ECONSTOR
Make Your Publications Visible.

A Service of
ZBW
Leibniz-Informationszentrum Wirtschaft
Leibniz Information Centre for Economics

Altar, Moisa; Albu, Lucian; Dumitru, Ionut; Necula, Ciprian

Research Report

The impact of capital account liberalization on exchange rate and the competitiveness of the Romanian economy

Pre-Accession Impact Studies III, No. 2

Provided in Cooperation with:
European Institute of Romania, Bucharest

Suggested Citation: Altar, Moisa; Albu, Lucian; Dumitru, Ionut; Necula, Ciprian (2005) : The impact of capital account liberalization on exchange rate and the competitiveness of the Romanian economy, Pre-Accession Impact Studies III, No. 2, European Institute of Romania, Bucharest

This Version is available at:
https://hdl.handle.net/10419/74628

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

WWW.ECONSTOR.EU

Mitglied der Leibniz-Gemeinschaft

Study No. 2

THE IMPACT OF CAPITAL ACCOUNT LIBERALIZATION ON EXCHANGE RATE AND THE COMPETITIVENESS OF THE ROMANIAN ECONOMY

Authors:

Professor Moisa ALTAR– coordinator

Professor Lucian ALBU

Ionut DUMITRU, PhD Student

Ciprian NECULA, PhD Student

Contents

1. Introduction 2

2. The influence of the capital account liberalization on the financial system development and on the process of economic growth 6

2.1. Quantification indicators of the level of capital account openness 6

2.2. Modern macroeconomic theories regarding the influence of capital account liberalization on the financial system and on the process of economic growth 12

3. Liberalization of the capital flows in Romania 19

4. Economic competitiveness and the equilibrium real exchange rate 32

4.1. Economic competitiveness indexes 32

4.2. The equilibrium real exchange rate – a quantifier of economic competitiveness 34

4.3. The estimation of the equilibrium real exchange rate for Romania and the analysis of its influence on economic competitiveness 39

5. Conclusions 50

References 51

1. Introduction

In the last decades, on a world level, there exists an intense preoccupation regarding the liberalization of capital account. Numerous studies analyse both advantages and disadvantages of capital account liberalization, the precursory conditions which should be fulfilled, and the optimum way to phase this important operation. The liberalization of capital account represents an activity carried out in many countries and in the last two decades it is integrated in a more important preoccupation: the projection of a new architecture of the international monetary system. It is known that, after the Second World War, the politicians and economists were preoccupied with the creation of a new order at international level, based on open and stable economies. Therefore, the Bretton Woods Convention, where the strongest voice was John Maynard Keynes – chief of the United Kingdom delegation – established a strategy of trade liberalization, but with fixed exchange rates. In Keynes' view, the control of capital flows, respectively of the capital account, was meant to serve two fundamental scopes: the decrease of economic volatility and the proper conditions for states to have an independent macroeconomic policy.

At the beginning of the 70's, the main stipulations of Bretton Woods had been dropped out and the world economy, especially the international monetary system was confronted with many distortions, perturbations and even crises. An effective way of the regulation mechanisms from world economy was the liberalization of capital account.

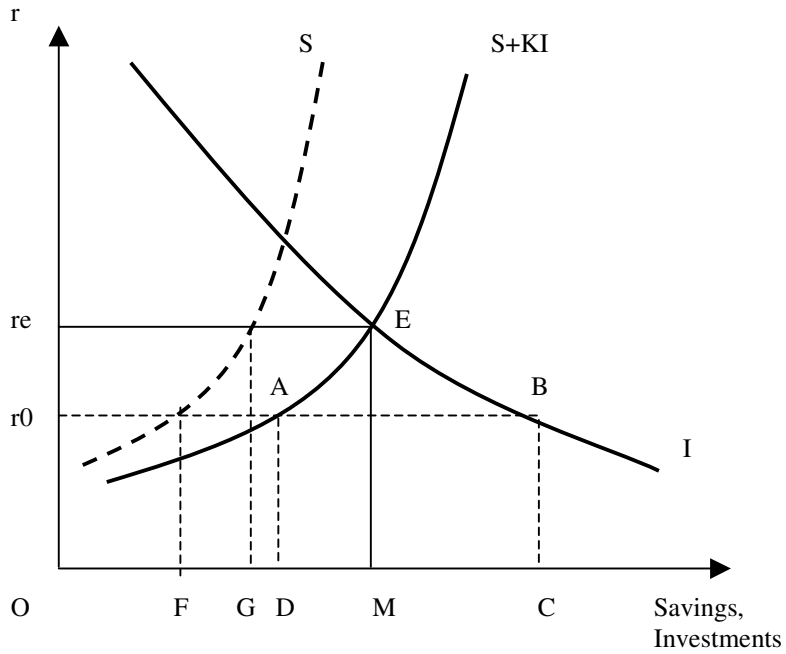
The articles of Mundell and Fleming from the beginning of the 60's had allowed a more clear identification of the connections, which form the exchange rate regime and settlements regarding capital flows, and their common influence on monetary and fiscal policies efficiency. The numerous conclusions obtained by Mundell and Fleming regarding the relation between the current account and capital account, between economies volume and investment volume, can be inferred from the fundamental macroeconomic identity:

$$Y = C + I + G + NX$$

where Y is the output at macroeconomic level, C is consumption, I – investment, G – governmental expenditures and NX is net export.

A result obtained from the Mundell-Fleming is that, when the exchange rate is fixed exogenously and the capital account is liberalised, the efficiency of monetary policies is significantly diminished due to the fact that the money offer of the central bank has become an endogenous variable. When the exchange rate is floating and capital account remains open, the efficiency of fiscal policies is drastically diminished, affecting only the exchange rate and not the GDP level. Is obvious that these affirmations refer to the hypothetic situation in which the complete liberalization of capital account and capital movements determine the equalisation of domestic interest rates with the international ones. The mechanism of investment formation as a sum of national savings (S) and of capital flows' balance (KI) is clearly shown in Figure 1.1.

Figure 1.1 The relation between saving and investment in an economy with a liberalized capital account



Some countries, and especially developed countries - understanding the advantage of capital account liberalization - have initiated the liberalization of the capital account since the second half of the '70. In a study elaborated in 2000 by the researchers of the policy science departments from Yale and UCLA[1] Universities – a study presented in 2001 at the Annual Meeting of the American Political Science Association in San Francisco –the factors that determine different countries to take the decision of capital account liberalization are analysed. This study shows that the countries with a fixed exchange rate are less tempted by the liberalization of the capital account. In the same time, countries with a high income per capita present the disposition for a rapid liberalization of the capital account. The same thing could be said about the countries strongly connected to the world economy.

In the study it is demonstrated that the disposition for the liberalization of capital account is determined, besides other factors, by the level of democratic structures of the country, by the proportion of the public sector to economy, etc. Thus, the authors show that the countries with high proportion of public sector generally have little interest for the capital account liberalization.

The process of capital account liberalization has increased significantly since the first years of the 9th decade. The international financial organisms and also the European Union have encouraged countries' decisions regarding the liberalization of financial flows.

[1] N. Brune, G. Garrett, A. Guisinger and J. Sorens, „The Political Economy of Capital Account Liberalization"

It should be noticed that financial liberalization is a dynamic, complex process that implies carefully sequenced phases and the adoption of a few prudential measures, which should reduce the apparition probability of some future currency crises.

Due to the fact that there are no countries with an absolute liberalization of the capital account and there are also no countries with a completely closed capital account – respectively, on a scale of 0 to 100, there are no countries with a score of 100 or countries with 0 – a fundamental problem is **the choice of indicators systems** that allow for a better characterization of the degree of openness of the capital account. Economic literature has proposed a large number of very different types of indicators for the measurement of capital account openness' level of each country, many of these are based on the information contained in **IMF Annual Report on Exchange Arrangements and Exchange Restrictions**, which contains data for a number of 137 countries.

A special aspect regarding the measurement of capital account openness' level is represented by the distinction between the **legal openness level** and effective **openness level**. Generally, from the analysis of the current situation of different countries, the effective openness level is higher than that resulting from legal regulations. This fact indicates the avoiding of capital account regulations through different means. In **chapter 2, paragraph 2.1**, the authors analyse the main types of indicators for the measurement of the openness level of the capital account, used on world level, with an accent on the distinction between the effective and legal openness level.

As it is showed by the experience of different countries, the liberalization of the capital account generates many advantages for the national economy: a better allocation of capital and the reduction of its cost. Also, the liberalization of the capital account contributes to the development of the general financial system of national economy and has major influence on economic growth.

The efficiency of the liberalization action on the improvement of main macro-economic indicators, and especially on the economic growth process, represents an extremely complex problem and it should be analysed with special attention. The efficiency of capital account liberalization depends on some factors, which are difficult to measure, as the quality of existing institutions, legislation etc.

In **paragraph 2.2** some theories and models regarding the identification of the capital account liberalization influence on the financial system and on the economic growth are analysed.

Following the application of the Maastricht Treaty, the European Union countries have liberalized the capital movements, creating the premises for the introduction of the single currency. With the perspective of EU integration, Romania has been engaged in the liberalization of capital flows, elaborating a coherent strategy for the complete liberalization of the capital account. **Chapter 3** is reserved for the presentation of the Romanian strategy for the capital account liberalization, and also for the analysis of the main phenomena which appeared after the implementation of this strategy.

For Romania, a country completing the process of EU accession and then the processes integration in the European structures, the insurance of a sustained rate of economic growth represents a sine qua non condition for the achievement of the nominal and real convergence processes. The achievement of a sustainable economic growth is determined by the continuous increase of the **Romanian economic competitiveness**, by the implementation of the requirements of the Lisbon Strategy. It is known that at international level there are numerous papers and reports regarding the methodology of computing a country's competitiveness. In

paragraph 4.1 a series of indicators used for the calculus of economic competitiveness are analysed and also o series of classifications elaborated by various international organisations are presented. Unfortunately, most of the international studies place the Romanian economic competitiveness level below the level of most ex-communist countries.

An indicator of maximum synthesis of economic competitiveness is the equilibrium real exchange rate – ERER – that is defined as the rate, which ensures both internal macroeconomic equilibrium and external equilibrium, respectively the equilibrium with the world economy. In **paragraph 4.2** the main problems regarding the definition and calculus of equilibrium real exchange rate are presented and the fundamental factors that influence this indicator are analysed.

Taking account of the symbiosis between the equilibrium real exchange rate and economic competitiveness, **paragraph 4.3** contains **the empirical results obtained from the implementation of econometric models on the Romanian equilibrium real exchange rate.**

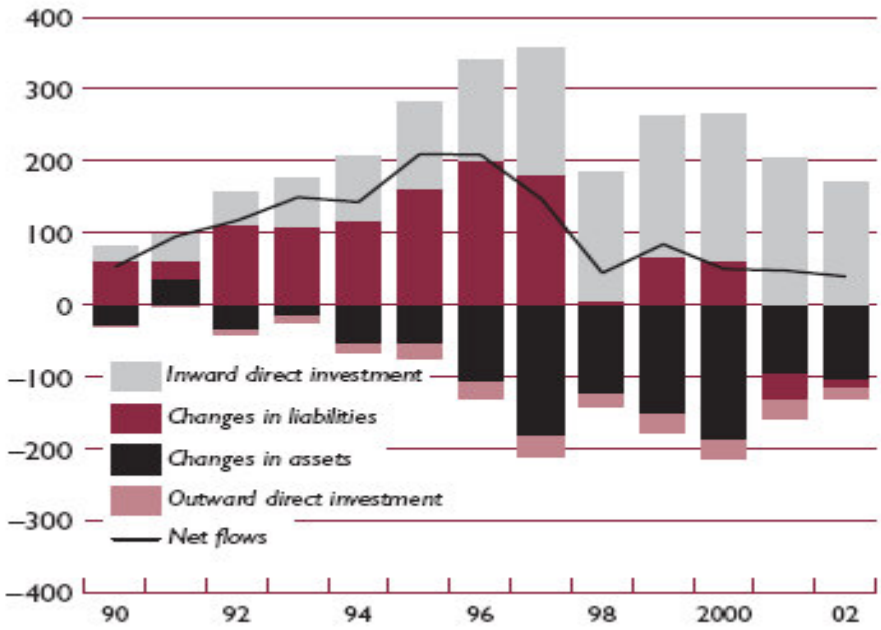
Based on the models elaborated and on the computations made with their help, the present paper presents the deviations of the effective exchange rate from the equilibrium level of exchange rate and in the same time analyses the causes that generated these deviations and the effects on the dynamic of the Romanian economic competitiveness.

2. The influence of the capital account liberalization on the financial system development and on the process of economic growth

2.1. Quantification indicators of the level of capital account openness

Since the 9th decade of the last century the world economy has been characterized by an important intensification of capital flows between different countries. For example, the flow of private capital between developing countries had increased from aprox. USD 100 billions in 1990, up to over USD 200 billions in 1995. So, in 5 years, the volume of private capital flows between developing countries doubled. Since 1998, unfortunately, the direction of private capital flows recorded an inverse direction; many of the capitals invested in developing countries have been withdrawn. This change of the direction of capital flows has generated capital account powerful crises on numerous emerging markets. Figure 2.1 presents the volume and structure of private capital flows to developing countries.

Figure 2.1 - The private capital flows to developing countries (USD. billions)



Source: The IMF's approach to capital account liberalization: evaluation report 2005

Since 1995 the preoccupations for the study of the phenomenon regarding the balance of payment's equilibrium and especially the capital account's equilibrium has recorded a significant intensification both in academic circles and in international organisms, like the International Monetary Found, OECD, European Commission, etc. It should be noticed that in present there are numerous controversies regarding the advantages of capital account liberalization and the sequencing of this operation, despite the fact that many studies on this subject have been elaborated.

From the point of view of economic theory, the necessity of capital account liberalization is based on the fact that the free movement of capital promoted an efficient allocation of economies on a global level and a better diversification of financial risks. Through this, the capital account liberalization could bring a major contribution to the economic growth and the social wealth processes (Fischer – 1998).

The economic literature recommends numerous models that, beginning from the competitiveness' and the efficient markets hypothesis, have stressed out the fact that the liberalisation of the capital account could make the economic growth process more alert, especially through a better allocation of capitals. In the same time, the economic literature has recorded some different points of view regarding the role of the capital account liberalization on the economic growth process, pointing some risks of a liberalised capital account. Thus, the Nobel Price winner, Joseph Stiglitz claims that capital account liberalization does not necessarily accomplish a better allocation of resources, especially in situations where the markets are characterized by important distortions. Also, Stiglitz pointed out that on the international capital market informational asymmetry exists.

The literature concerning the capital account points out the following advantages of financial liberalization:

- a more efficient allocation of resources – the international capital flows will be oriented towards developing countries markets, where the rentabilities are higher, generating an acceleration of economic growth in these countries. Plus, the necessity of creating an appropriate environment for foreign investors will lead to an increasing market discipline and will induce an improvement of the behaviour of domestic economic agents, of the labour force and governmental discipline;
- an increase of households' and companies' flexibility in accommodating to income and production shocks. The accommodation's increase is the result of an enlarged access to credit and capital markets;
- the possibility of risk diversification on international level;
- a more accelerate development of the national financial system due to the amplification of competition in the banking sector, which determines a decrease in the operational costs of financial intermediaries.

Worldwide experience points out that the existence of some control on capital mobility implies a higher cost for firms which borrow capital on the domestic market. This increase of credit cost is due to the fact that the restrictions imposed on the capital account do not permit the equalization between the domestic market's and international market's profitability. In the same time, the presence of some restrictions on capital outflows could represent an impediment to profit repatriation (or to the dividends repatriation, in case of multinational companies), and this is not an encouraging factor for investors.

Regarding capital account liberalization, a series of authors and some international institutions insist on a gradual process of financial liberalization. The bases for this thesis are some malfunctions of the economic-financial environment that could be provoked by the capital flows when the stopping mechanisms are abruptly interrupted. The experience of some developing countries had pointed out that capital account liberalization amplify the volatility of the macroeconomic phenomena. This could generate currency and banking system crises. These phenomena appeared in South-East Asia (1997), Russia (1999), Turkey (2000), Argentina (2001), etc.

The crises generated by the capital account liberalization apparently also had some other causes in connection with certain imperfections of domestic and international capital markets. The mentioned crises had been provoked, also, by investors' behaviour that is not always rational and predictable, generating sometimes propagation and contagion phenomena on international capital market. In many situations, the capital account liberalization in developing countries can generate crises, especially due to the existence of a fragile financial system and insufficient regulation. Specialists have been lead by these facts to the conclusion of elaborating some sequencing algorithms of capital account liberalization, with the aim that the risks generated become smaller.

The economic analysis stressed out the multifunctional aspect of macroeconomic volatility, respectively exchange rate volatility, the volatility of consumption expenditures, the stock prices volatility, interest rate volatility, GDP volatility. The analyses made by Levchenko (2005) pointed out the fact that in many developing countries the ratio of consumption volatility to GDP volatility had significantly increased in the last period. This fact is explained by the characteristics of the developing countries where, due to the insufficient development of capital markets, important categories of economic agents do not have access to international markets. The relative small level of development of national financial system generates situations when the dispersion of the effects of capital account liberalization on economic agents is relative high. In the same time, the author shows that the indicator, obtained through the ratio of consumption volatility to GDP volatility, begins to diminish when it is reaches a certain critical level of financial openness' level ("the level of efficient openness").

