.3	-49.9	-47.1	11.6	-26.6	-33.8
Mongolia	:	:	:	48.1	102.7	92.4	-61.6	91.1	4.6	65.0	-122.6	-138.4	12.7	:
Nepal	:	-326.0	-313.3	-91.0	-98.9	-273.3	-337.8	-546.9	-72.9	-72.1	-737.1	-467.5	387.2	195.6
Pakistan	:	1348.9	-461.4	-3333.5	-285.7	1407.0	-2969.0	-1237.4	622.1	376.5	-888.8	-1257.6	1776.5	3696.5
Phillippines	:	-556.6	-1963.6	332.1	-292.6	-3354.1	-4340.0	4882.0	4317.4	9783.2	5151.5	3981.4	14248.8	6441.5
Sri Lanka	:	-147.2	-718.7	-588.7	85.4	-509.3	-647.1	-421.6	735.7	598.2	-1137.8	-795.5	488.9	108.1
Thailand	:	-733.5	-3285.1	2154.1	1514.2	14974.3	-2653.9	7055.2	15212.2	5481.6	-2763.3	-3877.3	-4260.0	1485.6
Vietnam	:	:	:	:	:	:	751.7	-4059.4	1361.3	2062.7	-8110.1	1458.0	1107.0	:

Table B.5: World Bank Measure - Asia

Source: the author.

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Bangladesh	75.7	98.4	84.0	-69.4	257.1	-133.3	-113.5	75.5	-201.0	-258.0	-282.4	106.0	349.3	-196.0
Cambodia	:	:	34.0	-1.0	-65.6	-11.5	78.0	41.2	28.7	-32.1	-14.1	29.3	29.8	10.7
India	432.0	-607.0	-1482.0	987.0	-1492.0	-970.0	1934.0	1348.0	-1390.0	-313.0	267.0	-554.0	585.0	:
Indonesia	-744.0	-91.0	1279.0	2932.0	263.0	2255.0	-1319.0	2645.0	-2099.0	-2077.0	-3829.0	-701.0	2063.0	2937.0
Korea R.	1769.0	-758.0	-1080.0	722.0	1816.0	1240.0	-1214.0	4839.0	6231.0	3581.0	571.0	-2951.0	-124.0	-342.0
Lao PDR	40.2	60.3	16.3	-13.2	-71.8	-92.4	-17.7	100.5	103.8	165.1	74.2	57.2	:	:
Malysia	-1085.0	151.0	-79.0	-3624.0	-154.0	762.0	2502.0	137.0	-3039.0	1273.0	3221.0	2394.0	391.0	4.0
Maldives	17.8	-2.6	1.0	-22.6	-2.3	-1.5	16.4	14.0	18.2	-11.4	-6.9	6.5	-2.3	-0.3
Mongolia	3.1	36.4	-17.4	4.8	1.0	-10.1	28.1	75.6	50.2	-23.6	19.3	32.2	-14.1	:
Nepal	-4.9	-10.7	-0.8	-4.6	-7.1	-2.8	-82.3	-216.6	-134.0	-58.3	-145.7	-256.5	66.6	-370.8
Pakistan	103.0	78.0	-120.0	6.0	-175.0	303.0	-160.0	72.0	-1011.0	-768.0	-557.0	-708.0	-974.0	108.0
Phillippines	-593.0	138.0	520.0	-85.0	-157.0	2094.0	2986.0	5241.0	750.0	1311.0	2630.0	270.0	2076.0	-2081.0
Sri Lanka	115.1	-225.6	-173.3	-128.0	-106.3	-157.9	-143.6	-148.0	-26.3	27.3	-186.2	-15.0	-136.2	32.3
Thailand	-1419.0	-431.0	142.0	230.0	-87.0	1196.0	2627.0	3173.0	2828.0	-33.0	685.0	258.0	-1410.0	-736.0
Vietnam	:	:	:	:	:	:	611.0	269.0	535.0	925.0	680.0	847.0	1038.0	:

Table B.6: Errors and Omissions - Asia

Source: the author.

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Bangladesh	:	-42.9	-262.1	243.8	938.9	-191.0	-1105.5	-882.5	1038.9	872.9	-1109.3	-561.2	2366.4	1247.4
Cambodia	:	:	:	-108.5	:	227.1	86.4	12.2	121.0	5.4	3.3	-10.2	132.4	71.5
India	:	-5468.0	113.9	-2058.9	-2911.7	-9692.0	-9084.6	-5443.5	-5009.5	-5650.0	-9033.9	-6218.5	3981.1	:
Indonesia	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Korea R.	:	-4524.5	-6968.9	-3717.2	10019.5	13124.9	-5066.3	14930.1	19178.2	-2296.1	10585.6	-7977.0	:	:
Lao PDR	:	5.7	-90.0	-108.3	-145.3	-240.8	-91.6	6.4	91.5	227.8	-16.1	-33.1	:	:
Malysia	:	744.4	-182.9	-5261.4	5888.4	1042.7	6772.7	9652.9	-5822.0	:	:	:	10218.2	5449.1
Maldives	:	-0.5	-6.0	-18.9	3.3	-4.1	-21.4	-31.6	-20.5	-45.3	-49.9	8.6	-33.8	-62.3
Mongolia	:	:	:	23.2	87.4	77.1	-70.9	73.0	:	50.2	-133.3	-137.3	-11.7	:
Nepal	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Pakistan	:	1046.9	-289.4	-3418.5	-392.7	1291.0	-2961.0	-1277.4	794.1	351.5	-906.8	-1274.6	1770.5	3619.5
Phillippines	:	:	:	:	:	:	-6085.0	5307.0	5126.4	8842.2	7416.5	4446.4	14622.8	6933.5
Sri Lanka	:	-185.8	-822.3	-569.9	-58.0	-471.2	-668.6	-816.2	814.5	622.5	-1377.2	-612.5	593.3	14.3
Thailand	:	:	-3181.1	-1110.9	487.2	12237.3	87.1	4447.2	11752.2	3773.6	-4952.3	-3134.3	-25.0	1076.6
Vietnam	:	:	:	:	:	:	718.7	-4171.4	824.3	1276.7	-10199.1	261.0	1731.0	:

Table B.7: Morgan Guaranty Trust Co. Measure - Asia

Source: the author.

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Bangladesh	:	:	:	:	:	:	272.1	683.1	620.6	754.7	653.3	691.9	1006.6	397.8
Cambodia	:	:	:	:	:	:	:	:	41.8	-41.7	150.3	50.2	146.7	123.7
India	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Indonesia	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Korea R.	1799.0	-666.0	-1068.0	794.0	1895.0	1408.0	-1064.0	6862.0	6669.0	4183.0	1456.0	-1742.0	565.0	-328.0
Lao PDR	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Malysia	:	:	:	:	:	:	:	:	:	:	:	:	4538.0	2033.0
Maldives	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Mongolia	:	:	35.0	15.3	36.7	23.8	95.2	165.6	105.0	13.4	52.9	38.5	-6.3	:
Nepal	:	:	:	:	:	:	:	:	:	-106.5	-274.3	-267.7	60.9	-331.7
Pakistan	:	:	:	:	:	:	:	:	:	:	:	:	:	306.0
Phillippines	:	:	:	:	:	:	:	:	:	17692.0	20031.0	14044.0	14896.0	10429.0
Sri Lanka	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Thailand	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Vietnam	:	:	:	:	:	:	:	:	:	:	:	:	:	:

Table B.8: Cuddington Measure - Asia

Source: the author.

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Argentina	:	2925.1	-1609.7	-12548.9	2744.1	25571.8	7226.6	7028.1	157.3	13336.8	2636.2	16834.4	11296.5	20806.3
Bolivia	:	-434.7	-310.6	-393.2	581.1	339.2	-322.7	127.0	531.5	420.7	574.1	-652.5	946.8	728.1
Brazil	:	64.3	1382.7	7155.8	1992.7	-19505.8	909.6	13103.1	45339.3	11970.3	3618.3	-14245.9	8433.6	12223.8
Chile	:	-1729.9	-1577.2	-1263.8	-669.5	-35.2	490.2	825.7	8068.1	8168.7	2132.0	3431.0	3111.9	3362.2
Colombia	:	997.7	382.3	-182.4	1186.9	341.0	265.9	1766.9	-284.5	3716.3	1456.4	2489.2	-3378.6	-665.7
Costa Rica	:	-76.7	-423.4	-386.7	160.0	-14.1	-75.7	-306.0	719.1	-276.9	89.5	-89.3	-267.1	-166.1
Dominican R.	:	-251.2	-469.9	-113.8	-79.2	330.2	-217.6	127.0	427.4	996.1	-148.7	414.7	1759.2	1570.6
Ecuador	:	-274.1	-154.4	1166.0	321.7	-1098.9	699.5	937.4	-546.3	2671.7	-1205.8	1504.1	1954.6	1361.9
El Salvador	:	-83.2	-191.0	-448.6	:	27.9	-36.2	-64.5	829.2	135.6	528.0	1100.9	896.7	113.2
Guatemala	:	-633.1	-601.2	-540.3	-367.0	-114.5	-456.8	-703.4	-431.3	-610.8	-1406.1	-1009.4	-997.4	-1179.6
Haiti	:	-232.9	18.7	-18.7	-99.0	-168.3	3.1	53.8	8.6	66.0	-27.9	-14.6	5.3	76.1
Honduras	:	-358.0	153.6	284.8	-46.9	-145.5	-309.3	-321.3	-272.5	-414.5	25.8	-755.0	185.8	264.8
Mexico	:	-8654.5	-22989.0	-6848.9	7734.7	25135.3	-4271.7	-14000.7	5457.0	6060.9	-20637.6	-7823.3	-13140.5	-9846.7
Nicaragua	:	-181.7	-509.5	-491.8	-55.2	-2133.1	-5186.3	-543.4	-216.5	-288.8	-564.0	-965.4	-574.5	-193.8
Panama	:	-196.0	-385.7	371.9	462.8	-1042.1	-112.1	134.4	592.2	-48.7	317.9	796.2	-12.0	1019.4
Paraguay	:	-578.5	-549.3	-845.7	-399.7	:	-177.9	-319.2	485.0	406.6	-259.0	-427.1	302.5	182.0
Peru	:	-1811.7	-2912.5	911.4	303.5	1147.0	-3812.7	-2106.3	257.5	8.3	-927.6	-1556.1	772.6	1491.9
Uruguay	:	-297.6	187.3	-43.8	-155.7	-31.1	343.6	245.6	54.3	-262.5	237.3	982.9	3832.2	-57.6
Venezuela	:	1769.7	1295.6	-2672.0	3161.5	3297.2	3271.0	7962.1	5396.7	3345.9	11160.6	5372.7	9732.9	8273.0

Table B.9: World Bank Measure - Latin America

Source: the author.