One of the issues appearing in the economic literature nowadays refers to the direct relationship between the capital account liberalization and the process of economic growth. We will discuss this into further details in the next paragraph. At this point though we would like to pint out that a minimum set of conditions and requirements have to be met such that the capital account liberalization facilitates economic growth. These conditions are:

- the capital account liberalization has to allow enough private capital inflows;
- they have to be long term private capital inflows that cannot be withdrawn at a short notice in order to avoid crises;
- there have to be enough international mechanisms on stand-by to protect against currency crises and support developing countries, should such crises occur.

Most analysts agree that capital has recently grown in mobility on international markets. However there is no clear-cut mainstream opinion on the nature and intensity of this phenomenon. Analysts cannot reach a consensus, as the capital mobility level of any given country is notoriously hard to measure. Except for the two extreme situations when the capital account is either totally closed or completely liberalized, there is hardly any indicator to assess the extent to which a specific capital market integrates with the international one. The two situations mentioned before are just theoretical and so there is a pressing need to find those indicators that could help assess the capital account openness' level as well as the overall openness' level of the capital market. The indicators to be developed have to allow comparisons between various countries and provide a complete history for a country's capital account openness.

We could consider two types of indicators to measure capital mobility. There are basically rules-based indicators and indicators measuring the intensity levels of capital flow. Of

course, some new methodologies had to be created and these indicators have to be integrated into existing econometric models.

The first category of formulae aims to create a scale for the capital account liberalization level of each country. According to the criteria that have been used, each country is ranked and rated to the extent to which it meets the agreed criteria.

There is always a gap between the legally stated restrictions on the capital account and their enforcement levels. There have been a multitude of arguments in the literature on capital account regulation enforcement. Garber (1998) presents a series of sophisticated methods and tools companies use to find loopholes in capital account regulations.

Dooley, Mathieson and Rojas-Suarez (1997), Eichengreen (2001) and others wrote on various methods to quantify the capital account openness degree and the extent to which a specific capital market is integrated into the global one.

Harberger (1978, 1980) came up with a method to quantify various markets integration using the yield convergence speed the respective market provides. Feldstein and Horioka (1980) look into the savings and investments level in some countries to determinate the capital mobility degree. Strong capital account regulations in any given country will cause the yearly savings volume to equal that of investments for those nations. In countries where the capital account is not liberalized savings and investments are not necessarily equal. Considering this basic observation one can argue that whenever the ratio between savings and investments equals 1, one could also assume the capital account is heavily regulated. Feldstein and Horioka try to prove their assumption using statistical data from 16 OECD countries. Frankel (1991) applied the Feldstein-Horioka tests to more countries including those in Latin America. He came to the conclusion that the correlation between investment and savings levels is very strong in all cases he covered. Montiel (1994) used the same Feldstein-Horioka formulae for a number of 62 countries to point out that especially in case of Latin American countries the actual capital account mobility level exceeded the legal mobility.

Edwards (1985, 1989), Montiel (1994) and others argue that the speed of convergence between the national interest rate level and the interest rates on the international capital market is also a useful indicator of the capital account openness. Using this specific model for countries like Brazil and Colombia he points out that the actual capital account openness level was much higher than what the existing regulations would have allowed. Dooley a.o. (1997) developed a more comprehensive calculus method based on Kalman filters in order to quantify the gaps between the actual capital account openness level and the legal one.

Obviously, for emerging economies like Romania's it is much more important to assess the **actual capital account openness level** rather than the formal one. This might help central banks track down the underground channels that break the existing regulations on the capital account.

IMF's Annual Report on Exchange Arrangements and Exchange Restrictions provide a great deal of detailed information on currency exchanges and capital account regulations that is subsequently used in various models to quantify the capital account openness level. IMF has been publishing this report since 1967 and it covers 137 countries. The report elaborates on the various capital flows regulation methods countries are using. The report also includes one indicator that tracks down the dynamics of the capital account liberalization level. The indicator is actually a ratio of the number of years since the capital account has been deregulated to the number of years that country has been showing up in the IMF's report. IMF's report makes no distinction between countries that have strong capital flow regulations in place and countries that have intermediary levels of control.

Beginning with 1996, IMF has changed its system of quantifying the capital account liberalization degree, information which appeared in the Annual Report on Exchange Arrangements and Exchange Restrictions. If until 1996, IMF reported only one binary variable to express the existence of restrictions (the value of variable is 0) or the absence of restrictions (the value of variable is 1), starting with 1996, IMF publishes a set of 13 binary variables comprising all the characteristics of the capital account. Consequently, the degree of the capital account liberalization determination methodology changed significantly. Starting from the information published in the report, Johnston and Tamirisa (1998), Tamirisa (1999), Tamirisa (2004) developed a set of indices for 45 countries regarding the capital account liberalization. The indices are obtained by calculating an average of the variables presented in the IMF report. Miniane (2004) develops an extension of the sample, calculating, according to the IMF methodology, an indicator to quantify the degree of the capital account liberalization starting with 1983. Miniane doesn't make the difference between the restrictions imposed over capital inflow and the restrictions imposed over capital outflow because the IMF reports don't provide too much information over this aspect. It should be mentioned that this indicator shows an image of the capital account dynamics.

Another indicator used for quantifying the degree of the capital account liberalization is that calculated for the OECD countries, which is published in the Code of Liberalization of Capital Movements that appears at two years intervals. In every report published by OECD are mentioned the restrictions existing over a number of 11 categories of transactions connected with the capital account: direct investment, buying and selling bonds, entrance on the capital market, operations on real estate market, credits etc. Klein and Olivei (2001) propose an indicator which quantifies the degree of the capital account liberalization in which are included the categories of flows in the OECD report over which there are no restrictions regarding the capital flows.

Starting with the information from the IMF report about the exchange rate regime and the restrictions over the capital account, Alesina, Grilli and Milesi-Feretti (1994) developed a dummy variable type indicator in order to identify the favourable and unfavourable mechanisms generated by the restriction imposing over the capital account

Another indicator used to quantify the degree of capital account liberalization was proposed by Montiel and Reinhart (1999). The calculation of Montiel and Reinhart indicator is based on the data provided by IMF and also on the information included in the annul reports published by a number of 15 developing or transition countries. The indictor's values can be 0, 1, 2 – 2 being used for the countries which impose the most severe restrictions over the capital account.

Regarding the capital account liberalization, the research in this field focused, in principal, on the determination of the date when the capital market opened to foreign investors. Bekaert and Harvey (1995) and Bekaert (1995) propose an indicator for characterizing the situation in which the emerging markets were opened to foreign investors considering a multitude of elements including: the official date of the capital market liberalization, the date of ADR (American Depositary Receipts) appearance on the market, the approximate date of the exchange rate regime switching etc. The proposed methodology was improved in the paper of Bekaert, Harvey and Lundblat (2001) and they also extended the database for the countries analyzed.

Edison and Warnock (2003) proposed a new method of quantifying the restrictions imposed over the foreigners' possession of shares on the domestic capital market. This method is based on two stock exchange indices published by the International Financial Corporation for a number of 29 emergent countries such as the global exchange index (IFCG) and the exchange

index of the shares which can be owned (IFCI). Because the shares which can not be owned by foreign investors are determined as a difference between the shares quoted on the capital market and the shares included in IFCI, the variable calculated as a ratio between the IFCI capitalization and the IFCG capitalization represents a measure of the restrictions imposed to the foreign investors.

Although the high number of proposed indicators which characterizes the degree of the capital account opening and the level of capital market integration, the situation continues to be unsatisfying, because these indicators sometimes can give false signals. A significant progress in the direction of characterizing the degree of the capital account openness was started with Dennis Quinn's papers. A famous specialist in the international finance area, in his paper "The Correlates of Change in International Financial Regulation", published in 1997, Quinn quantifies the degree of the capital account liberalization by distinctly taking into account its credit and its debit. Based on a very well elaborated methodology, Quinn gives a mark between 0 and 2 to the capital inflows and outflows levels of liberalization. The indicator that quantifies the degree of capital account liberalization is obtained by summing the two marks. For both capital inflows and capital outflows the mark 0 stands for forbidden payments, the mark 0,5 stands for the existence of quantitative or regulating restrictions, mark 1 shows that significant taxation is imposed on transactions; 1,5 – the level of taxation is lower; 2 – the transactions have no restrictions or taxation. The disadvantage of Quinn's indicator (the sum of the two marks) is that on the scale from 0 to 4 the level of which a country is considered to have the capital account liberalized can't be established, in consequence these variables can't be transformed into binary variables (0 – closed economy, 1 – open economy). Further, Quinn proposes that the countries that achieve marks between 0 and 2 should be considered rather closed and those with marks between 2.5 and 4 could be considered as having a liberalised capital account.

Recently, Quinn used the detailed information existing in the IMF reports and developed a new index regarding the mobility of capital flows, index which was published for a number of 59 countries (Quinn and Toyoda – 2003 and Quinn – 2003). The new indicator's values can vary between 1 and 100, a higher value meaning a higher degree of liberalization. The values calculated for this index are available for five years: 1959, 1973, 1982, 1988 and 1997. For a smaller number of countries, the values are available for the whole period 1950-1999. Using a similar methodology, Mody and Murshid (2002) propose an index regarding the financial integration that has been calculated for a number of 150 countries for the period 1966-2000. This indicator can receive a value between 0 and 4; 0 stands for the fact that the country's current account and capital account are closed, restrictions are imposed on exports and there are multiple exchange rates.

In order to quantify the effective level of capital account opening and the way of controlling it, Carmen Reinhart and Nicolas Magud have recently proposed two new indicators (Magud and Reinhart, 2005): CCE index (Capital Control Effectiveness) and WCCE index (Weighted Capital Controls Effectiveness).

The new indicators, proposed especially after year 2000 (Quinn, Mody – Murshid, Miniane, Magud – Reinhart) represent a real progress in the field of knowledge and in the field of characterizing as accurate as possible the mechanisms implied by the capital account liberalization and the integration of financial markets. These indicators allow a better characterization of every country, accomplishing international comparisons as well as the observation of capital flows dynamics.

Obviously, this information is extremely useful for the observation of the influence which the liberalization of capital account has over the whole national financial system, inflation and economic growth.

In the previous pages the quantification methods based on rules were mainly described. As an alternative to these models, the literature developed new methods based on the study of various economic variables such as the level of national investment, the level of national savings, the interest rates differential, the international capital flows etc.

Presently, to find certain adequate indicators in order to quantify the openness degree of the capital account continues to be an important preoccupation for numerous researchers. Such research permitted the occurrence of a new generation of indicators dedicated to quantify the capital mobility and they are built in a similar way as in the case of those used to quantify the commercial openness of an economy.

Among the specialists who were preoccupied by the characterization of the capital account liberalization we mention Kraay (1998) whose methodology is based on expressing the capital inflows and outflows as a percentage of GDP, and Lane and Milesi-Ferretti (2001) whose methodology is based on expressing the assets and liabilities resulting from direct and portfolio investment as a percentage of GDP. In fact, the above indicators are used for characterizing the financial openness degree.

The methodologies based on rules as well as the methodologies based on quantitative techniques indicate a general trend which started at the beginning of the '70s of the last century, of continuous growth of the capital mobility degree, especially in the case of developed countries. Regarding the developing countries, both categories of indicators point out the ascending trend of capital account liberalization (especially starting with the '90s of the last century). Nevertheless, it should be mentioned that the indicators based on the quantification of capital flows intensity emphasize a more pronounced evolution of the capital account liberalization than indicators based on rules.

2.2. Modern macroeconomic theories regarding the influence of capital account liberalization on the financial system and on the process of economic growth

The indicators presented in the preceding paragraph are used for analyzing the degree of capital account liberalization of a country as well as for determining the impact the liberalization on the national economy's dynamics. Therefore, these indicators are used for computing the liberalization's costs and benefits. The liberalization of the capital account has as main advantages, as it was mentioned before, the increase of the efficiency of resources' allocation, a better diversification of risks, as well as a major contribution to the country's financial system development. Many papers published in the literature as well as different studies elaborated by the international organizations have analysed the impact of the capital account liberalization on the process of economic growth. The studies and analyses elaborated until now have reached contradictory conclusions. While some studies pointed out that liberalization amplifies the process of economic growth, others have reached the conclusion that financial liberalization has no impact whatsoever on the economic growth. Obviously, the divergent conclusions are due to the different hypothesis of these studies. Recent research emphasized the necessity of including in the study of the impact of liberalization on the process

of economic growth some indicators in order to quantify the national institutions' quality and their efficiency. We will present next the conclusions of several specialists regarding the impact of the financial liberalization on the process of economic growth.

In this sense, we mention the model developed by Quinn (1997) in which the author includes a set of variables specific to an economic growth regression (initial GDP, the weight of investments in GDP, population growth, pupils' participation rate in the secondary cycle etc.) and a set of indicators that quantify the degree of capital account liberalization. The author reaches the conclusion of the existence of a tight correlation between modification of the liberalization degree and the growth of GDP per capita.

Klein and Olivei (1999) use another econometric technique for testing the influence that financial liberalization has on economic growth. The authors start from the hypothesis that the capital account liberalization initially contributes to the financial market development which in turn will induce an amplification of the process of economic growth. To verify the hypothesis adopted they use two regression equations. The first regression intends to identify the influence of the modification of the indicator that quantifies the financial market development level on the indicator measuring the capital account level of liberalization. The second regression is built up by using the information provided by an economic growth model containing as distinct parameter the indicator that quantifies the financial market level of development. The authors demonstrate the fact that in the case in which both variables have statistic significant coefficients the hypothesis is true. Based on their calculations the authors reach the conclusion that for developed countries, the capital account liberalization has a significant influence on economic growth. The results obtained by Klein and Olivei point out the fact that capital account liberalization has profitable effects only for the countries where there is a developed financial system.

Interesting results were also obtained by Edwards (2001). In his model, Edwards includes an indicator in order to quantify the degree of capital account liberalization, indicator proposed by Quinn (1997), and also a variable obtained by multiplying Quinn's indicator with the logarithmic level of GDP per capita. Using a sample of 60 countries, from the calculation, it resulted that Quinn's indicator has a low degree of signification, and the second indicator used is significant from a statistic point of view. The author finds that the way in which capital account liberalization influences economic growth depends essentially on the level of economic development. In other words, the economically developed countries as well as some rich emerging markets benefit from the amplification of capital mobility, while for countries with lower levels of GDP per capita, capital account liberalization may have a perverse effect of slowing down economic growth.

Other specialists analyze distinctly only aspects linked to the influence of capital markets liberalization on the process of economic growth. In a working paper published in 2001 at NBER (National Bureau of Economic Research – SUA), Bekaert, Harvey and Lundblat develop a model of economic growth in which they include an index in order to quantify the degree of capital market development. The authors estimate the parameters of this model using panel data techniques. Thus they find that the influence of capital market liberalization has a significant role from a statistic point of view: capital market liberalization leads to a 1% yearly economic growth in a period of five years after the liberalization process.

Very interesting findings regarding the influence of capital account liberalization on the process of economic growth for different categories of countries were obtained by professor Michael Klein in a paper published in 2003 at NBER. The author reaches the conclusion that capital account liberalization amplifies the rate of economic growth only in the countries where GDP per capita has an average level. For the rich countries as well as for poor countries and

especially for the countries being at the extreme poles regarding the GDP per capita, the liberalization has an insignificant impact on the rate of economic growth.

As it was mentioned before, specialists have conflicting opinions about the role of capital account liberalization on economic growth. Among those who state that capital account liberalization has a neutral effect are Grilli and Millesi-Feretti. In a paper published in 1995 (Grilli, Millesi-Feretti, 1995) the authors included in the analyzed model indicators regarding the degree of capital account liberalization and some indicators regarding the level of capital inflows and outflows control. They also included some indicators describing the human capital (the enrolling degree of population in the education process) and certain variables describing the politic environment. Using the technique of instrumental variables estimation, the authors find that there is no relation between the growth of capital account liberalization degree and economic growth.

Very important issues regarding the capital account liberalization are the way of choosing the right moment for liberalization and the scheduling of the complete liberalization. These important aspects are approached in various papers, published especially after the year 2000. Thus, Quinn, Inclad and Toyoda (2001) approach the issue of capital account liberalization influencing economic growth as well as the issue of choosing the right moment to switch to perfect capital mobility. More precisely, they investigate the social, politic and economic prerequisites before passing to perfect capital account liberalization. They classify the countries analysed in the study in two large categories: the first comprises of the countries that, from a political and economic point of view, suffer of repression syndrome and respectively the second includes countries passing through a liberalization cycle. The countries in the first category which have restrictions imposed on capital mobility are characterized by indicators specific to developing countries. In these countries the level of GDP per capita is low, in principal, the financial system is weakly developed, and the inflation rates are high. Moreover, in these countries high rates of risk premium occur on the black or grey market of foreign exchange currencies.

The countries from the second category are those that began the liberalization cycle in 1950. Here the financial systems are powerful, GDP per capita grew significantly, having, in the same time a high level of investments in human capital. It should be mentioned that when the capital market became completely liberalised the phenomenon of black or grey foreign exchange markets disappeared.

The studies developed in the last century are focused on analysing the causality relation between economic development and capital account liberalization. The researches focus on identifying whether the economic development is a consequence of capital account liberalization or the opposite is true: if the existence of a developed economy is a sine qua non condition for switching to liberalization.

This preoccupation also exists in the paper of Quinn, Inclad and Toyoda (2001), mentioned above. The authors start with an economic growth model, a variant of a Barro (1991) type economic growth model that is adapted for using panel data. Using this model they perform a test of the influence of the capital account liberalization on the output growth rate. On the basis of the testing results, the authors pass to the second stage of the analysis which is to identify the influence of capital account liberalization on some basic social and macroeconomic indicators. The macroeconomic variables are grouped in three categories as follows:

- initial economic conditions regarding GDP per capita, the degree of trade liberalization, the level of the financial system development, the risk premium on the unofficial exchange market, etc.;

- political initial conditions such as the development level of democratic institutions, the ways of protecting property rights, political stability etc.;
- social initial conditions such as the demographic growth rate, population's level of education etc.

The model contains a series of lags and the econometric technique used for estimating the regressions is the panel data.

In order to quantify the degree of capital account liberalization the Quinn (1997) indicator is employed. The use of this indicator is justified starting from the hypothesis that other indicators may be influenced by other variables besides the degree of capital account liberalization. For example, the authors prove that the Quinn indicator is preferred to indicators build on the basis of capital inflows and outflows' weight in GDP.

The model developed by Quinn, Inclan and Toyoda (2001) uses as variables the GDP per capita measured at the beginning of the analysed period, the dynamics of investments (for this variable there are also introduced lags), the annual rate of population growth and the level of economic openness calculated as the sum of exports and imports divided by the level of GDP (for this variable there are lags introduced too). Obviously, a basic variable of the model refers to the dynamics of the level of capital account liberalization. In order to obtain more relevant results the authors introduced in the model a series of variables to quantify the various shocks likely to appear on the international market and especially the shocks determined by the oil price fluctuations. The other variables refer to different social and political aspects, and especially to the political instability that characterizes some countries.

It should be mentioned that introducing lags for some independent variables is due to econometric reasons. The arguments for introducing lags were to make data simultaneity and multicolinearity disappears. It was possible that these phenomena, if not been eliminated could strongly change the results.

The conclusion of this important study indicates the fact that capital account liberalization significantly influences the rate of economic growth.

It should be mentioned that a large number of authors refer to the importance of institutions and regulation's quality, essential elements in the process of liberalization. Thus, in a paper recently elaborated by an important specialist in the field of international finance (Klein – 2005), the important role of institutions' quality in amplifying the relation capital account liberalization – economic growth is analysed. It is known the fact that the mechanism of transforming population's savings into investments as well as the level of risk premium requested by foreign investors depends mainly on the quality of institutions and laws, especially the ones guaranteeing property rights.

Klein starts from a neoclassic model of economic growth in which two types of capital are used physical capital (K) and human capital (H). In an autarkic economy from a financial point of view the investments in human and physical capital are made, in principal, using the savings made on the country's territory. In the case of liberalized capital flows, the foreign capital can be used, in principal, only for investments in physic capital. Elaborating the model, Klein starts from a Cobb – Douglas macroeconomic function:

$$Y = K^{\alpha} H^{\beta} (EL)^{1-\alpha-\beta}$$

The production function has Harrod neutral technological progress, Y is the level of GDP, E represents technological progress factor which is supposed to have constant growth rate

(i.e. technological progress factor grows exponentially), L is the level of labour force, measured in natural units. The indicators α and β represent the output elasticity of the two types of capital. Using indicators per capita in which labour force is measured in efficiency units (EL), the production function will be written as follows:

$$y = k^{\alpha} h^{\beta}$$

The quality of institution is quantified with the help of a parameter q, positive and sub-unitary. For the countries with solid institutions functioning efficiently, the value of the parameter is close to 1. In the structure of the model, the existing institutional level quantified by q, may influence the rate of forced capital estrangement because of government decisions (for example, the nationalization) or criminal activities. The author defines an increasing function x(.) which depends on the indicator q (x(q)), being equal to 1 when q is 1, function which quantifies the percent of savings which turns into investments.

The physical and human capital equations of dynamics are:

$$\frac{\dot{k}}{k} = \frac{s_k x(q) y}{k} - (\delta + n + g)$$

$$\frac{\dot{h}}{h} = \frac{s_h x(q) y}{h} - (\delta + n + g)$$

The above equations are familiar to countries with an autarchic financial regime, thus the only source of investment is the level of people's savings and the funds of the public budget destined to investments. It was supposed that the labour force growth rate and technological progress growth rate are constant: $\frac{\dot{L}}{L} = n$ and $\frac{\dot{E}}{E} = g$; s_k represents the percentage of the total volume of people's savings which is destined to physical capital growth and s_h is the percentage destined to human capital development. δ represents the rate of capital depreciation, considered the same for both types of capital.

The system of differential equations that describes the dynamics of the two types of capital (the system is described above) has a singular point corresponding to the equilibrium point of the national economy (steady state). GDP per capita corresponding to the steady state is:

$$y_A^* = \left(\frac{s_k^{\alpha} s_h^{\beta} x(q)^{\alpha+\beta}}{(n + g + \delta)^{\alpha+\beta}} \right)^{\frac{1}{1-\alpha-\beta}}$$

The formula above points out the fact that even in the situation of autarky, GDP per capita's level depends essentially on the function x(q). GDP per capita's equilibrium level will have the maximum value when q is 1, that is, when the public institutions function at maximum efficiency.

Starting from the paper of Barro, Mankiev and Sala–i–Martin (1995), the authors introduce the concept of partial capital mobility. This concept refers to the fact that while the investment flows in physical capital have perfect mobility, the investment flows in human capital have a limited mobility. These different characteristics of the two types of capital lead to the fact that the capital level K can be used as collateral for foreign investors, while the stock of human capital H can not be used as collateral. The conclusion is that the investments in human capital can only be financed by the flow of savings achieved at national level. Because the physical capital, K may serve as collateral in international transactions, from the equilibrium

conditions between demand and supply and from the optimum conditions, it results that marginal capital profitability should be equal to the marginal cost.

Institution's quality level can influence the rate of forced capital estrangement. This is why foreign investors will request a risk premium quantified by the function $\nu(q)$. This function is decreasing in the quality of existing institutions, quantified, as mentioned, by the indicator q. The better the institutional environment, the less the risk premium requested by the foreign investors will be. From the financial arbitrage results the equation:

$$\frac{\partial y}{\partial k} - \delta - \nu(q) = r_W$$

where r_W represents the interest rate on the international market.

Using the condition of financial arbitrage, the level of equilibrium GDP per capita is:

$$y_G^* = \left(\frac{\alpha^\alpha s_h^\beta x(q)^\beta}{(n+g+\delta)^\beta (r_W + \delta + \nu(q))^\alpha} \right)^{\frac{1}{1-\alpha-\beta}}$$

The formula above is characteristic to an economy where the capital flows are liberalized. This formula points out that the national institutions efficiency influences favourably GDP per capita's level of equilibrium through the functions x(q) and $\nu(q)$, the latter quantifies the dimension of risk premium requested by foreign investors, which grows in the same time with the institutional environment's deterioration.

Within the model the liberalisation degree of the capital account is quantified using the following indicator:

$$\rho = \frac{T-L}{T}$$

In the above-mentioned formula was assumed that L represents the moment of capital account liberalization within the time horizon [0,T]. In other words, it was started from the hypothesis that during the first $(1-\rho)T$ years there are no capital inflows and outflows, respectively, in and out of the country, and during the next ρT years the capital account is liberalized.

The growth rate of the GDP per capita corresponding to the two states the national economy, namely financial autarky or capital account liberalization, is described by the following differential equations:

$$\frac{\dot{y}}{y} = -\lambda(1-\alpha)(\ln(y) - \ln(y_A^*)) \quad \text{- financial autarky}$$

$$\frac{\dot{y}}{y} = -\lambda((\ln(y) - \ln(y_G^*)) \quad \text{- liberalized capital account}$$

where $\lambda = \frac{1-\alpha-\beta}{1-\alpha}(n+g+\delta)$.

The above-mentioned dynamics equations were obtained by using a Taylor series expansion around the equilibrium points of the initial dynamics equations. Obviously, as in the case of studying any dynamic system only the linear part was kept, within which it was synthesized the "genetic code" of the system.

Since it was assumed that the national economy has two different periods, namely one of $(1-\rho)T$ years of financial autarky and another one of ρT years during which the capital account is liberalized, the GDP per capita growth rate will be given by the following formula:

$$\frac{1}{T}\ln\left(\frac{y(t)}{y(0)}\right)=-\frac{1}{T}\underbrace{(1-e^{-\lambda T(1-\alpha(1-\rho))})}_{C}\ln(y(0))+\underbrace{\left[(1-e^{-\lambda T(1-\alpha)(1-\rho)})e^{-\lambda T\rho}\ln(y_A^*)+(1-e^{-\lambda T\rho})\ln(y_G^*)\right]}_{S}$$

The solution shows that the convergence rate is a function of ρ and the countries that spent a longer time as open economies have a faster convergence rate ($\frac{\partial C}{\partial \rho}>0$). It is also worth noticing that the term S depends both on ρ and on the quality of the institutions, through the influence of q upon the equilibrium GDP.

The first order Taylor expansion of S around its component variables leads to the following expression:

$$\frac{1}{T}\ln\left(\frac{y(t)}{y(0)}\right)=-\frac{C}{T}+\gamma\rho+ZB\,,$$

where Z is a vector whose components are the model's variables, except for the ρ indicator. An important issue for the study of the output growth rate refers to the mathematical properties of the γ indicator.

In order to identify the monotony of γ, Klein has chosen two explicit functions for x(q) şi $\nu(q)$, namely

$$x(q)=x^{q-1}\quad ;\nu(q)=e^{-\nu q}\text{, where x>1 and v>0.}$$

Based on the study of the proprieties of the considered functions, Klein has reached the conclusion that the γ function depends on the q indicator, through which the institutional level of the national economy has been quantified, and the function is concave and non-linear. At the same time, the $\gamma(q)$ function did not have monotony properties.

The model published by Michael Klein in 2005 succeeds in capturing a significant number of macroeconomic phenomena, and clearly reveals the fact that the efficiency with which the capital account liberalization acts upon the process of economic growth depends to a considerable extent on the quality of the institutions that characterize the national economy, on the efficiency of the enforcement of existing regulations, and on the way the state of law works. It has to be mentioned that at similar conclusions have arrived – using other types of models – other renowned specialists in the area of international finances, of whom we do mention Dani Rodrik from the Harvard University, Menzie Chinn from the University of Wisconsin - Madison, Barry Eichengreen from the Berkeley University, etc

3. Liberalization of the capital flows in Romania

In the perspective of the integration into the European Union, Romania has committed itself to liberalize the capital flows, in accordance with Article 56 of the Treaty on the Establishment of the European Union, which forbids any restrictions on the movement of the capital flows inside the European Union or between its member states and other countries. The liberalization of the capital flows inside the European Union was mainly achieved by enforcing the provisions of the Maastricht Treaty (1992), which stipulated the total liberalization of the capital movements as a prerequisite for the introduction of the single European currency.

Although the liberalization of the capital flows in Romania has started as early as 1991 with the adoption of the Law on foreign investments (No. 35/1991), which allowed for foreign investments in Romania providing guarantees and facilities for the foreign investors, the phase of capital flows liberalization was achieved no sooner than 2001, within the context of preparing the country's accession to the European Union.

A major progress in the area of liberalization occurred in March 1998, when Romania assumed the obligations envisaged by Article VIII of the Statute of the International Monetary Fund regarding the convertibility of the current account operations.

According to the international practice and considering the current situation of Romania, the approach of the liberalization of the capital flows currently subject to authorization is a phased one. The main target envisaged is that of finalizing the liberalization process until the accession to the European Union, except for the transition period required.

Romania has entirely accepted the acquis communautaire regarding Chapter 4 – Free movement of capitals – effectual on December 31st, 2001, and engaged in front of the European Union to eliminate all the restrictions upon the capital flows until the date of accession (planned for January 1st, 2007). Later on, it was agreed upon the acquis communautaire effectual on June 30th, 2002. During the negotiations for accession regarding Chapter 4 – Free movement of capitals – of the acquis communautaire Romania required a transition period of 7 years from the date of its accession to the European Union (EU) for the purchasing by the EU and EES (European Economic Space) citizens of agricultural land, forests and forestry land and other land outside localities, and a transition period of 5 years for enforcing the right of purchasing lands destined to be s secondary living place.

Table 3.1 presents the main phases of the capital account liberalization in Romania.

Table 3.1 Phases of capital account liberalization in Romania

Liberalization phase	Year	Operations representing capital flows
Liberalization of direct and real estate investments of residents living abroad, as well as that of capital movements of	2001	- direct investments of the residents living abroad, - real estate investments of the residents living abroad, - admission of the national movable assets on the foreign capital markets, - guarantees allowed by the non-residents to the residents,

personal nature and of other capital movements (**Phase I**)		- capital movements of personal nature, representing short-term loans granted by the non-residents to the residents, - presents and endowments, - dowries, - bequests and legacies, - transfer of assets created by the residents with the view to emigrate, at the moment of their settlement or over the period they live abroad, - inheritance taxes, - damages (whenever they may be considered as capital transfers) - returns of money for the cancelled contracts and returns of non-entitled money (whenever these may be considered as capital), - transfers of money to pay for services (not included in current account operations), - other transfers representing other capital movements
Liberalization of capital movements connected with the carry on of the insurance contracts and other capital flows with significant influence upon the real economy (**Phase II**)	2002	- admission of the national collective investment institutions on an international market, - medium and long-term loans connected with commercial transactions or provision of services, granted by the residents to the non-residents, - premiums and payments connected with the completion of life insurance contracts, - premiums and payments connected with the completion of credit insurance contracts, - other capital transfers connected with the insurance contracts, - physical import and export of financial assets representing movable assets and means of payments, except for those in cash
	2003	- purchases by the residents of foreign movable assets transacted at or outside the Stock Exchange, - purchases by the residents of units of the foreign collective investment institutions transacted at or outside the Stock Exchange, - financial loans and credits with reimbursement time less than one year granted by the non-residents to residents, - financial loans and credits granted by the residents to the non-residents, - guarantees granted by the residents to the non-residents,

		- capital movements of personal nature representing loans granted by the residents to non-residents
	2004	- admission of foreign securities on the domestic capital markets, - admission of units of the foreign collective investment institutions on the national capital market, - physical import and export of financial assets representing means of payment in cash
Liberalization of capital operations with significant impact upon the balance of payments (**Phase III**)	2005	- access of the non-residents to bank term deposits in lei, - right of the residents to open bank accounts and to make operations abroad without the prior agreement of the NBR, except for transactions with derivatives
	2006	- access of the non-residents to State Treasury bonds in lei issued by the Ministry of Finance - access of the non-residents to State Treasury certificates in lei issued by the Ministry of Finance
	Until the date of accession	- access of the non-residents to the money market instruments.

Source: National Bank of Romania

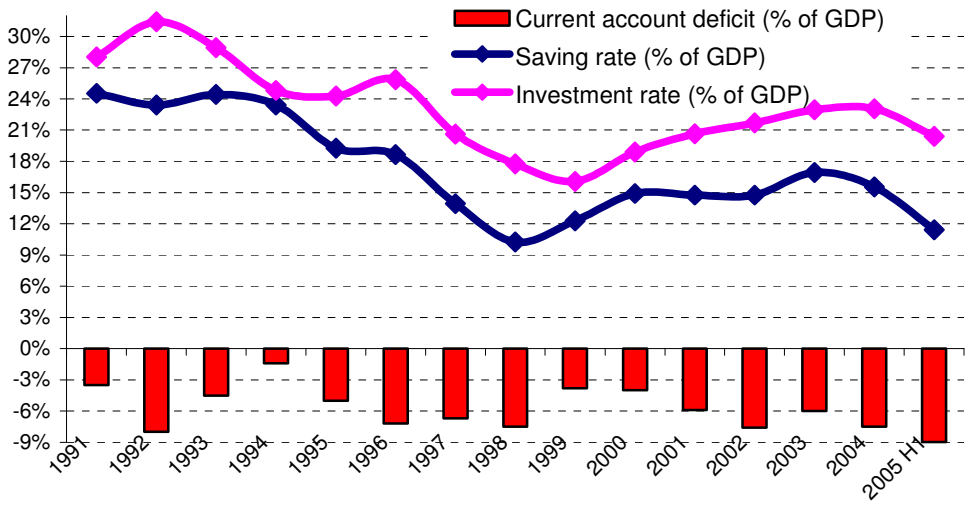
Countries in transition usually register a level of savings insufficient to cover the necessary level of investments. The savings deficit is generally covered through foreign savings. Such a deficit expressed itself in Romania[2] through an increasing current account deficit. It reflects an aggregated demand greater than the domestic output, and is financed through capital inflows.

The current account deficit of the balance of payments worsened over the interval 2000-2004 (Figure 3.1), reaching 4.4 billion euros at the end of 2004, representing 7.5% of the GDP.

The increase in the current account deficit was due mainly to the increase in the foreign trade balance deficit. The worsening of the foreign trade balance deficit was due to the significant increase in import, its growth rate outpacing that of the export. Such an evolution was on the one hand due to the increase in the imports of raw materials and capital goods necessary to support the economic growth process, and on the other hand, due to the increase in the imports of consumer goods determined by the expansion of the consumer credit which occurred in the last years and the appreciation of the national currency, both in real terms (until November 2004) and even in nominal terms (since November 2004). It is worth mentioning the fact that the elasticity of the imports of consumer goods against the exchange rate is very high in Romania.

[2] The investment rate is computed as the ratio of the gross capital formation to GDP, and the savings rate is computed as the ratio of the sum of the gross capital formation and the current account deficit to the GDP.

Figure 3.1 Investment and saving rate in Romania



Source: National Bank of Romania, and authors' computations

Regarding the current account deficit, beside its size of utmost importance is its way of financing. Thus, it is important whether the financing may be ensured, and also its structure.