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Argentina	-715.0	341.0	-2.0	-35.0	16.0	-12.0	1684.0	1263.0	409.0	637.0	146.0	2737.0	1929.0	1729.0
Bolivia	11.4	-53.2	-34.3	-123.6	315.8	112.3	31.6	260.7	400.7	353.2	54.8	202.7	639.8	33.0
Brazil	296.0	-852.0	1393.0	815.0	442.0	-1447.0	1992.0	3160.0	2911.0	-240.0	-2557.0	498.0	154.0	764.0
Chile	50.0	-390.0	-371.0	15.0	557.0	-49.0	-16.0	-237.0	239.0	1083.0	-426.0	861.0	1027.0	-866.0
Colombia	-70.0	-191.0	-191.0	135.0	-541.0	-226.0	313.0	559.0	-153.0	432.0	-50.0	150.0	-282.0	-391.0
Costa Rica	-43.4	-99.9	-201.9	-299.0	-249.1	-23.2	-118.7	-157.8	182.5	-213.1	-391.0	-243.9	-28.2	-68.0
Dominican R.	120.7	-548.3	-569.0	102.1	659.8	256.6	-108.8	193.7	338.6	480.4	618.5	451.9	139.3	468.1
Ecuador	-210.0	-164.0	192.0	69.0	20.0	1336.0	189.0	62.0	147.0	521.0	15.0	276.0	4.0	-184.0
El Salvador	-299.4	-125.6	-65.6	-107.6	-15.4	28.4	24.2	204.4	668.9	206.0	11.5	456.6	607.5	152.6
Guatemala	-36.1	-83.3	-81.8	-85.2	23.6	136.2	71.7	-40.7	-66.8	-195.0	-86.1	-87.2	64.7	-311.4
Haiti	46.3	-80.1	-9.2	-35.3	10.2	-124.9	-19.5	-16.1	181.3	-1.0	-44.3	-6.9	3.1	-85.0
Honduras	107.4	40.0	-29.2	47.5	-115.5	-45.0	-157.9	-196.5	-96.1	-122.0	-118.7	-68.3	-60.5	-76.1
Mexico	-1228.0	2278.0	852.0	3128.0	3323.0	4248.0	-229.0	-2411.0	527.0	-685.0	-2590.0	76.0	1112.0	-1381.0
Nicaragua	149.2	-17.2	-60.2	-128.1	-67.1	-85.0	-146.5	-320.1	141.3	299.5	35.3	61.2	-135.1	-26.4
Panama	119.7	-629.9	-449.9	-256.9	51.5	205.8	96.3	195.0	389.1	598.9	-370.2	462.4	-227.2	-228.1
Paraguay	-362.4	-472.0	-457.7	-700.4	-686.5	:	-139.8	-5.8	141.6	244.3	79.3	-52.9	257.9	145.8
Peru	215.0	-1114.0	-417.0	-1232.0	-267.0	-652.0	-703.0	8.0	-358.0	-108.0	-480.0	-69.0	-208.0	-655.0
Uruguay	-35.7	-468.8	-238.3	-208.7	-10.2	-18.6	-152.2	-78.8	-285.5	-250.9	46.6	-334.4	2291.8	-1248.5
Venezuela	1742.0	1516.0	299.0	539.0	310.0	497.0	892.0	1517.0	1662.0	538.0	2926.0	3601.0	2781.0	946.0

Table B.10: Errors and Omissions - Latin America

Source: the author.

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Argentina	:	:	-2305.7	-14276.9	2443.1	24888.8	4187.6	1691.1	770.3	14331.8	288.2	25794.4	13192.5	21253.3
Bolivia	:	-438.1	-324.9	-399.6	477.1	300.8	-310.3	107.1	597.6	396.5	479.7	-809.5	996.6	774.4
Brazil	:	-3292.7	1345.7	4175.8	-2084.3	-19733.8	-3700.4	18236.1	48722.3	11849.3	5169.3	-17806.9	12768.6	5224.8
Chile	:	-1791.9	-1598.2	-1256.8	-695.5	10.8	403.2	278.7	7687.1	6526.7	2785.0	3576.0	3990.9	3661.2
Colombia	:	725.7	272.3	-256.4	938.9	694.0	224.9	1535.9	-461.5	3904.3	1601.4	2591.2	-3321.6	-814.7
Costa Rica	:	:	:	:	:	-23.9	-93.5	-262.7	689.3	-233.3	13.2	-34.9	-266.5	-194.4
Dominican R.	:	-257.8	-471.1	-140.5	-61.2	291.2	-200.6	86.3	374.2	977.3	-213.1	319.8	1770.2	1449.4
Ecuador	:	-275.1	-169.4	1148.0	:	:	:	:	:	:	:	:	:	:
El Salvador	:	-61.9	:	-444.5	:	17.7	:	-62.4	821.2	131.0	381.6	709.6	813.6	246.9
Guatemala	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Haiti	:	-249.1	6.1	-49.3	-104.5	-179.5	-1.5	57.4	11.4	62.6	-91.8	2.6	4.5	25.8
Honduras	:	-377.0	116.5	273.3	-55.7	-184.4	-398.7	-374.7	-334.2	-546.7	-72.1	-820.1	102.3	277.3
Mexico	:	-9751.5	-22967.0	-8531.9	6849.7	23625.3	-5289.7	-8888.7	4249.0	4166.9	-20592.6	-13246.3	-5739.5	-5390.7
Nicaragua	:	-194.8	-515.9	-501.9	-41.6	-2121.0	-5240.6	-614.2	-161.3	-266.6	-484.1	-1025.8	-571.6	-209.8
Panama	:	-1455.5	-1828.6	-722.8	-4791.5	-1218.0	421.0	-141.7	1876.8	1920.0	503.3	1812.4	3219.9	1607.6
Paraguay	:	-574.2	-631.4	-902.9	-401.0	:	-174.4	-218.7	442.3	404.7	-328.3	-358.9	425.0	73.3
Peru	:	-2287.7	-2828.5	1030.4	31.5	718.0	-4276.7	-1237.3	282.5	-93.7	-694.6	-1508.1	807.6	1677.9
Uruguay	:	-684.8	-402.5	-62.4	-199.7	-992.4	-888.8	-390.8	-373.7	-197.1	-312.0	-1227.6	6846.7	-1458.4
Venezuela	:	1622.7	1237.6	-3210.0	2133.5	3498.2	3218.0	7945.1	5214.7	3083.9	11110.6	5639.7	9700.9	8319.0

Table B.11: Morgan Guaranty Trust Co. Measure - Latin America

Source: the author.

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Argentina	:	:	:	:	:	:	1877.0	1538.0	183.0	858.0	803.0	2538.0	:	:
Bolivia	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Brazil	:	:	:	:	:	:	-2082.0	2155.0	278.0	:	:	:	:	:
Chile	:	:	:	:	:	:	476.0	-167.0	357.0	2082.0	709.0	1258.0	41.0	-752.0
Colombia	62.0	19.0	-104.0	185.0	-425.0	-61.0	489.0	791.0	-169.0	769.0	228.0	118.0	-708.0	-795.0
Costa Rica	-37.9	-73.5	-197.5	-272.5	-262.7	-13.2	-94.3	36.2	283.0	-83.7	-346.5	-248.9	76.2	-42.9
Dominican R.	:	:	:	:	:	:	-108.7	226.0	344.9	470.3	629.2	469.3	145.0	441.5
Ecuador	:	:	:	:	:	:	392.0	207.0	296.0	690.0	202.0	493.0	275.0	84.0
El Salvador	-296.3	-119.6	:	:	:	29.0	20.2	:	:	287.2	104.2	454.3	582.7	180.0
Guatemala	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Haiti	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Honduras	:	:	:	:	:	:	:	:	:	:	:	:	:	-10.3
Mexico	:	:	:	:	3364.0	4498.0	374.0	-2241.0	222.0	-1110.0	-3003.0	:	922.0	-1427.0
Nicaragua	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Panama	97.9	-543.8	-415.0	-229.5	63.7	235.7	255.4	402.7	572.1	786.5	-215.8	534.9	-275.6	-179.7
Paraguay	:	:	:	:	:	:	-132.8	-30.9	152.5	232.9	101.0	-58.7	259.7	140.6
Peru	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Uruguay	154.8	-457.0	:	:	7.5	-18.0	-146.1	-88.6	:	-251.3	55.5	-362.0	2285.0	:
Venezuela	2304.0	1340.0	52.0	354.0	738.0	366.0	1171.0	1029.0	679.0	1725.0	3373.0	2321.0	3658.0	1713.0

Table B.12: Cuddington Measure - Latin America

Source: the author.

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Angola	:	446.70	391.60	343.20	553.10	354.00	2162.50	-907.10	397.20	-288.20	118.70	1472.50	1496.10	:
Botswana	:	4.70	-180.50	-142.50	113.80	175.30	-34.00	129.90	171.10	191.70	169.40	25.40	588.60	:
Burundi	:	-14.20	-44.10	-0.60	15.70	0.50	-26.70	-63.80	30.50	-1.70	-71.70	-58.30	82.50	58.60
Cape Verde	:	13.95	-23.46	-26.75	-36.30	32.92	-38.74	-3.95	-17.97	17.76	-15.89	8.63	-2.64	14.15
Egypt	:	-1066.60	-4564.60	-578.90	1862.30	800.10	-2541.20	-2573.10	1340.40	2029.30	-330.80	823.60	1951.30	4946.50
Ghana	:	46.70	-40.40	-108.50	480.80	237.20	430.60	-328.80	265.90	-583.00	-418.80	-214.30	314.10	224.20
Guinea	:	-93.40	-230.10	110.40	46.40	-130.40	-162.10	184.70	-78.30	-113.80	-229.30	-237.90	52.40	78.80
Kenya	:	237.20	-756.00	-191.30	97.30	-63.00	-919.80	-696.70	-180.20	-479.30	-387.50	-965.40	159.90	380.40
Lesotho	:	97.00	30.00	-19.40	82.40	-81.00	-111.70	-165.60	-111.40	-16.90	-56.90	-227.20	147.50	:
Madagascar	:	16.30	-181.90	-326.60	6.70	-42.40	-594.20	-502.70	205.90	178.30	-284.40	-599.80	75.60	-13.40
Mali	:	-162.20	31.90	-226.30	-391.50	11.00	-301.20	-10.10	-65.50	-264.80	-435.00	-265.40	-121.70	:
Mauritania	:	61.20	-230.90	-36.40	61.60	112.40	:	:	-67.70	:	:	:	:	:
Nigeria	:	1363.30	2383.50	1670.90	1860.70	-281.80	-219.90	-4367.70	-872.40	1992.10	:	:	:	:
Senegal	:	-355.70	-153.10	-173.50	-223.00	85.60	-407.10	-145.00	-13.10	-358.70	-621.20	-207.70	294.60	:
South Africa	:	:	:	:	:	614.00	-110.00	-5687.60	-4239.70	-5724.40	886.70	7424.00	1078.50	-6352.20
Sudan	:	-486.20	-253.40	142.30	460.70	161.80	-1459.70	-1352.10	-84.90	-881.10	-624.50	-213.90	480.40	1324.00
Tanzania	:	-718.70	-848.70	-851.90	-328.70	-310.00	-598.70	-867.70	-253.00	-98.30	-898.20	-1045.00	280.90	:
Tunisia	:	158.50	-528.70	-670.90	255.30	639.60	-76.60	-747.50	-216.60	247.00	-1094.70	-366.00	1947.20	2008.70