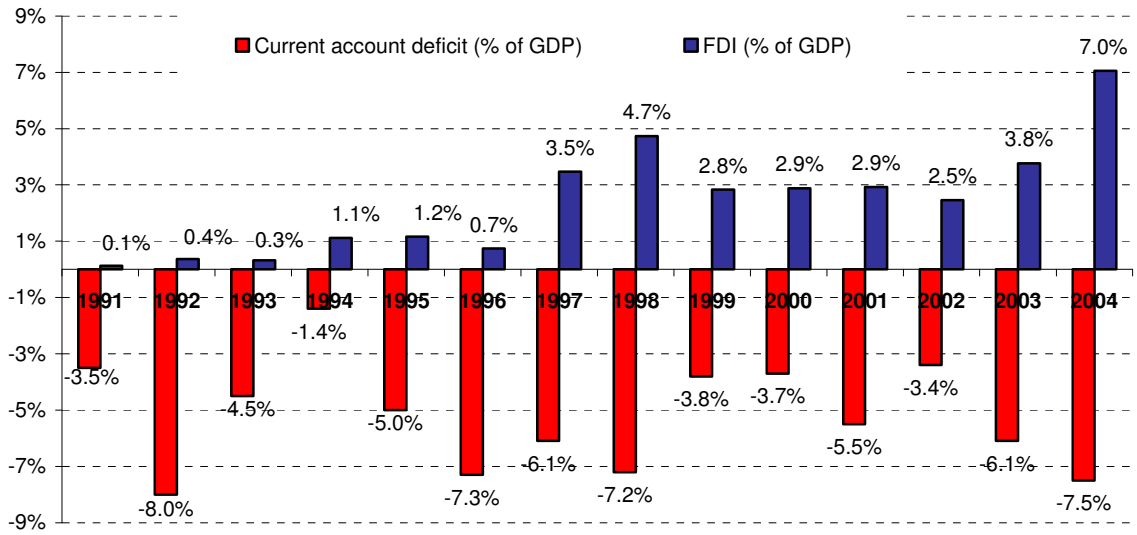
Except for a few cases (for instance, the year 1999), in Romania a major crisis of the foreign balance of payments has never occurred; the financing of the current account deficit was ensured, although sometimes at high costs.

In 1999, Romania has faced a peak of the foreign debt service (around 2.8 billion USD), but the matter of payment default was not an issue. The difficult moment of 1999 was successfully overcome through domestic efforts, because at that moment the access to foreign financing was limited. Such a limitation was due to the international context which occurred after the Russian crisis[3]. Considering the difficulties Romania has been facing, the exchange rate was devaluated in real terms in order to stimulate competitiveness of exports and to adjust the foreign trade balance deficit.

Regarding the financing structure of the current account deficit, it is important that such a deficit should be financed through stable autonomous resources, among which the most important are the foreign direct investments (FDI), which also create the bases for a subsequent increase in exports, contributing to the adjustment of the foreign trade balance. Although the current account deficit in Romania registered high levels since 1997, it was largely covered through foreign direct investments, so that in 2004 that deficit was nearly entirely covered through the FDI. Figure 3.2 shows the way the current account deficit was financed over the interval 1991-2004 with the help of the foreign direct investments.

[3] The contagion effect of the Russian crisis in 1998 was felt also in Romania, the cost for which the country could have run foreign debt increasing significantly, due to the increase in the country risk embodied in the prohibitive interest rates.

Figure 3.2 The current account deficit and its financing through foreign direct investments



Source: National Bank of Romania

The inflows of foreign capital in Romania, especially as foreign direct investments, were favoured by the continuous improvement of the country rating, Romania reaching for the first time in 2004 a rating corresponding to a country with low investment risk ("investment grade"). Such a rating was granted by both Fitch Agency and Standard&Poor's Agency (table 3.2)

Table 3.2 Romania's country rating (2005)

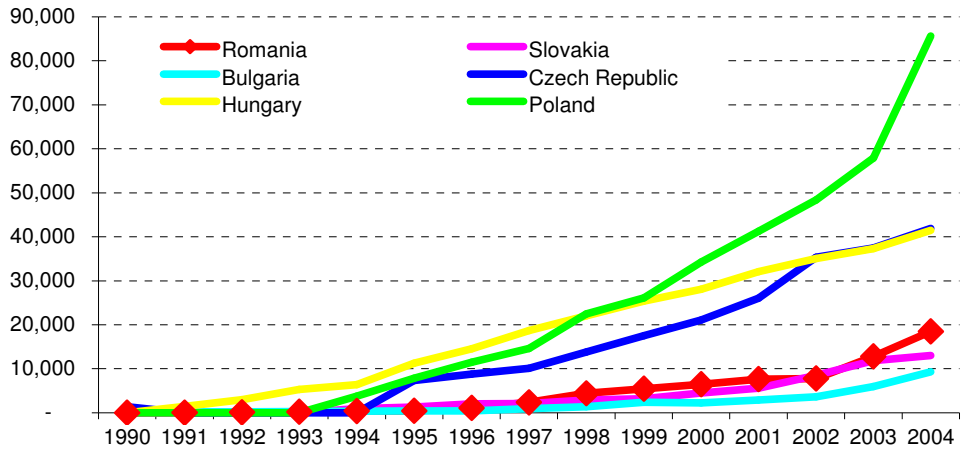
	Long-term debt ratings in Eastern Europe		
	S&P (FCY)	**Moody's (FCY)**	**Fitch (FCY)**
Bulgaria	BBB- (investment grade)	Ba1 (speculative grade)	BBB- (investment grade)
Croatia	BBB (investment grade)	Baa3 (investment grade)	BBB- (investment grade)
Czech Rep.	A- (investment grade)	A1 (investment grade)	A (investment grade)
Hungary	A- (investment grade)	A1 (investment grade)	A- (investment grade)
Poland	BBB+ (investment grade)	A2 (investment grade)	BBB+(investment grade)
Romania	**BBB- (investment grade)**	**Ba1 (speculative grade)**	**BBB- (investment grade)**
Russia	BBB- (investment grade)	Baa3 (investment grade)	BBB (investment grade)
Slovakia	A- (investment grade)	A2 (investment grade)	A- (investment grade)
Slovenia	AA- (investment grade)	Aa3 (investment grade)	AA- (investment grade)
Turkey	BB- (speculative grade)	B1 (speculative grade)	BB- (speculative grade)
Ukraine	BB- (speculative grade)	B1 (speculative grade)	BB- (speculative grade)

Source: Bloomberg

The existence of a low unit labour cost (ULC), as well as the perspective of the EU accession were factors that favoured the foreign direct investments in Romania.

Nevertheless, it is worth noticing the fact that the level of the foreign direct investments in Romania remains quite low in comparison with countries such as the Czech Republic, Hungary and Poland, but the trend shows a growth potential in the coming years (Figure 3.3).

Figure 3.3 The stock of foreign direct investments in the East European countries (mill. USD)



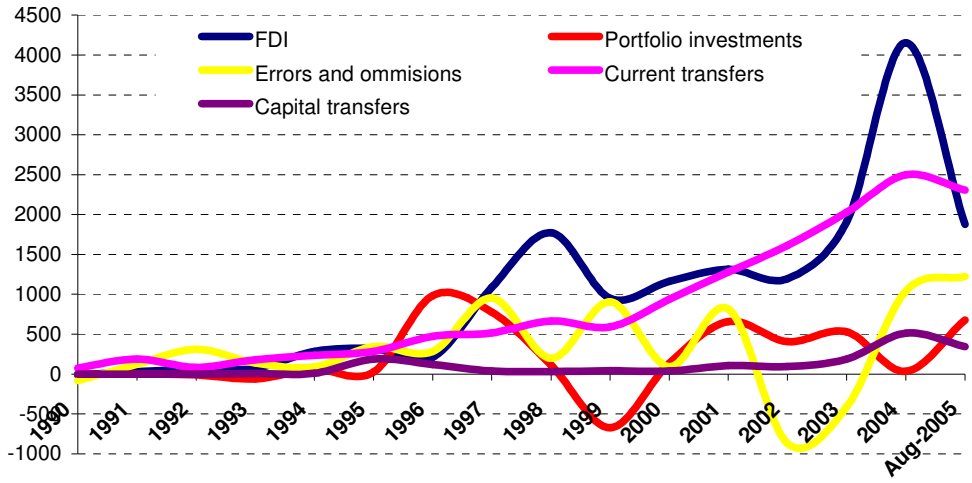
Source: Central Banks and authors' computations

An important source of reducing the current account deficit in the last years is provided by the remittances of the Romanian citizens working abroad. These show up in the balance of payments in the current account on the position "current transfers from work" – other sectors and incomes, and their evolution is continuously upwards. In 2004 their level reached 2.4 billion euros (Figure 3.4). It is worth noticing that without the remittances the current account deficit would have been much greater. For instance, without remittances the current account deficit would have reached 11.6% instead of 7.5% of the GDP, as it actually was. Obviously, 11.6% of GDP current account deficit would have been unsustainable for Romania.

The phases already completed in the liberalization of the exchange rate and the capital account stimulated significant capital inflows (Figure 3.4) - both increases in short-time investments ("hot money" or portfolio investments) and in medium and long-term investments.

Regarding the short-term capital inflows, which are speculative flows ("hot money" and portfolio investments, respectively), their evolution should be carefully monitored, since they are very volatile and might create instability on the foreign exchange market. In special circumstances, such flows may generate foreign exchange crises, such as those that occurred in South America, South-East Asia, etc. The highest level of the portfolio investment was registered in Romania over the interval 1996-1997, due to the establishment of the Bucharest Stock Exchange and the RASDAQ Market. Because of the Russian crisis in 1998 and the foreign debt problem that Romania has faced, in 1999 capital outflows from Romania were recorded, and the foreign portfolio investments balance was negative.

Figure 3.4 Capital inflows in Romania (mil. EUR)



Source: The National Bank of Romania

A special problem for Romania is the efficient management of capital flows, especially of those having a high impact upon the balance of payments. The management level has increased continuously since 2001, when the schedule of the liberalization of capital inflows and outflows has been set. Considering certain negative effects that the liberalization of the capital account might generate, the macroeconomic decision-makers should ensure the following measures (Eichengreen, 2005):

- decreasing the domestic interest rates in order to diminish the interest rate differential as against the international environment,
- increasing the flexibility of the exchange rate,
- maintaining certain restrictions and elaborating safeguarding provisions at the time of the liberalization of the capital account,
- sterilization of the capital inflows by the national bank,
- increasing tax discipline.

The international practice showed that in the process of capital account liberalization all the countries in transition enforced the above-mentioned measures, adapted in accordance with the macroeconomic situation specific for each country.

Regarding the ***interest rate policy*** implemented in Romania in the process of capital account liberalization, several specifications are worth mentioning. Thus, since 2000 the NBR took back its role as price-maker for the interest rate, being able to influence through its own interest rates the yields in the financial sector. Over this period, Romania enjoyed a favourable conjuncture determined by the existence of a surplus of foreign currencies on the domestic market and by the reduction of the dependency of the state budget financing on the domestic market, the Ministry of Finances having thus a less costly access to the Euro-bonds market.

Consequently, the interest rate channel of the monetary policy transmission mechanism improved after 2001 in what regards the segment central bank-commercial banks. In this way, the interest rate became an important indicator of the monetary policy stance. A study

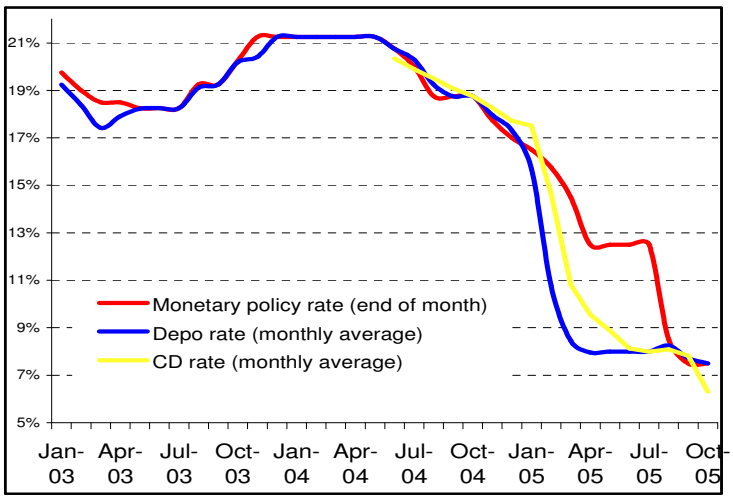
elaborated by the IMF[4] concluded that the efficiency of the interest rate channel has improved significantly after 2001. The authors have identified a cointegration relationship between the monetary policy interest rate and the interest rates on the market, which in fact indicates the increase in the efficiency of the interest rate channel of the monetary policy transmission.

The policy of continuous reduction of the interest rates practiced by the NBR was determined mostly by the necessity to consolidate the disinflation trend, as well as by the necessity to reduce the risks generated by the attraction of speculative capitals during the phases of capital account liberalization. The downward tendency of the interest rates was interrupted by the NBR for two short time intervals, namely at the end of 2000 and beginning of 2001, and at the end of 2003 and beginning of 2004. These trend breaks were necessary in order to prevent certain possible economic downfalls.

Most recently, the NBR interest rates policy had to deal with a major constraint related to the liberalization of certain capital flows with high monetary impact, namely the liberalization of the non-residents' access to the term deposits in lei which occurred in April 2005. The existence of a high differential of the domestic interest rate as against the external interest rate could have encouraged the inflows of speculative capitals that would have created inflationary pressures and would have led to a strong short-term appreciation of the national currency. Moreover, a high interest rate differential would have created the premises for a reverse of the trend in what regards the outflows of speculative capitals.

In fact, the NBR faced the so-called "Tosovsky dilemma" mentioned in the economic literature, which refers to the contradiction that is formed between the necessity to decrease the interest rates in the process of capital flows liberalization and the requirements related to the control of aggregate demand from the perspective of the disinflation process – which would require higher interest rates. The strategy adopted by the NBR materialized through a strong trend of reducing the interest rate for the monetary policy, namely from 20.75% in May 2004 to 12.5% in April 2005, and to 7.5% in October 2005 (Figure 3.5). At the same time, it was achieved the temporary uncoupling of the interest rate for the monetary policy – which was the maximum interest rate for which the NBR attracted 1 month term deposits – from the effective sterilization interest rate. The latter had a stronger downward tendency.

Figure 3.5 The evolution of the interest rate for the monetary policy over the interval 2003-2005

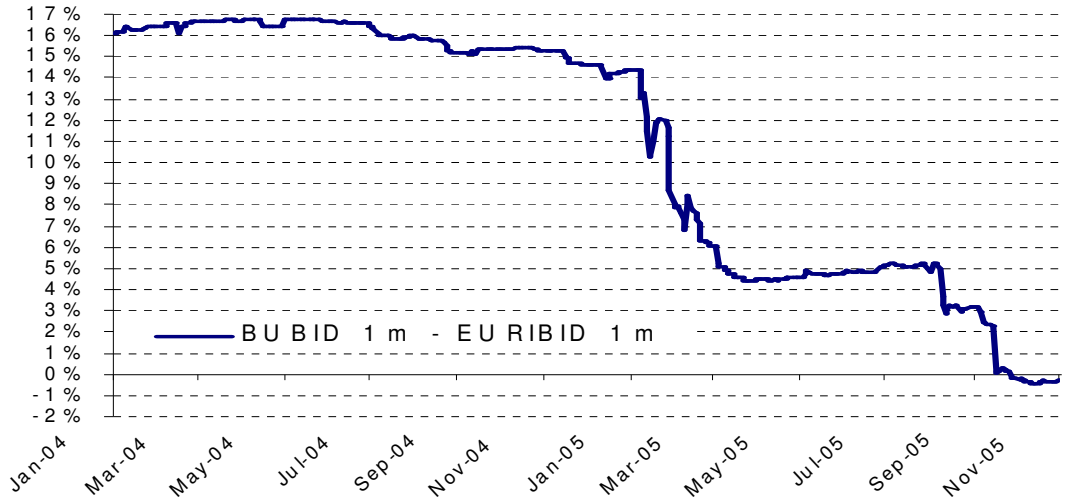


Source: The National Bank of Romania

[4] IMF Country Report No. 04/220.

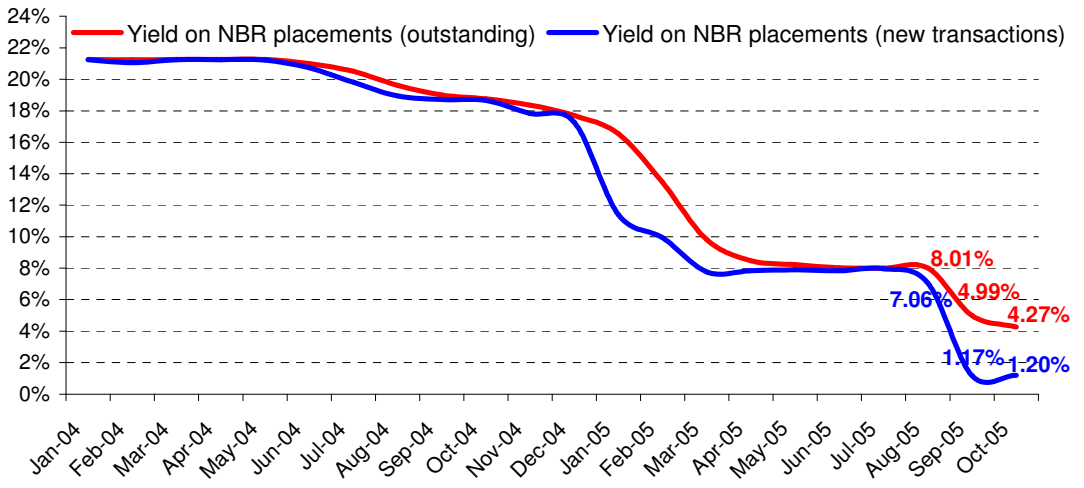
Through the strategy adopted by the NBR, the differential between the domestic interest rate and the external one was continuously reduced. Following the sterilization of the surplus liquidity on the money market made by the NBR in September-November 2005, the size of the differential turned even negative (Figure 3.6). The sharp reduction of the yields for the commercial banks deposits at NBR, namely 1 month term deposits, deposit certificates and the deposit facility, determined a sharp decrease in the interbank interest rates (Figure 3.7), all these happening under the circumstances of a high surplus of liquidity in lei on the interbank market.