Table B.13: World Bank Measure - Africa

Source: the author.

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Angola	19.10	-26.90	-43.00	377.10	244.50	19.40	-149.20	181.80	-378.50	78.90	50.60	308.60	-150.50	:
Botswana	-179.20	89.70	121.40	74.50	151.00	100.40	32.90	108.80	-45.10	-21.10	1.90	-75.80	-92.00	:
Burundi	11.30	3.90	12.70	7.20	-21.10	-24.20	9.20	27.80	18.80	19.00	34.20	31.20	-3.90	12.60
Cape Verde	-14.62	33.94	-8.71	-2.38	-8.31	35.64	1.34	20.40	-13.28	8.74	12.03	23.91	7.67	5.35
Egypt	-630.00	-730.00	-716.00	1519.00	-255.00	-272.00	74.00	1882.00	722.00	1558.00	-587.00	1146.00	-1906.00	-1575.00
Ghana	-78.60	-21.90	20.70	28.50	54.00	60.00	3.70	12.10	11.50	-81.90	168.60	189.10	-195.10	46.90
Guinea	-52.40	-112.30	-18.60	107.50	-39.80	-37.80	-69.90	-49.80	-17.80	-21.40	-83.90	2.20	-143.10	157.10
Kenya	-66.90	-69.60	-110.30	-257.50	-5.80	-11.40	128.20	-32.80	88.60	165.50	127.10	-151.70	-213.20	211.90
Lesotho	2.80	-20.10	-79.20	-17.80	20.30	-28.10	-23.30	-42.10	-56.80	-29.00	-62.10	-155.40	115.70	:
Madagascar	-2.00	52.00	31.00	-4.00	-61.00	-98.00	-59.00	-25.00	25.00	-32.00	-39.00	57.00	-11.00	-52.00
Mali	7.40	-30.50	35.30	6.00	-5.60	13.00	-14.20	-4.10	54.30	-8.80	3.30	-63.50	6.10	:
Mauritania	62.30	-19.50	-57.40	-26.70	23.50	18.10	1.00	3.00	8.10	:	:	:	:	:
Nigeria	-235.00	93.00	122.00	88.00	139.00	83.00	45.00	62.00	77.00	-7.00	:	:	:	:
Senegal	1.30	-3.10	19.60	-8.40	57.20	19.60	-7.70	9.30	-10.70	-8.20	9.00	-7.90	-30.90	:
South Africa	904.00	817.00	1977.00	3056.00	1176.00	1629.00	2401.00	1120.00	1742.00	446.00	-713.00	-1408.00	-466.00	-2927.00
Sudan	-10.90	-97.90	-31.00	82.60	-344.80	-89.30	-727.50	-651.20	-750.50	-167.20	-368.40	0.50	-492.20	231.00
Tanzania	-37.70	-1.60	-137.70	-209.30	-136.60	10.00	-158.60	31.90	90.30	156.70	415.70	-16.10	83.80	:
Tunisia	-477.00	-55.00	-343.00	-119.00	50.00	100.00	-67.00	-206.00	12.00	-38.00	33.00	-13.00	47.00	58.00

Table B.14: Errors and Omissions - Africa

Source: the author.

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Angola	:	:	:	353.20	:	349.60	2113.70	:	:	:	:	:	383.50	:
Botswana	:	-18.70	-187.50	-128.20	114.20	166.60	-69.10	53.00	31.40	37.00	34.40	-53.10	475.70	:
Burundi	:	-16.30	-45.40	-4.80	6.90	0.60	-37.10	-55.30	35.50	-12.00	-79.90	-55.90	74.80	36.40
Cape Verde	:	:	:	:	-40.29	33.01	-38.65	-3.90	-14.95	17.71	-16.57	6.99	-4.59	10.20
Egypt	:	-3300.60	-3264.60	-55.90	1228.30	1171.10	-2203.20	-974.10	2697.40	2401.30	-73.80	2192.60	1620.30	3264.50
Ghana	:	65.00	-45.50	-109.70	387.50	314.80	:	:	:	:	:	:	:	:
Guinea	:	-104.80	-235.10	:	44.20	-135.00	-153.10	194.00	-90.80	-106.20	-230.60	-228.40	-16.70	72.70
Kenya	:	225.50	-873.50	-502.00	36.10	-78.50	:	-740.90	-224.60	-553.60	-392.80	-972.00	152.10	369.40
Lesotho	:	98.50	-3.30	-10.50	69.00	-62.20	-118.70	-170.60	-113.10	-27.90	-76.00	-247.40	148.20	:
Madagascar	:	13.30	-194.90	-354.60	-11.30	-54.40	-557.20	-524.70	221.90	176.30	-332.40	-584.80	59.60	-45.40
Mali	:	-152.60	49.40	-214.40	-491.80	-22.20	-268.90	-8.30	-64.10	-260.90	-477.50	-329.60	-91.30	:
Mauritania	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Nigeria	:	1192.30	1637.50	1421.90	2180.70	-841.80	-81.90	-4447.70	-1156.40	1341.10	:	:	:	:
Senegal	:	-386.80	-177.50	-176.10	-331.80	96.50	-376.10	-169.50	-55.50	-413.50	-604.00	-240.70	278.20	:
South Africa	:	:	:	:	:	548.00	-237.00	-5809.60	-4374.70	-5785.40	642.70	7090.00	672.50	-6409.20
Sudan	:	-560.20	-336.20	:	:	:	:	:	-163.40	-919.50	-677.90	-269.00	334.80	1315.00
Tanzania	:	:	:	-920.50	-404.30	-472.50	-618.30	-952.70	-303.70	-83.50	-1032.20	-1121.70	283.80	:
Tunisia	:	219.50	-848.70	-682.90	322.30	789.60	-381.60	-997.50	-206.60	255.00	:	:	:	:

Table B.15: Morgan Guaranty Trust Co. Measure - Africa

Source: the author.

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Angola	:	:	:	:	:	:	:	:	:	:	:	:	:	
Botswana	-173.00	110.00	114.80	64.10	162.10	140.20	41.00	117.50	-15.70	-18.80	7.00	-60.80	-90.70	:
Burundi	:	:	:	:	:	:	:	:	:	:	:	:	:	
Cape Verde	:	:	:	:	:	:	:	:	:	:	:	:	:	
Egypt	:	:	:	:	:	:	:	:	:	:	:	:	:	
Ghana	:	:	:	:	:	:	-46.30	:	-33.50	:	:	124.10	-275.10	-21.10
Guinea	:	:	:	:	-39.60	-48.90	-61.30	-61.70	-15.10	:	:	:	:	
Kenya	:	:	:	:	:	:	:	:	:	:	:	:	:	
Lesotho	:	:	:	:	:	:	:	:	:	:	:	:	:	
Madagascar	:	:	:	:	:	:	:	:	:	:	:	:	:	
Mali	8.80	-13.30	-11.30	8.50	-3.80	34.50	-18.40	38.70	88.60	-10.80	24.80	-58.50	91.30	:
Mauritania	:	:	:	:	:	:	1.00	3.00	8.10	:	:	:	:	
Nigeria	:	:	:	:	:	:	:	:	:	:	:	:	:	
Senegal	:	:	:	:	:	:	:	:	:	:	:	:	:	
South Africa	:	:	:	:	:	:	:	:	:	628.00	-91.00	-957.00	-496.00	-3072.00
Sudan	:	:	:	:	:	:	:	:	:	:	:	:	-489.80	-17.90
Tanzania	:	:	:	:	:	:	:	:	:	:	:	:	:	
Tunisia	-233.00	223.00	-259.00	27.00	529.00	665.00	427.00	287.00	529.00	198.00	657.00	426.00	933.00	486.00

Table B.16: Cuddington Measure - Africa

Source: the author.

Appendix C

Capital Flight Figures

In this Appendix we present capital flight estimates from given sets of countries but this time we do not consider capital flight reversal. Therefor, In Figures C.1, C.2, C.3 and C.4 we present net flight.

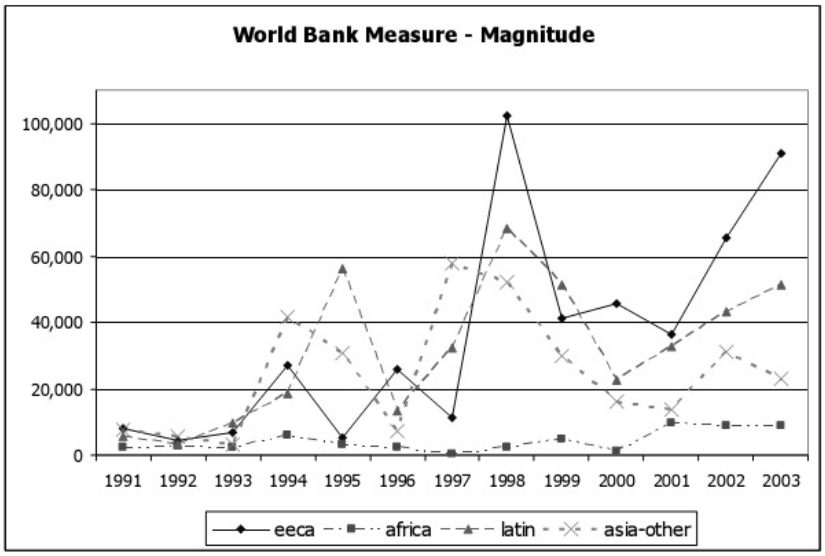

Figure C.1: Estimated magnitudes of capital flight - Net Outflow - The Erbe and World Bank Measure.