Figure 3.6 The interest rate differential between Romania and the euro zone



Source: Reuters

Figure 3.7 The yields of the commercial banks' deposits at the NBR



Source: The National Bank of Romania

Regarding the ***exchange rate policy*** in the context of capital flows liberalization, the international practice suggests the flexibility of the exchange rate and the increase in its volatility as a way to discourage the inflows of speculative capital.

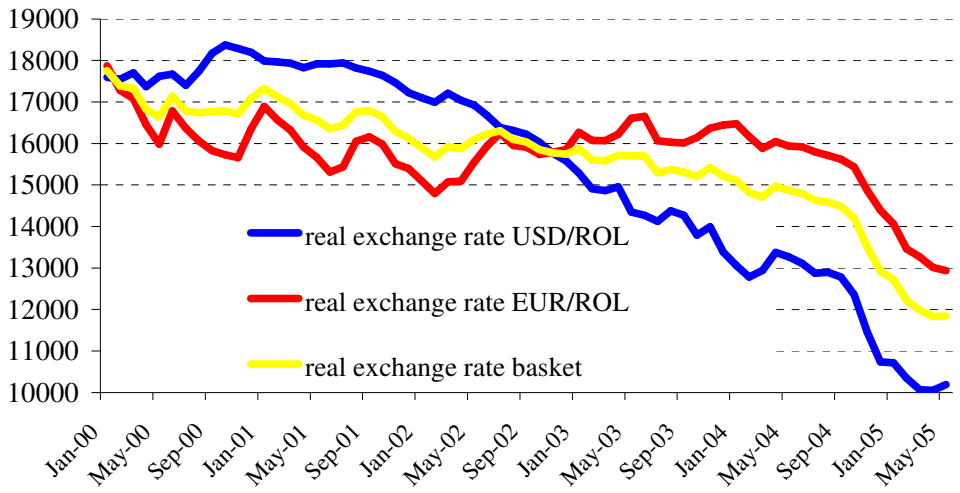
The pressure towards appreciation of the exchange rate generated by the capital inflows was diminished by the National Bank of Romania during most of the interval after 1990 by a process of purchasing foreign currency and significantly sterilizing the liquidities in the national currency introduced in this way on the market.

Over the interval 2000-2005, the exchange rate policy was one of managed floating of the national currency, while until 2004 the NBR exchange rate policy was one of frequent interventions on the foreign exchange market. Such interventions of the NBR on the foreign exchange market have determined until 2004 a low flexibility of the exchange rate and its increased predictability.

According to the medium-term economic strategy elaborated by Romania, the exchange rate was used as anti-inflationary anchor after 1990 and not only as an instrument to adjust the foreign imbalances. It is worth noticing the fact that the efficiency of the transmission channel of the monetary policy through the exchange rate towards inflation (the exchange rate pass-through) was high.

In the last years, the national currency has appreciated in real terms both against the euro and against the US dollar, and against the currency basket, respectively (Figure 3.8). Most recently, the national currency appreciated even in nominal terms.

Figure 3.8 The national currency real exchange rate dynamics (CPI, December 1999=100)

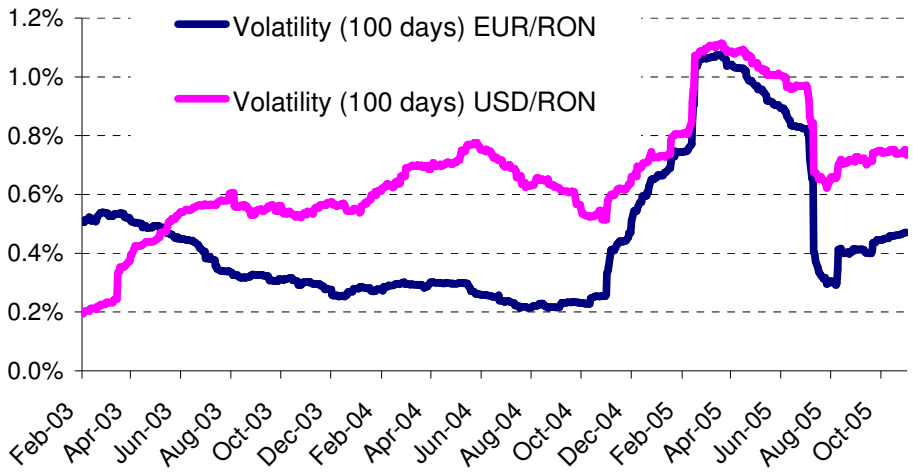


Source: The National Bank of Romania, and authors' computations

Thus, over the interval November 2004-May 2005 the exchange rate ROL/EUR appreciated in nominal terms with around 15%. The nominal appreciation of the national currency was mostly due to the expectations of the economic agents regarding the influence of the capital account liberalization on the exchange rate dynamics, as well as to the expectations regarding the high capital inflows that would be generated by the high interest rate differential.

As it was previously mentioned, due to the change performed in 2004 by the NBR in its strategy regarding the exchange rate, and to its intervention on the foreign exchange market after longer and less predictable time intervals, the exchange rate became much more flexible and volatile (Figure 3.9).

Figure 3.9 Exchange rate volatility



Source: The National Bank of Romania, and authors' computations

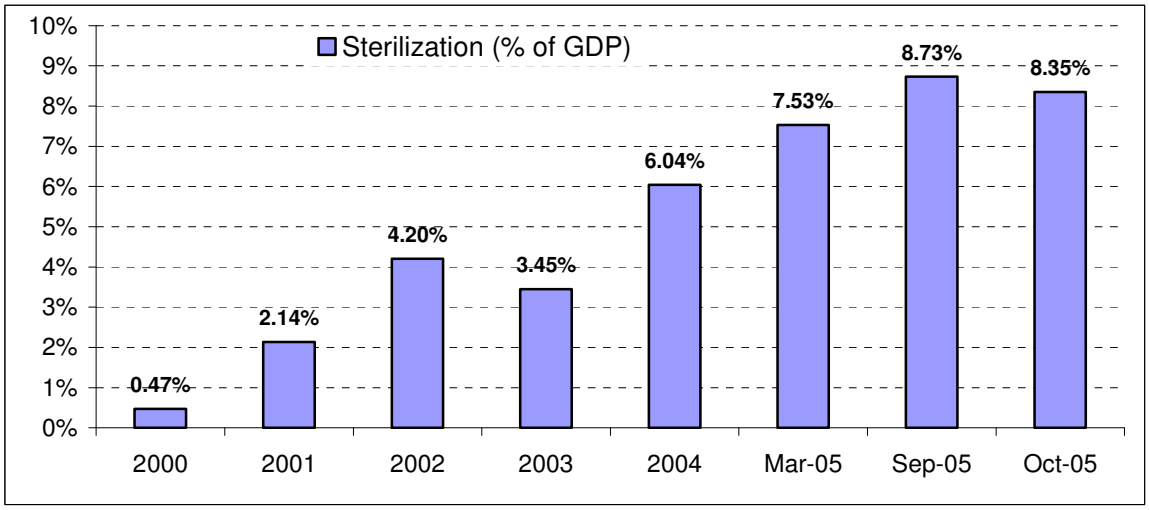
Besides the capital inflows, the Balassa-Samuelson effect has also contributed – as a long-term tendency –to the appreciation of the national currency. According to it, the increase in the productivity differential in Romania as against the euro zone determines the equalization of the wages between the tradable and non-tradable goods sectors, which determines an increase in the inflation differential, and an appreciation of the national currency, respectively.

It has to be stressed that the flexibility of the exchange rate of the national currency was a sine qua non prerequisite both for the successful achievement of the capital account liberalization and for the efficient implementation of the new monetary policy strategy, namely the inflation targeting, adopted in August 2005.

In order to annihilate certain unwanted effects that the capital account liberalization may trigger (as it is known, in some countries this determined strong foreign exchange crises), the NBR continued to use the techniques that have became "classical" in this area, namely ***the policy of sterilization of the capital inflows*** and ***the policy of strategic quotas as regards the minimum reserve requirements***. In order to maintain the currency supply at a level unable to generate inflationary pressures, the NBR continued to sterilize the surplus liquidity on the monetary market through open market operations – deposit certificates, attraction of deposits and reverse repo – and through permanent facilities provided to the commercial banks, namely the deposit facility. Figure 3.10 shows the dynamics of the volume of sterilizations performed by the NBR over the interval 2000-2005, the figures representing the end-of-period volumes.

The volume of sterilizations performed by the NBR has continuously increased in the last years, Romania being placed after the Czech Republic in the top of the Central and East European countries with the highest sterilization volumes of the national currency performed by the central banks. It is worth noticing the fact that the high sterilization of the liquidity on the money market generates operational losses, whose volumes are increasing. The operational losses are due to the fact that the NBR pays for the sterilized money higher interest rates than those collected from its deposits.

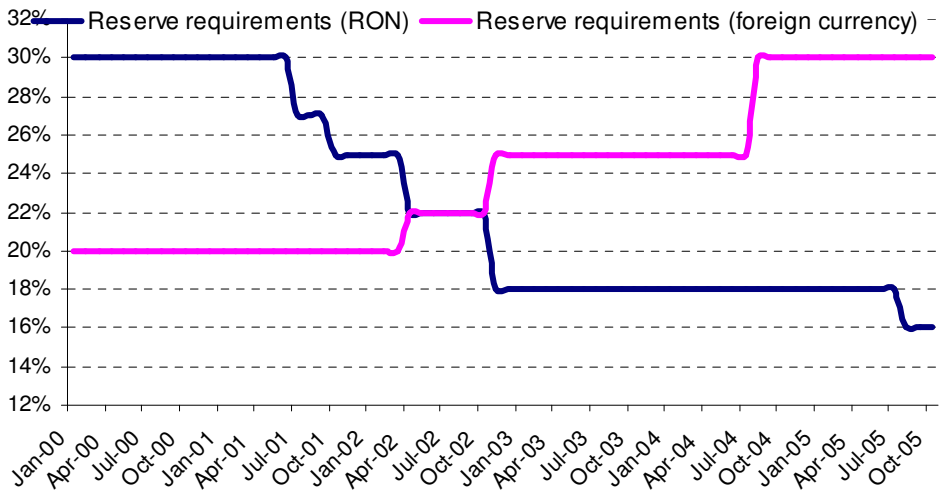
Figure 3.10 Evolution of the volume of sterilization through open market and the deposit facility



Source: The National Bank of Romania and authors' computations

Regarding the minimum reserve requirements the commercial banks must have at the central bank – currently 18% for the deposits in lei and 30% for the foreign currency denominated deposits – their evolution over the interval 2000-2005 is shown in figure 3.11.

Figure 3.11 The reserve requirements dynamics



Source: The National Bank of Romania

At world level, an important part in the policy mix used in the process of capital flows liberalization is also played by the ***fiscal policy***. Generally, in such circumstances it becomes more restrictive, in order to counterbalance the expansionary effect of the capital inflows upon the aggregate demand, and thus to limit the inflationary pressures and the real appreciation of the exchange rate.

Contrary to the usual practice, at the beginning of 2005 in Romania a tax relaxation occurred, through the introduction of the 16% flat tax rate for the income tax (from a previous system with progressive quotas ranging between 18% and 40%) and the profit tax (previously 25%). Such a tax relaxation was performed in order to stimulate investment and to bring the underground economy to the surface. Obviously, on the medium-term the introduction of the flat tax rate will lead to an increase in the state budget revenues through the increase in their calculus bases, namely through the action of the so-called Laffer effect. However, in the short run a certain contraction in the budget revenues is likely to occur.

In order to annihilate any unwanted effects that the capital flows liberalization might generate, the NBR has set certain ***safeguarding clauses*** at the time of the liberalization of the capital account occurred in April 2005. Thus, in circumstances when the short-term capital flows might exert strong pressures upon the foreign exchange market and cause serious perturbations in the monetary policy implementation, the NBR may proceed to safeguarding measures. Thus, the NBR may retain in the accounts for an undetermined time a part of the short-time flows, may set a higher minimum reserve requirement, may enforce a commission for the transactions on the interbank forex market generated by inflows/outflows of capitals or may introduce maturity restrictions for the deposits in lei originating from capital inflows made by the residents and non-residents at credit institutions from Romania.

The analysis of the liberalization performed by Romania in April 2005 revealed the fact that the process was passed over without significant influences upon the foreign exchange market, contrary to previous opinions of some economic analysts. The lack of unbalancing shocks may be ascribed both to the significant reduction of the interest rate differential between the leu and the most important international currencies, and to a relative migration of capitals from the international market to the US market generated by the increase in the interest rate on that market.

4. Economic competitiveness and the equilibrium real exchange rate

4.1. Economic competitiveness indexes

A fundamental condition for ensuring sustainable economic growth is represented by the continuous growth of labour productivity and economic competitiveness. The level of the labour productivity, the level of the prices and of the costs, international exchanges efficiency, the quality of the business environment represent only a few of the factors that influence economic competitiveness.

In order to carry out international comparisons and in order to illustrate the current state and the dynamics of the national economy, researchers must first construct a series of indicators which can best reflect the level of the national competitiveness.

An economy's external competitiveness is an extremely complex concept. Generally, there isn't a unanimous opinion regarding the most appropriate definition of economic competitiveness. In its broadest sense, external competitiveness of an economy refers to the ability of ensuring the long run economic growth by having an economic structure which can easily adapt to international markets' demand changes.

In the view of the renowned economist Paul Krugman, external competitiveness refers to the ability of producing internationally competitive goods and services and to the capacity of ensuring satisfactory and continuously developing living standards.

There are numerous working papers and reports at international level which deal with defining and measuring a country's economic competitiveness, such as „**The World Competitiveness Yearbook"** published by the International Institute for Management Development (IMD) in Geneva, „**The Global Competitiveness Report"** published by the World Economic Forum in Geneva (WEF) a.s.o. The European Reconstruction and Development Bank and the World Bank are institutions which are also conducting research in this area and they have effectively established their own technique of estimating a country's level of external competitiveness.

However, it is worth mentioning that the methods and indexes considered in assessing external competitiveness are substantially different from one institution to another. The International Institute for Management Development uses a number of 288 variables grouped in 8 categories. They refer to macroeconomic indexes, to indexes which reflect the relationships with the world economy, indexes which quantify the quality of governmental and central administration institutions. Other indexes refer to the level and the effectiveness of the financial system, to the development level of science and technology, to the size and quality of human capital and so on.

Regarding the methodology used by the World Economic Forum, this is mainly targeted towards the problem of economic growth, highlighting the main factors which generate it.

The World Economic Forum uses two categories of synthetic indexes:

- **Growth competitiveness index**
- **Business competitiveness index**

The first index describes the macroeconomic environment, the technology level, the quality of the institutions and so on. The indexes regarding the macroeconomic environment refer to macroeconomic stability, computed based on the evolution of the inflation, on the evolution of the real exchange rate, the level of public expenditure, the level of savings and so on.

The second index, which is a microeconomic index, describes the quality and the activity of companies, the quality of the business environment and so on.

The World Economic Forum publishes yearly rankings of competitiveness in which Romania was first included in 2001. Table 4.1.1 presents the international competitiveness rankings for ten countries which underwent the process of transition.

It is worth mentioning the fact that there are a number of limitations to this procedure of computing competitiveness indexes. First of all, some degree of comparability across different methodologies has to be ensured and secondly, some aspects regarding competitiveness are difficult to quantify (for e.g. the quality of education, the level of creativity). Regarding international comparability, one must take into account the fact that there are considerable differences among countries arising from their historical background, from the political, economic and social goals, from their geographical position, from their endowment with natural resources and so on.

Table 4.1.1 Competitiveness indexes (WEF methodology) for transition economies

2004						***2005***					
I. Growth competitiveness ranking		***of which***		***II. Business competitiveness ranking***		***I. Growth competitiveness ranking***		***of which***		***II. Business competitiveness ranking***	
		Macroeconomic Environment ranking						***Macroeconomic Environment ranking***			
Estonia	20	Slovenia	30	Estonia	27	Estonia	20	Estonia	30	Estonia	26
Slovenia	33	Lithuania	33	Slovenia	31	Slovenia	32	Slovenia	35	Czech Republic	27
Lithuania	36	Latvia	37	Czech Republic	35	Czech Republic	38	Latvia	38	Slovenia	32
Hungary	39	Estonia	39	Lithuania	36	Hungary	39	Lithuania	39	Hungary	34
Czech Republic	40	Czech Republic	41	Slovakia	39	Slovakia	41	Czech Republic	46	Slovakia	39
Slovakia	43	Poland	51	Hungary	42	Lithuania	43	Slovakia	49	Lithuania	41
Latvia	44	Slovakia	54	Latvia	49	Latvia	44	Poland	53	Poland	42

Bulgaria	59	Hungary	55	**Romania**	56	Bulgaria	58	Bulgaria	62	Latvia	48
Poland	60	Bulgaria	60	Poland	57	Poland	60	Hungary	63	**Romania**	67
Romania	63	**Romania**	71	Bulgaria	75	**Romania**	67	**Romania**	73	Bulgaria	78

Source: World Economic Forum

Table 4.1.1 highlights the fact that, unfortunately, Romania holds one of the last places among the former communist countries when we consider the competitiveness indexes computed after the World Economic Forum methodology.

4.2. The equilibrium real exchange rate – a quantifier of economic competitiveness

It is obvious that the most important indicator of external competitiveness is the equilibrium real exchange rate. This is an unobservable fundamental macroeconomic parameter whose value is computed using econometric techniques. Together with a number of other unobservable macroeconomic variables such as the potential output and the output gap, the equilibrium real exchange rate describes the broad picture of the fundamental macroeconomic mechanisms.

The open macroeconomics literature defines the **equilibrium real exchange rate** as the exchange rate that ensures both domestic and external equilibrium. This definition was first used by **John Williamson**, a member of the Institute for International Economics, in 1994. Although Williamson's definition is theoretically correct, there are many discussions concerning the appropriate definition of external and domestic equilibrium.

For transition countries, most of the specialists agree with the fact that domestic equilibrium has to be defined in closed relation with **NAIRU (Non- Accelerating Inflation Rate of Unemployment)** and external equilibrium has to take into account the balance of payments sustainability.

Regardless of the methodology used to determine economic competitiveness, the macroeconomic part has an extremely important role and in this particular category the equilibrium exchange rate is crucial as it directly influences external competitiveness, especially through export prices.

Maintaining external competitiveness is an important problem for a country with such a degree of openness as Romania, because imports and exports play an important role in ensuring long term economic growth. A loss of competitiveness can rapidly be reflected in a growth of the current account deficit. While Romania will advance on the path of real convergence, it will have to deal with more and more capital inflows and the real exchange rate will appreciate. It is highly important that this appreciation be accompanied by a rise in productivity and in the quality of the products offered on the external markets in order not to affect Romania's external competitiveness. Also, it is necessary to correlate the level of the wage rises with productivity growth.

It is worth mentioning that the relationship between the real exchange rate and competitiveness quantifies a number of phenomena between which there exist numerous direct and inverse (feedback) connections.

On the other hand, a real appreciation of the exchange rate can be considered, at a glance, as a loss of competitiveness. This is true only if the appreciation takes place in relation with the equilibrium exchange rate. Otherwise, this judgement can be proven wrong. In other words, if the real exchange rate is below its equilibrium level, the country may not suffer a competitiveness loss, but quite the contrary a growth in the competitiveness level.

The above mentioned phenomenon takes place especially if the overvaluation of the exchange rate is a result of productivity growth in the tradable goods sector. Hence, it becomes obvious the necessity of quantifying the equilibrium real exchange rate and it also becomes obvious the importance of understanding the Balassa-Samuelson effect. Moreover, it also becomes clear the necessity of better understanding the fundamentals which determine the dynamics of the equilibrium real exchange rate, as well as the relationship between labour productivity and equilibrium real exchange rate. The analysis is based on the papers of Balassa (1964), Samuelson (1964), Menzi Chinn şi Louis Johnston (1996), Matthew B. Canzoneri, Robert Cumby şi Behzad Diba (1999) and others.

The equilibrium real exchange rate is influenced by a number of variables such as: **the economy's degree of openness, the development level of the financial system, the ratio of net foreign assets to GDP, the productivity differential between the tradable and nontradable goods sectors, the terms of trade index (the ratio of the international prices of exportable goods to the international prices of importable goods), the volume of capital inflows and outflows, variables which characterise fiscal and commercial policies, the dynamics of the productivity factors in the tradable and the nontradable goods sectors, the characteristics of the balance of payment, changes in consumers' preferences** and so on.

An important element which influences the equilibrium real exchange rate is the way that the **Balassa – Samuelson effect** manifests itself in the economy.

In order to analyse the way that various factors influence the equilibrium real exchange rate, we will first decompose it in its fundamental variables. Letting q stand for the logarithm of the real exchange rate, e stand for the logarithm of the nominal exchange rate, and p and p^* stand for the logarithm of the domestic price level, respectively the logarithm of the foreign price level, we obtain the following fundamental identity:

$$q = e + p^* - p \qquad (1)$$

Identity (1) is true for both tradable and nontradable goods sectors.

Letting ω and $\overline{\omega}^*$ stand for the proportion of the nontradable goods sector to the national economy and, respectively, to the international economy, we will have the following relations for the price indexes:

$$p = \omega p_N + (1-\omega) p_T \qquad (2)$$

$$p^* = \varpi^* p_N^* + (1-\varpi^*) p_T^* \qquad (3)$$

Using the relations (1), (2), (3) we obtain the following identity:

$$q = q_T + \varpi(p_T - p_N) - \varpi^*(p_T^* - p_N^*) = \\ = (e + p_T^* - p_T) + \varpi(p_T - p_N) - \varpi^*(p_T^* - p_N^*) \quad (4)$$

Relation (4) highlights the fact that there are three potential factors influencing the real exchange rate:

- the change in the exchange rate in the tradable goods sector;
- the change of the relative prices prevailing in the tradable, respectively in the nontradable goods sector;
- the change of the proportion of the tradable goods sector to the national economy and/or to the international economy.

In order to identify the relevant factors which influence the real exchange rate, in the present paper we use the **Granger causality** test. This is how we were able to determine the fact that a few of the variables mentioned in the beginning of this chapter don't influence the equilibrium real exchange rate in Romania.

We will further present a number of factors which can influence the equilibrium real exchange rate:

a) **The degree of openness**

Quite a few papers which have appeared in the economic literature analyse the influence of the degree of openness on the equilibrium real exchange rate. Closely related to this topic, numerous papers analyse the influence of an economy's degree of openness on the economic growth. However, there are a few discussions regarding the appropriate measure of the degree of openness. Generally, the variable that measures the degree of openness must reflect the commercial policy of the state and the existing trade barriers. For many authors, the degree of openness is synonym with the neutrality idea prevailing in the monetary policy literature. Although many papers use the export – import volume ratio in order to measure the degree of openness, we have reached the conclusion that the most appropriate measure of the degree of openness is the sum of exports and imports expressed as a percentage of GDP:

$$open = \frac{IMP + EXP}{PIB_{EURO}} \times 100$$

The following notations were used in the above formula:

$open$ - the economy's degree of openness ;

IMP - FOB imports expressed in euros;

EXP - FOB exports expressed in euros;

PIB_{EURO} - gross domestic product expressed in euros.

It is worth mentioning the fact that the degree of openness is considered as a proxy for the degree of international trade liberalisation. An increase of the openness degree, which means an increase in the degree of international trade liberalisation and a reduction in trade barriers, leads to an increase in the current account deficit. This happens because an increase in the degree of openness ensures an increase in imports. As a consequence, more foreign currency

is needed to back up an increase in imports which will lead to a depreciation of the domestic currency.

It is worth mentioning, that for Romania, the Granger causality tests indicated that the degree of openness does influence the real exchange rate.

b) **The development of the financial system**

It is widely accepted that the development of the financial system influences the equilibrium real exchange rate. Generally, in order to quantify the development of the financial system, one must use a great number of indicators regarding the development level and the efficiency of the banking system, the development level and the efficiency of the capital markets and others.

Taking into account the aim of this paper, as well as the data statistically available for Romania, we will use as variable which quantifies the development of the financial system, **the ratio of the monetary aggregate M2 to GDP**.

c) **The proportion of net foreign assets to GDP**

It is obvious that the proportion of net foreign assets to GDP influences the equilibrium real exchange rate. Because the methodologies employed to compute the net foreign assets are quite complex and because computing the volume of net total assets on quarterly basis is a difficult procedure, we used as proxy for this variable the **ratio of total assets in the banking system to GDP. For this variable, the Granger causality test showed that it has an influence on the equilibrium exchange rate.**

d) **The intensity of capital flows**

On short term, capital flows generate an appreciation of the equilibrium real exchange rate. They induce excess demand for nontradable goods which will lead to an increase in the prices of this sector and, eventually, to an appreciation of the real exchange rate. Regarding the long run effect, this depends on the way that capital inflows are used. If the capital is employed to increase the competitiveness of the national economy, specifically to increase productivity in the tradable goods sector, then the final effect will be a sustainable appreciation of the real exchange rate. On the contrary, if the capital inflows are used only to trigger an excessive increase in consumption and not to increase economic competitiveness, then the initial appreciation of the real exchange rate will be followed by long run depreciation. Regarding the liberalisation of capital flows, this will influence the real exchange rate through two channels. On one hand, the liberalisation of the capital flows reduces the real interest rate, bringing it close to the one prevailing on the international markets. A reduction in the real interest rate fuels consumption and thus leads to an increase in the nontradable goods prices. The final effect will be the depreciation of the real exchange rate. The second channel through which the real exchange rate will be influenced is known in the economic literature as the **income effect**.

e) **Fiscal policy**

It is well known that the volume and structure of the government expenditures, the taxes policy and the budget deficit influence the equilibrium real exchange rate. In order to analyse

the role of the fiscal policy in influencing the equilibrium real exchange rate, one can use Barro-Ricardo type models.

f) **Trade policy**

Another factor which influences the equilibrium real exchange rate concerns the trade policy, specifically the level and structure of trade tariffs, the policy regarding export subsidies, trade barriers and so on. For example, an increase in trade tariffs will lead to a change in the demand of both tradable and nontradable goods, obviously in a different proportion. The changes in prices will be finally reflected in the dynamics of the equilibrium real exchange rate.

It is worth mentioning, that in analysing the influence of trade and fiscal policy upon the equilibrium exchange rate, one must take into consideration the aforementioned "income effect".

4.3. The estimation of the equilibrium real exchange rate for Romania and the analysis of its influence on economic competitiveness

The problem of the exchange rate regime adopted by different countries as well as the factors that influence the dynamics of the exchange rates represent fundamental topics in contemporary economic literature. Starting with the year 1990, the ex communist countries have adopted a variety of exchange rate regimes according to the macroeconomic strategies that they decided to pursue. In time however, and depending on the macroeconomic developments, these countries have changed their exchange rate regimes, in order to be able to achieve the desired targets.

In the process of joining the European Union and of preparing the conditions imposed for entering the European Monetary System, the ex communist countries had to solve a series of problems, including a few extremely delicate ones concerning the exchange rate regime. It is well known that the ECOFIN Council has established the principle of equal treatment among all EU member countries starting with the year 2000. This means that the convergence criteria apply for the new EU member states as well. On the other hand, for the states which have just joined the EU, or will join the EU in the future, the participation to the Exchange Rate Mechanism II (ERM II) is imposed. ERM II actually represents and arrangement regarding the exchange rate of the Euro zone and the member states which aren't yet part of the Euro zone. Participation to the ERM II means that the member states must maintain their exchange rate in a ±15% band around the central exchange rate. The central exchange rate is fixed and adjusted by the European Central Bank together with the central banks of the countries that aren't part of the Euro zone. Regarding the exchange rate regime, according to ECOFIN three types of exchange rate regimes are not consistent with ERM II among which the crawling peg and the fixed exchange rate with another reference currency than the euro. It has been shown that, between the preparations necessary in order to join the European Union and the conditions that must be fulfilled in order to join the ERM, with ERM II as an intermediary stage, major contradictions can arise. On the one hand, joining the EU necessitates the fulfilment of nominal and real convergence conditions regarding the rate of economic growth, the restructuring procedure, the absorption of foreign capital and so on. All these lead to an appreciation of the exchange rate in real terms. The process of exchange rate appreciation is amplified by the Balassa-Samuelson effect. On the other hand, the Balassa-Samuelson effect may lead to an increase in the inflation rate which can later make the fulfilment of the EMU conditions extremely difficult to achieve. It is well known that the annual inflation rate for the candidate countries cannot exceed with more than 1.5 percentage points the average inflation rate of the three EU countries with the lowest inflation rate.

In order to harmonise the convergence criteria with the ones regarding the exchange rate and inflation, the analysis and thorough knowledge of the equilibrium real exchange rate is of utmost importance.

Studies aimed to estimating the equilibrium real exchange rate have been conducted in a number of countries, including ex communist countries such as Hungary, Poland, Czech Republic and the Baltic Countries.

For over two decades the IMF has analysed the appropriate procedure for estimating the equilibrium real exchange rate for developing countries and the OECD has done the same for developed countries.

Regarding Romania, there have been little studies concerning this area of the economy. Due to the lack of sufficiently long data sample, the studies conducted for transition countries have been traditionally panel data analyses. It is worth mentioning that even for panel data studies, most of these have not included data series for Romania and Bulgaria.

Regarding the estimation of the equilibrium real exchange rate (ERER), the economic and econometric literature proposes two methods.

The first approach, proposed by Williamson (1994), Bayoumi (1994) and Stein (1994) is based on macroeconomic models which reflect the main correlations which take place in an economy and which involve the exchange rate. Williamson (1994) and Bayoumi (1994) advise the use of large macroeconometric models whose final output is the **fundamental equilibrium exchange rate (FEER**), or conversely the **desired equilibrium exchange rate (DEER).** On the contrary, Stein (1994) advises the use of a small macroeconometric model in order to obtain the estimated values for the equilibrium exchange rate called the **Natural Exchange Rate (NATural Real Exchange Rate**).

The second approach, mainly represented by Peter B. Clark and Ronald MacDonald (1998) and known as the IMF methodology of estimating the equilibrium exchange rate, is based on econometric cointegration techniques and the equilibrium exchange rate is estimated starting from the macroeconomic fundamentals. They have first used the notion of **Behavioural Equilibrium Exchange Rate (BEER)** and **Permanent Equilibrium Exchange Rate (PEER).** The econometric methodology proposed by Clark and MacDonald (1998) obtains the equilibrium exchange rate by considering the long run relationship between the fundamentals.

The importance of accurately estimating the equilibrium exchange rate comes from the fact that it is considered as a fundamental economic indicator of the economic health. It continuously sends information regarding the competitiveness of the economy, the potential disequilibria which may arise and also signals the situations which can lead to currency crises. For the countries which are preparing to join the EU, the equilibrium exchange rate offers important information regarding the harmonisation with the convergence criteria regarding the exchange rate stability, a condition imposed to EMU accession.

This study uses econometric techniques in order to estimate the current level of the equilibrium exchange rate and to determine its trend.

The cointegration techniques allowed for the identification of a long run relationship between the real exchange rate and its fundamentals. After testing a large number of variables, the following were introduced in the model constructed for Romania:

- **the productivity differential between Romania and the European Union** which will allow the estimation of the Balassa-Samuelson effect;
- **the proportion of net foreign assets to GDP;**
- **the degree of openness of the Romanian economy.**

The sample included quarterly data between the first trimester of 1997 and the second trimester of 2005[5]. For the price index 1996:Q1 was set equal to 1. Considering the fact that the National Bank of Romania has switched to Euro as a reference currency in March 2003, and since then the quotation for the American dollar is obtained through the procedure of cross

[5] The sample was constructed taking into consideration the lack of official for the GDP before 1997. The National Statistics Institute publishes the quarterly GDP only starting with the first semester of 1997.

using the international exchange rate EUR/USD, we used the time series for EUR/ROL (ECU/ROL before 1999) in order to estimate the equilibrium exchange rate.

We also chose the fundamentals for the exchange rate, variables which we included in the BEER model, based on previous studies conducted for ex communist countries, especially for Hungary, Poland, Czech Republic and the Baltic Countries.

The BEER approach to estimating the equilibrium exchange rate consists of the following steps:

1. The long run relationship between the exchange rate and its fundamentals is estimated using the cointegration approach, based on the fact that all the series used in the analysis are generally integrated of order 1 (I(1)).

2. The values estimated for each factor are then substituted in the estimated relationship in order to determine the deviation from the long run equilibrium relationship.

3. The long run sustainable values for the exchange rate fundamentals are determined. This can be done by decomposing the data series in permanent and transitory components using **Hodrick-Prescott** filters or decomposition methods of **Beveridge-Nelson** type. As an alternative method, one can use calibration techniques like **Baffes** (1999) advises.

4. The long run values of the exchange rate fundamentals are then substituted in the estimated cointegration relationship.

5. The total deviation from the equilibrium level is computed as a difference between the actual values of the real exchange rate and the equilibrium real exchange rate estimated at point 4 of the present methodology. **Clark and MacDonald** (2000) propose as an alternative method for obtaining the equilibrium real exchange rate a decomposition of the cointegration vector in a permanent and a transitory component (PEER – Permanent Equilibrium Exchange Rate) by using the **Gonzalo-Granger** methodology.

We have applied this methodology following a number of steps which will be further presented in detail.

As we have already mentioned, we selected the variables which will be used as fundamentals for the real exchange rate: the degree of openness (OPEN, computed as (import+export)/GDP), net foreign assets (NFA) and the differential between the productivity in the tradable goods sector[6] in Romania and the productivity of the same sector in the EU (dif_w), a variable which is supposed to quantify the Balassa- Samuelson effect.

The net foreign assets, a variable which measures the international investment position of a country, represent the stock of foreign financial assets and liabilities at a certain moment in time[7]. As a proxy for the international investment position of Romania, we used the net foreign assets of the banking system (commercial banks and the National Bank of Romania). The net foreign assets of the banking system mainly reflect the interventions of the National Bank of Romania (NBR) on the foreign exchange market. A decrease in the volume of foreign assets caused by an increase in foreign liabilities (capital inflows, especially from foreign direct investments and other investments) leads to an intervention of NBR on the foreign exchange

[6] The tradable goods sector has been considered the industry in this paper

[7] According to the definition that is currently world wide accepted, the international investment position contains the stock of foreign assets and liabilities at the beginning and at the end of a time period, as well as the financial transactions, the exchange rate changes, the international prices changes and other financial changes which have taken place in the same period of time. Foreign assets include direct investments of residents abroad, portfolio investment and other investment and reserve assets of the National Bank of Romania. Foreign liabilities include direct investments of non-residents in Romania, portfolio investment and other types of investments.

market, so that an increase in the foreign assets reserves describes in a certain degree a drop in the investment position of the country (the net foreign assets of the whole economy). Consequently, the net foreign assets of the banking system are a good proxy of an economy's net foreign assets.