Source: the author

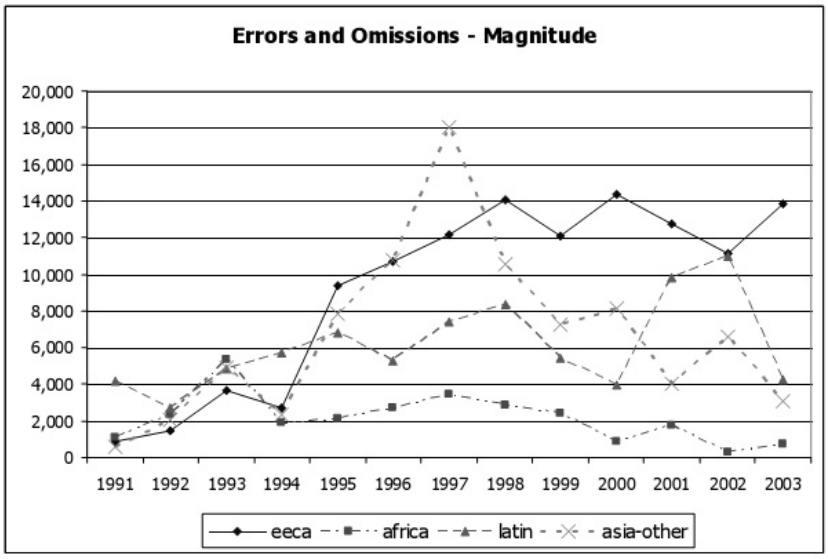

Figure C.2: Estimated magnitudes of capital flight - Net Outflow - Errors & Omissions.

Source: the author

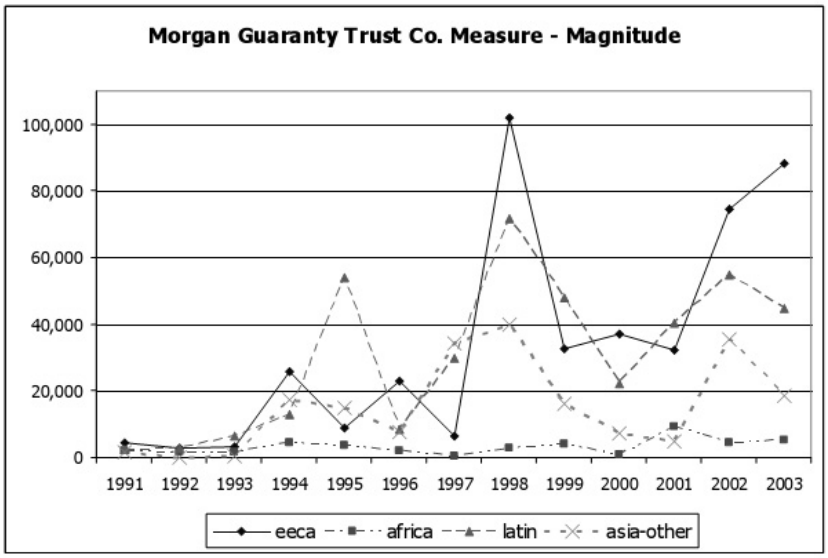

Figure C.3: Estimated magnitudes of capital flight - Net Outflow - Morgan Guaranty Trust Co. Measure.

Source: the author

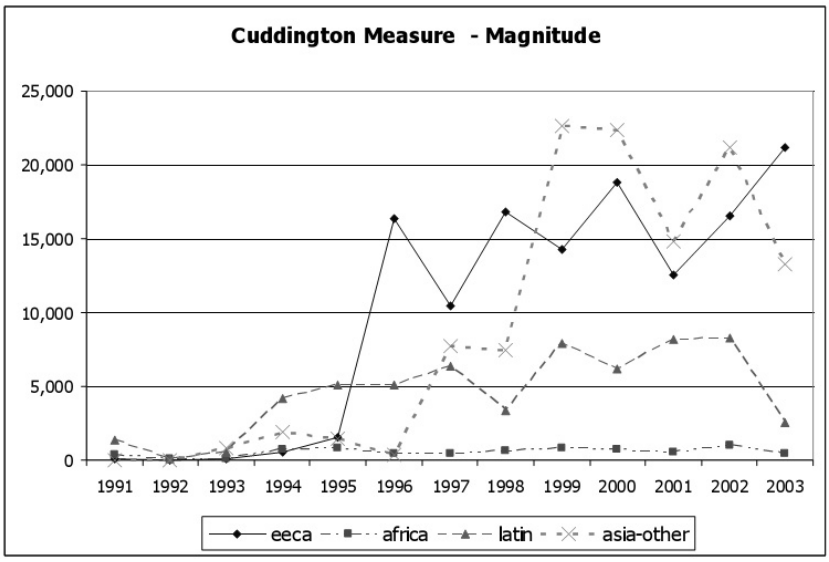

Figure C.4: Estimated magnitudes of capital flight - Net Outflow - Cuddington Measure.