Econometric calculus showed that all the fundamental variables taken into consideration are integrated of order 1. This allows us to use the **Johansen cointegration technique** in order to determine the long run equilibrium relation between the real exchange rate fundamentals and the real exchange rate itself.

Based on the estimated cointegration vector, we deduced the long run equilibrium relationship between real exchange rate and its fundamentals:

LCURS_R_EURO = -1.124182881*DIF_W_SA + 0.9329833701*NFA_SA + 0.2482810833*OPEN_SA + 8.879861467

The signs of the estimated coefficients are consistent with the economic theory and they are also statistically significant.

The coefficient of the **differential between the productivity growth of the tradable goods sector in Romania and in the EU** (DIF_W_SA) is negative. This means that an increase in this variable, which signifies the fact that productivity in the tradable goods sector is rising more rapidly in Romania than in the EU, leads to an appreciation in the real exchange rate. Actually this is a materialization of the Balassa – Samuelson effect.

The sign of the coefficient corresponding to the **degree of openness** (OPEN_SA) in the long run equilibrium relationship is positive which means that an increase in the degree of openness leads to a rise in the real exchange rate (the domestic currency appreciates). Indeed, for Romania, the liberalisation of international trade and the decrease in tariffs and other type of trade barriers has produced an increase in the current account deficit caused by a surge in imports. Thus, a greater volume of foreign currency was necessary to back up imports leading to depreciation of the domestic currency.

The sign of the coefficient corresponding to **net foreign assets** (NFA_SA) expressed as percentage of GDP shows the fact that an increase in the net foreign assets belonging to the banking sector (the NBR and the commercial banks) causes depreciation of the domestic currency. Both in academic circles as well as among practitioners the sign of this coefficient is subjected to heavy criticism.

From a theoretical point of view, there are a number of approaches regarding the influence of net foreign assets on the real exchange rate both in the short run and in the long run.

The models which use the "stock flow" approach assert that in emerging and transition economies where the investments rate is higher than the savings rate because of the need to sustain economic growth and to close the gap which separates them in terms of GDP per capita from developed countries, considerable capital inflows are to be expected, especially foreign direct investments. If the capital account of transition economies is liberalised, then these economies will have to deal with an increase in capital inflows because of the high real interest rate differential. Those capital inflows will be reflected through increases in foreign liabilities (negative foreign assets) and will lead to appreciation of the domestic currency. However, in the long run, after foreign liabilities reach a certain level, the country will have to start paying

interest and to repay the initial capital inflows. This will generate capital outflows which will invert the influence on the exchange rate causing a depreciation of the domestic currency.

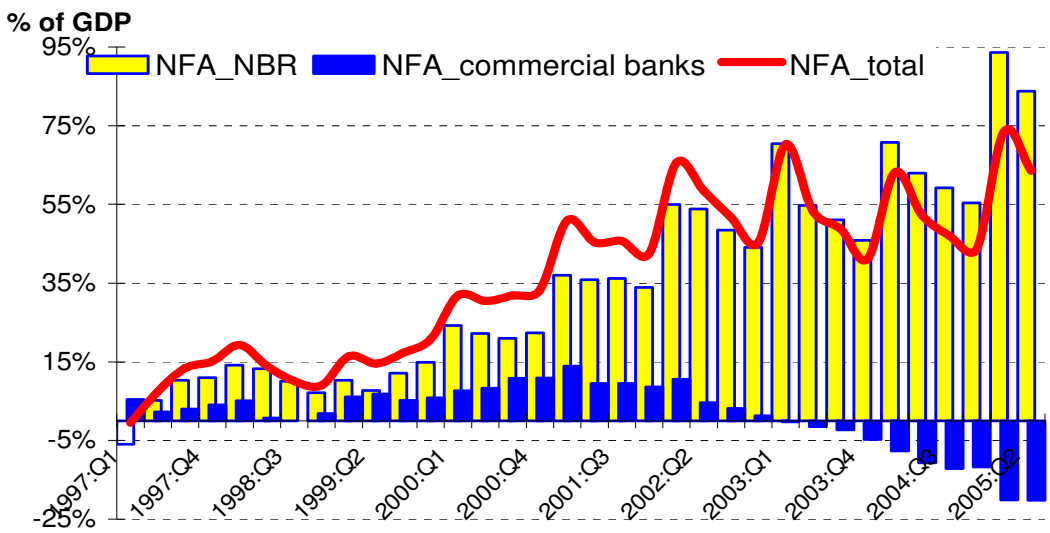
The traditional balance of payments approach states that foreign capital inflows (foreign liabilities) which worsen the country's investment position cause a long term depreciation of the exchange rate as foreign liabilities necessitate a high commercial surplus which can only be obtained by depreciating the domestic currency.

A positive relationship between net foreign assets and the exchange rate (an increase/decrease in the net foreign assets of the banking system which is equivalent with a decrease/increase in the net foreign assets of the whole economy causes an appreciation/depreciation of the domestic currency) was obtained through estimation for transition countries by a few authors (Egert, 2004; Burgess et al, 2003 for the Baltic countries; Alonso-Gamo et al, 2002, Lommatzsch and Tober, 2002 for Lithuania, the Czech Republic, Hungary and Poland; Alberola, 2003 for the Czech Republic).

Different conclusions, respectively the existence of a negative relationship between the net foreign assets and the exchange rate (an increase/decrease in the net foreign assets of the banking system which is equivalent with a decrease/increase in the net foreign assets of the whole economy causes a depreciation /appreciation of the domestic currency) were also obtained for a few transition economies (Hinnosar et al, 2003 for Estonia, de Rahn, 2003 for the Czech Republic, Estonia, Hungary, Poland and Slovenia, Alberola, 2003 for Hungary and Poland) and for OECD countries (Egert, 2004). Moreover, using panel data series for transition economies, MacDonald (2002) shows that the sign of the coefficient may change depending on the type of equation which is estimated.

For Romania, the equation estimated above shows that an increase/decrease in the net foreign assets of the banking system which is equivalent with a decrease/increase in the net foreign assets of the whole economy causes a depreciation /appreciation of the domestic currency. This result is backed by the traditional balance of payments approach which states that foreign capital inflows worsen the investment position of the country and cause a long term depreciation of the exchange rate. Figure 4.3.1 presents the dynamics of the net foreign assets in Romania.

Figure 4.3.1 The dynamics of Net Foreign Assets (NFA) in Romania



Source: The National Bank of Romania and authors' computations

The continuous growth of net foreign assets in Romania is mainly due to the increase of the international reserve of the National Bank of Romania as a result of foreign currency purchases on the foreign exchange market. The international reserves have reached a record level of 16 billion Euros in august 2005. It can be easily noticed in figure 4.3.1 that the trend of the net foreign assets was modified in the year 1998 and 2003, years when exceptionally large inflows of capital took place (foreign liabilities which have decreased the net foreign assets). The net foreign assets of the commercial banks have continuously decreased because of the substantial growth in foreign liabilities (this growth was caused especially by loans from foreign banks and by foreign banks' deposits denominated in foreign currencies).

Table 4.3.1 The dynamics of foreign capital inflows in Romania

Year	Financial and capital account balance	Comprising:	
		Direct investments balance (bill. EURO)	Portfolio investment
1996	1767	210	982
1997	905	1084	779
1998	**2377**	**1771**	**113**
1999	451	949	-673
2000	1402	1161	137
2001	1672	1312	657
2002	2493	1194	406
2003	**3471**	**1910**	**529**
2004	**3422**	**4153**	**34**

Source: The National Bank of Romania

The NBR's interventions on the foreign exchange market have been mainly directed towards foreign currency purchase in order to ensure an optimal level of the foreign exchange reserves (approximately 5 months of imports) and in order to maintain the domestic currency's appreciation in reasonable limits. Starting with November 2004, as a result of the preparations necessary for liberalising the capital account and for switching to inflation targeting, the NBR interventions on the foreign exchange market are less predictable and allow for more flexibility of the exchange rate.

To conclude, the results obtained using the cointegration technique show that an increase in the tradable goods sector productivity leads to appreciation of the equilibrium exchange rate and a growth in the variable which quantifies the development of the financial system or an increase in the net foreign assets of the banking system cause a long term depreciation of the equilibrium real exchange rate.

It is worth mentioning that the level of equilibrium real exchange rate represents a trend which describes the way that this variable develops in time. Consequently, it is necessary to

avoid a common error made by considering the equilibrium real exchange rate as a fixed value for the period of time included in the analysis.

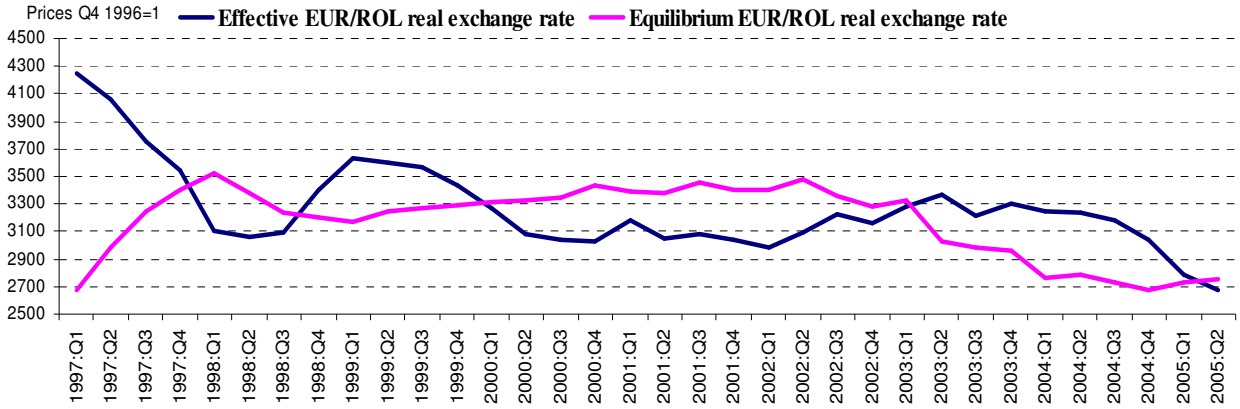
Another issue concerning the economic relevance of the results obtained refers to the moments when the actual real exchange rate showed deviations from the equilibrium real exchange rate and to the potential explanations for these deviations. It is obvious that pertinent explanations of these deviations are based on a thorough understanding of financial, monetary and economic events that took place in Romania in the period included in the analysis. We will further present two methodologies usually employed in order to compute the deviations of the actual real exchange rate from the equilibrium real exchange rate.

The first method, known as **"actual deviation",** quantifies the short run deviations of the actual real exchange rate from the equilibrium real exchange rate. This method makes use of the coefficients estimated through the cointegration relationship as well as the actual values of the fundamental variables.

The second method allows us to compute the **deviations from the long run trend**, respectively the long term deviation. This methodology presupposes the estimation of the log run trend for each fundamental variable taken into consideration in the model.

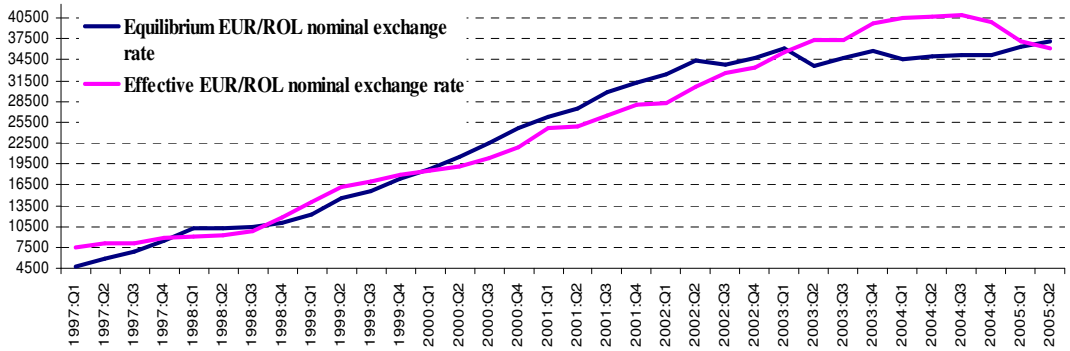
Figures 4.3.2 and 4.3.3 present the dynamics of the real and nominal exchange rate in comparison with the dynamics of the equilibrium real exchange rate in the period of 1997-2005.

Figure 4.3.2 Effective real EUR/ROL exchange rate and the equilibrium real EUR/ROL exchange rate



Source: authors' computations

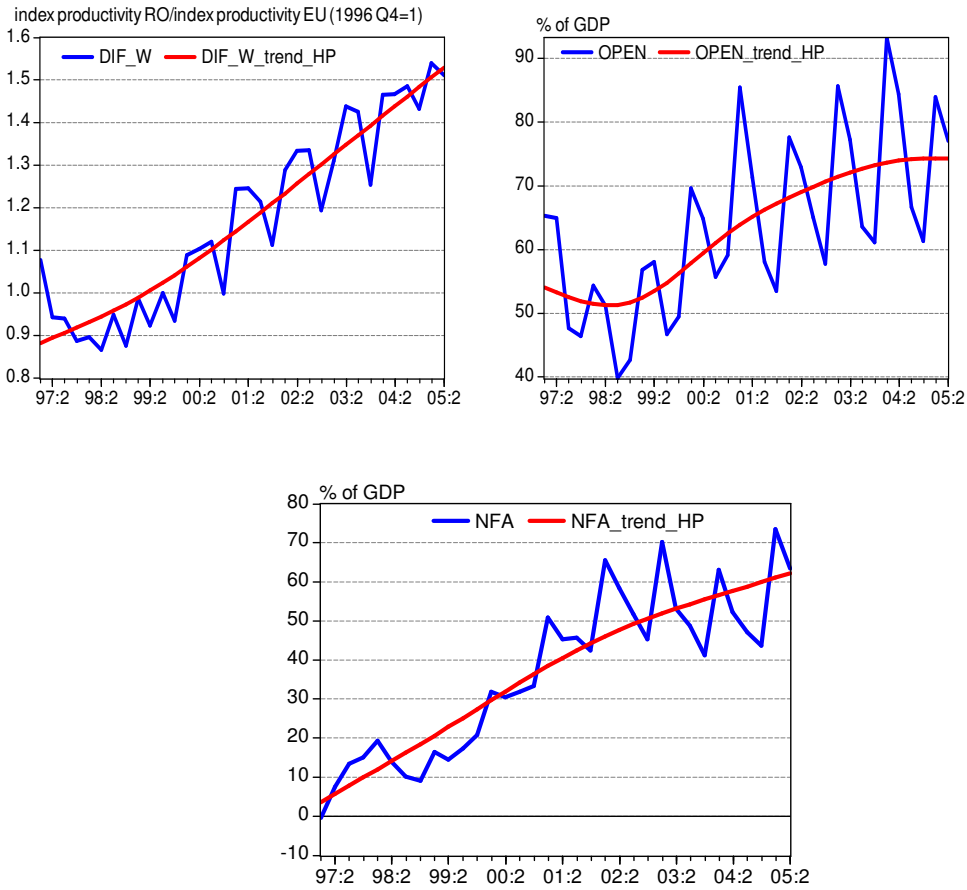
Figure 4.3.3 Effective nominal EUR/ROL exchange rate and equilibrium nominal EUR/ROL exchange rate



Source: authors' computations

In order to compute the total deviation of the actual exchange rate from its equilibrium level we first have to estimate the trend of the fundamental variables. This was accomplished using Hodrick-Prescott filters. Figure 4.3.4 presents the results obtained.

Figure 4.3.4 The Hodrick-Prescott trend for the exchange rate fundamental variables

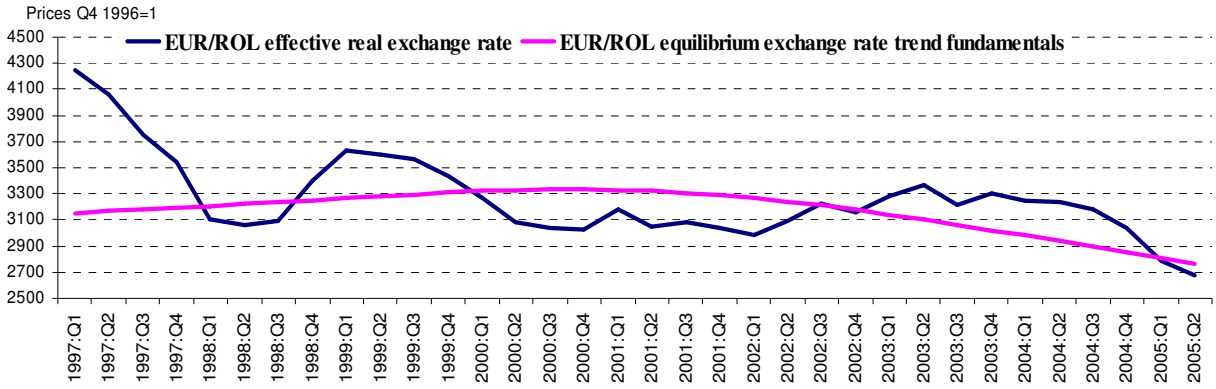


Source: authors' computations

Based on trend estimated for the fundamental variables and using the coefficients from the cointegration relationship, we computed the trend of the real exchange rate.