Source: the author

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Meranie úniku kapitálu a jeho vplyv na dlhodobý ekonomický rast: empirické dôkazy vyplývajúce zo štúdie prierezu krajín.

Aj keď bežne nepozorovateľný, únik kapitálu je stále vážnym problémom rozvojových a tranzitívnych ekonomík. Cieľom tejto diplomovej práce bolo vypočítať hodnoty úniku kapitálu pre danú množinu krajín a následne skúmať jeho vplyv na vývoj dlhodobého ekonomického rastu.

Keďže pojem úniku kapitálu nie je presne definovaný ekonomickou teóriou, v dostupnej literatúre existuje mnoho prístupov ako ho definovať, prípadne postupov, pomocou ktorých je možné vypočítať jeho veľkosť. V tejto práci uvádzame stručný prehľad spomínaných definícií, ako aj vybrané motodólie použiteľné na jeho výpočet. Z dostupných možností sme si vybrali 4 metodológie – metódu Svetovej Banky, metódu Morgan Guaranty Trust Co., metódu chýb a omylov a Cuddingtonovu metódu – a podľa nich sme postupovali pri vlastných výpočtoch. Treba poznamenať, že vzhľadom k rozsiahlej základni skúmaných krajín sa získanie a spracovanie potrebných dát prejavilo ako časovo veľmi náročná úloha.

Získané výsledky potvrdzujú, že aj v súčasnosti zostáva únik kapitálu vážnym problémom a nemal by byť braný na ľahkú váhu. Už len fakt, že veľké množstvo zo skúmaných krajín zaznamenalo aj v rokoch 2002 a 2003 výrazné úniky, potvrdzuje náš dohad. Odhalili sme aj súvislosť medzi únikom kapitálu a ekonomickými a finančnými krízami, ktoré jednotlivé krajiny prekonali. Zahrnutie krajín ako Mexiko, Brazília, Argentína, Venezuela, Rusko, Malajzia, Filipíny a Thajsko medzi skúmané krajiny nám poskytlo nástroj potrebný pre tieto účely. Všetky zo spomínaných krajín zaznamenali v období kríz zvýšený únik kapitálu.

V druhej časti našej práce sme sa venovali empirickému skúmaniu dopadu úniku kapitálu na dlhodobý ekonomický rast. Rýchlosť rastu logaritmu reálneho HDP na hlavu bola modelovaná prostredníctvom logaritmu počiatočnej hodnoty HDP na hlavu, vybranými dátami o úniku kapitálu (ako % HDP), logaritmu hrubej fixnej tvorby kapitálu, logaritmu miery gramotnosti, populačného rastu, inflácie, logaritmu

peňažnej zásoby (M2), logaritmu finálnych spotrebných výdavkov vlády a logaritmu otvorenosti ekonomiky. Daná závislosť bola skúmaná za obdobie rokov 1994 až 2003. Vykonali sme pooled cross-section analýzu založenú na modeli fixných efektov, ktorý bol odhadnutý pomocou generalizovanej metódy najmenších štvorcov.

Získané výsledky vo väčšine prípadov potvrdzujú hypotézu o nepriaznivých vplyvoch úniku kapitálu na ekonomický rast. Koeficienty sú zvyčajne záporného znamienka a signifikantné. Jedným z príkladov skupiny krajín, u ktorých nepozorujeme tento jav, sú ázijské krajiny. V tomto prípade môže byť uvedený jav pripísaný nespoľahlivosti dát.

V regresiách vystupovali okrem úniku kapitálu aj iné dôležité faktory ovplyvňujúce ekonomický rast. Odhadnutý koeficient logaritmu počiatočnej hodnoty HDP na hlavu sa na začiatku javil ako prekvapivý, jeho hodnota však nepredstavuje nič iné, ako fakt, že medzi krajinami jednotlivých skupín nedošlo k relatívnej konvergencii. Ďalším dôvodom, prečo bol tento koeficient odhadnutý neočakávane, je, že do modelu neboli zahrnuté niektoré dôležité premenné – napríklad vlastnícke práva, politické systémy a sloboda. Koeficienty ostatných vysvetľujúcich premenných vystupujúcich v modeli sa zhodujú s našimi očakávaniami. Medzi urýchľovače ekonomického rastu patrí podľa našej štúdie tvorba kapitálu, miera gramotnosti obyvateľov krajiny a otvorenosť ekonomiky. Faktory spomaľujúce ekonomický rast sú únik kapitálu, peňažná zásoba, inflácia, populačný rast a konečné vládne výdavky na spotrebu.

V našej práci sme ukázali, že únik kapitálu má naozaj spomaľujúce účinky na dlhodobý ekonomický rast a je v záujme postihnutých krajín tento problém riešiť. Aby bolo možné znížiť, alebo dokonca zvrátiť únik kapitálu, je potrebné zamerať sa na celkovú stabilizáciu ekonomickej a politickej situácie. Za vhodné opatrenia považujeme podporu domáceho trhu, stabilizáciu miery inflácie (keďže táto samotná nepriaznivo vplýva na ekonomický rast a je tiež faktorom vyvolávajúcim únik kapitálu) a transparentnosť pri implementácii prijímaných reforiem.