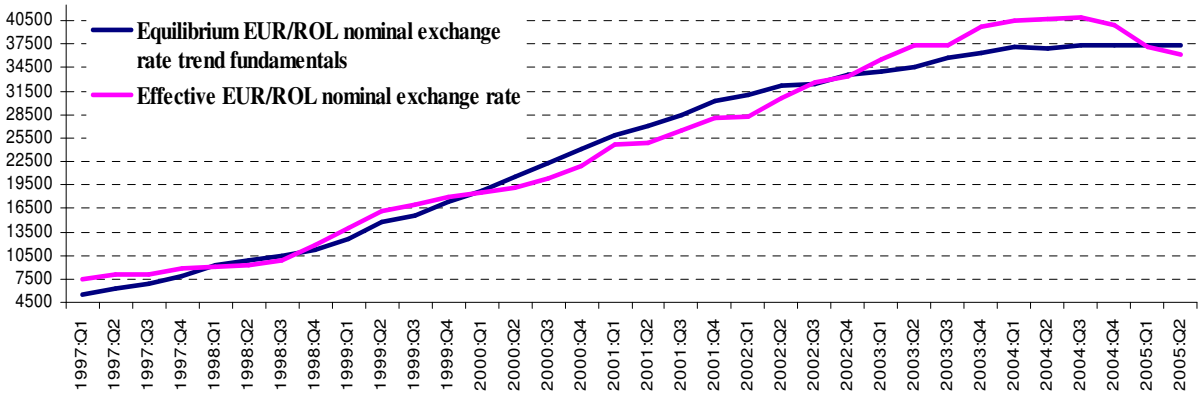
Figure 4.3.5 presents the trend of the equilibrium exchange rate in comparison with the effective real exchange rate.

Figure 4.3.5 Effective real exchange rate and equilibrium real exchange rate



Source: authors' computations

Figure 4.3.6 Effective nominal exchange rate and equilibrium nominal exchange rate



Source: authors' computations

Regarding the indicator "actual short term deviation" which measures the percentage deviation of the actual real exchange rate from its equilibrium value, this will be computed based on the following relation:

$$Actual \quad deviation = \frac{(Actual_real_exchange_rate - equilibrium_real_exchange_rate)}{equilibrium_real_exchange_rate} \times 100$$

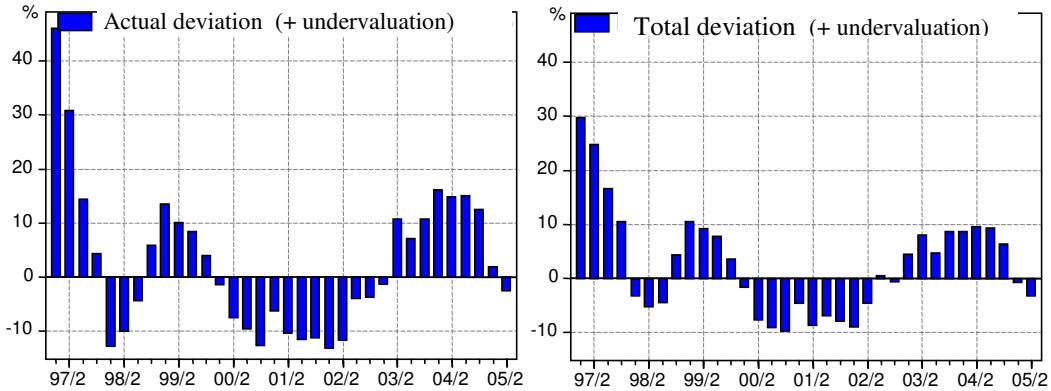
Based on the trend estimated for the main factors which influence the real exchange rate, the total deviation of the actual real exchange rate was computed using the following relation:

$$Total \quad deviation = \frac{(Actual_real_exchange_rate - equilibrium_real_exchange_rate_Trend)}{equilibrium_real_exchange_rate} \times 100$$

The above relation has the advantage that it keeps into account both the deviations caused by real exchange rate disequilibrium and the deviations caused by the departure of fundamentals from their trends.

Figure 4.3.7 presents the deviation of the real exchange rate from its equilibrium level for each trimester of the period included in our analysis. It is worth mentioning that the biggest deviations are recorded in the year 1997, respectively 45% in the first trimester of the year.

Figure 4.3.7 Percentage deviations from the equilibrium level



Source: authors' computations

Table 4.3.2 presents the main statistical characteristics of the real exchange rate deviation indicators. This highlights the fact that the average considered on the whole sample was positive, meaning that the real exchange rate was above its equilibrium level. This leads us to the conclusion that the domestic currency was, on average, undervalued in the period of 1997-2005.

Table 4.3.2 Actual percentage deviation of the equilibrium real exchange rate

	Actual deviation from the equilibrium level	**Total deviation from the equilibrium level**
Mean	2.73477	2.665397
Median	0.285208	2.051373
Maximum	46.00744	29.727
Minimum	-13.0979	-9.69444
Std. Dev.	13.40726	9.573089
Skewness	1.093457	0.84737
Kurtosis	4.496875	3.554208
Jarque-Bera	9.949575	4.503997
Probability	0.00691	0.105189
Observations	34	34

Source: authors' computations

Consequently, in the period of 1997 to 2005 the euro-leu exchange rate was undervalued on average with 2.73% if we consider the actual deviations and with 2.66% if we consider the deviations obtained by using the trends of the fundamentals. Although the percentage deviations from the equilibrium level were relatively low, they still show an **undervaluation of the domestic currency**, which should usually indicate an increase in competitiveness, respectively **an increase in exports and a decrease of imports and, thus, an improvement in the current account balance.**

Although in the short run the undervaluation of the domestic currency has positive effects, causing an increase in exports, an improvement in the current account balance and an increase of competitiveness, in the long run the situation has to be considered with caution. This is especially the case for transition countries which have joined or are completing the process of joining the European Union. In a further stage this countries are supposed to join the EMU and, consequently, have to adopt a **fixed exchange rate regime**. An overvalued exchange rate might generate a loss of economic competitiveness, reduces the speed of the process of real convergence and increases the chance of a speculative attack on the currency. On the other hand, the undervaluation of the exchange rate might generate inflation pressures. Both situations may deter a country from achieving the convergence criteria. That is why this type of extremely sensitive phenomena needs a lot of caution and attention.

5. Conclusions

As a condition of joining the EU and the Euro zone, Romania has liberalised the capital account according to article 56 of the European Community Treaty, an article which forbids any restrictions of capital mobility between the member states or between the member states and other countries. April 2005 marked one the most important stage of the capital account liberalisation, the access of non-residents to deposits denominated in Romanian lei. Contrary to pessimistic opinions of a few analysts, it is safe to say that this process was completed without powerful monetary or foreign exchange rate disturbances.

The authors of the present paper consider that the success of this important stage of the capital account liberalisation is the result of the professional way it was prepared as well as the international standards proficiency of the NBR specialists. Actually, the preparation of the capital account liberalisation strategy as well as the methods employed to apply this strategy prove the proficiency of the NBR macroeconomists.

The liberalisation of the capital account together with the new monetary policy strategy, inflation targeting, have an important effect on the competitiveness of the Romanian economy and on the sustainability of the high economic growth rate, a growth rate which was first achieved during the Isarescu government and was further amplified by Nastase and Tariceanu governments.

As international experience has proven, the liberalisation of the capital account will ensure a better allocation of resources and will direct the capital towards the most productive activities together with a reduction in the financing cost, the development of the Romanian financial system, an improvement in Corporate Governance and the business environment and a tightness of macroeconomic discipline.

In order to deal with potential adverse effects of the capital account liberalisation, especially with the risk of excessive lending, the National Bank of Romania took a series of measures regarding prudential regulation, the widespread use of international accounting standards use and so on. Regarding the portfolio investments which can expose the economy to sudden capital inflows and outflows, these will be solved due to a higher flexibility of the exchange rate and to the comfortable volume of foreign reserves held by NBR.

The policies implemented by the NBR regarding interest rates and higher exchange rate flexibility are meant to discourage speculative capital inflows. The measures implemented by the Romanian government regarding the reform of the public administration, the infrastructure improvement, the price and interest rates stability are designed to increase foreign direct investment in Romania.

The process of capital account liberalisation together with the implementation of the general strategy regarding the EU accession and the integration in the European structures, are fundamental factors of economic competitiveness and vital conditions for European macroeconomic convergence.

References

Alberola, E. (2003), "Real Convergence, External Disequilibria and Equilibrium Exchange Rates in EU Acceding Countries", Banco de España

Alesina, A., V. Grilli and G.M. Milesi-Ferreti (1994), "The Political Economy of Capital Controls"; in L. Leiderman and A. Razin, (eds.): Capital Mobility: The Impact on Consumption, Investment and Growth, Cambridge, New York and Melbourne: Cambridge University Press, 289-321.

Alonso-Gamo, P., S. Fabrizio, V. Kramarenko and Q. Wang (2002), "Lithuania: History and Future of the Currency Board Arrangement", IMF Working Paper No. 127

Arratibel, O., D. Rodriguez Palenzuela and C. Thimann (2002), "Inflation dynamics and dual inflation în accession countries: A "New Keynesian" perspective", ECB Working Paper No. 132

Backé, P., J. Fidrmuc, T. Reininger and F. Schardax (2002), "Price dynamics în Central and eastern European EU accession countries", Oesterreichische Nationalbank Working Paper No.61

Baffes, J., I.A. Elbadawi, and S.A. O'Connell, (1997) "Single-equation estimation of the equilibrium real exchange rate", World Bank Working Paper No. 08/20/97;

Balassa, B. (1964), "The Purchasing-Power-Parity Doctrine: A Reappraisal", Journal of Political Economy, Vol. 72. No 6., December, pp. 584-596.

Barro, R. J. (1991), "Economic Growth in a Cross Section of Countries," NBER Working Papers 3120

Barro, R. J., N. G. Mankiw and X. Sala-i-Martin (1995), "Capital Mobility in Neoclassical Models of Growth," American Economic Review, vol 85, no. 1, (March), pp. 103 – 115

Bayoumi, T., P. Clark, S. Symansky and M. Taylor (1994), "The Robustness of Equilibrium Exchange Rate Calculations to Alternative Assumptions and Methodologies", in J. Williamson, ed., Estimating Equilibrium Exchange Rates, Institute for International

Begg, D., L. Halpern and C. Wyplosz (1999), "Monetary and Exchange Rate Policies, EMU and Central and Eastern Europe", Forum Report on the Economic Policy Initiative No. 5, CEPR, London,

Bekaert, G. (1995), "Market Integration and Investment Barriers in Emerging Equity Markets," World Bank Economic Review, 9: 75-107

Bekaert, G. and C. R. Harvey (1995), "Time-Varying World Integration," Journal of Finance, 50: 403- 444

Bekaert, G. and C. R. Harvey (2000), "Capital Flows and the Behavior of Emerging Equity Market Returns," S. Edwards (ed.): Capital Flows and the Emerging Economies: Theory, Evidence and Controversies. Chicago: The University of Chicago Press: 159-194.

Bekaert, G., C. R. Harvey and C. Lundblad (2001), "Does Financial Liberalization Spur Growth**?**," NBER Working Papers 8245

Bekaert, G., C. R. Harvey, and C. Lundblad (2002), "Does Financial Liberalization Spur Growth?, Working Paper, Duke University.

Bubula, A. and I. Otker-Robe (2002), „The evolution of exchange rate regimes since 1990: evidence from de facto policies", IMF Working Paper No. 155.

Buiter, W. and C. Grafe (2002), „Anchor, float or abandon ship: exchange rate regimes for accession countries", EBRD

Burgess, R., S. Fabrizio and Y. Xiao (2003), "Competitiveness in the Baltics in the Run-Up to EU Accession", IMF Country Report No. 114.

Canzoneri, M., R.E. Cumby and B. Diba (1999), "Relative Labor Productivity and the Real Exchange Rate in the Long Run: Evidence for a Panel of OECD Countries", Journal of International Economics, v47, 245-266

Chinn, M. (1997), "Sectoral productivity, government spending and real exchange rates: empirical evidence for OECD countries", NBER working paper 6017;

Chinn, M., and L. Johnston (1996), "Real exchange rate levels, productivity and demand shocks: evidence from a panel of 14 countries", NBER working paper 5709;

Clarida, R. and J. Gali (1994), "Sources of real exchange rate fluctuations: how important are nominal shocks?", NBER working paper 4658;

Clark, P.B. and R. MacDonald (1998) "Exchange rates and economic fundamentals: A methodological comparison of BEER's and FEER's ", IMF working paper 9867;

Coricelli, F. and B. Jazbec (2001), "Real Exchange Rate Dynamics în Transition Economies", Centre for Economic Policy Research, Discussion Papers Series No. 2869, July

Cumby, R.E. şi J. Huizinga (1990), The Predictibility of Real exchange Rate Changes in the Short and Long Run, NBER Working Paper No. 3468

De Broeck, M. and T. Slok (2001), "Interpreting Real Exchange Rate Movements în Transition Countries", IMF Working Paper No. 56, May, Washington D.C.

DeGregorio, J. and H.C. Wolf (1994), "Terms of trade, productivity and the real exchange rate", NBER working paper 4807

Dickey, D. A. and R. J. Rossana (1994), "Cointegrated time series: A guide to estimation and hypothesis testing", Oxford Bulletin of Economic and Statistics, 56 (3), 325-53.

Dobrinsky, R. (2001), "Convergence in Per Capita Income Levels, Productivity Dynamics and Real Exchange Rates în the Candidate Countries on the Way to EU Accession", International Institute for Applied Systems Analysis, Interim Report No. 38

Dooley, M., D. Mathieson, and L. Rojas-Suarez (1997), "Capital Mobility and Exchange Market Intervention in Developing Countries", NBER Working Paper No. 6247

Drine, I., K. Lommatzsch and C. Rault (2002), „The Balassa-Samuelson effect in Central and Eastern Europe: myth or reality?", William Davidson Institute Working Papers Series 483

Durbin, J. (2000), „The State Space Approach to Time Series Analysis and Its Potential for Official Statistics", Australian and New Zealand Journal of Statistics No.42, p.1-23

Durbin, J. and S.J. Koopmans (2001), „Time Series Analysis by State Space Methods", Oxford Statistical Science Series No. 24, Oxford University Press

Edison, H.J. and F. E. Warnock (2003), "A Simple Measure of the Intensity of Capital Controls," Journal of Empirical Finance, 10 (1/2): 81–103.

Edwards, S. (1985), "Money, the Rate of Devaluation and Interest Rates in a Semi-Open Economy: Colombia 1968-1982," Journal of Money, Credit and Banking, 17(1): 59-68.

Edwards, S. (1989), "Real and monetary determinants of real exchange rate behavior: theory and evidence from developing countries", NBER working paper 2721;

Edwards, S. (1989), „Real Exchange Rates, Devaluation and Adjustment", The MIT Press.

Edwards, S. (2001), "Capital Mobility and Economic Performance: Are Emerging Economies Different?" NBER Working Paper No. 8076

Égert, B. (2001a), "Exchange Rate Regime and Disinflation in the Transition: the Experience of the pre-announced Crawling Peg in Hungary", Revue d'économie financière, No. 69 (2), Special Issue: Ten Years of Transition in Eastern European Countries, pp. 361-379.

Egert, B. (2001b) "Equilibrium real exchange rates in central Europe's transition Economies: How far is heaven?", University of Paris X- Nanterre;

Egert, B. (2001c) "Estimating the impact of the Balassa-Samuelson effect on inflation during the transition: does it matter in the run-up to EMU?", Paper presented at the "East European Transition and EU Enlargement: a Quantitative Approach" meeting in Gdansk;

Égert, B. (2002a), "Does the Productivity-Bias Hypothesis Hold in the Transition? Evidence from Five CEE Economies in the 1990s", Eastern European Economics, Vol. 40, No. 2., March-April, pp. 5-37.

Égert, B. (2002b), "Estimating the Impact of the Balassa-Samuelson Effect on Inflation and the Real Exchange Rate During the Transition", Economic Systems, 26(1), pp. 1-16

Égert, B. (2002c), "Investigating the Balassa-Samuelson Hypothesis in the Transition: Do We Understand What We See? A Panel Study", Economics of Transition, 10(2), July, pp. 1-36., and Bank of Finland BOFIT Discussion Paper No 6/2002

Égert, B. (2002d), "Equilibrium Real Exchange Rates in Central Europe's Transition Economies: Knocking on Heaven's Door", William Davidson Institute Working Paper No. 480

Égert, B. (2002e), "Nominal and real convergence in Estonia: The Balassa-Samuelson (dis)connection. Does disaggregation provide better understanding?", National Bank of Estonia.

Egert, B. (2004) "Equilibrium exchange rates in southeastern Europe, Russia, Ukraine and Turkey: Healthy or (Dutch) Diseased?", Oesterreichische Nationalbank

Égert, B., I. Drine, K. Lommatzsch and C. Rault (2002), "The Balassa-Samuelson effect in Central and Eastern Europe: Myth or Reality?", William Davidson Institute Working Paper No. 483

Eichengreen, B. J. (2001), "Capital Account liberalization: What do Cross Country Studies Tell us?", The World Bank Economic Review, 15: 341-365

Eichengreen, B. J. and O. Choudhry (2005) "Managing Capital Inflows: Eastern Europe in an Asian Mirror", University of California, Berkeley

Enders, W. (2000), "Applied econometric time series", Iowa State University, John Wiley & Sons, Inc

Engle, R. and C. Granger (1987), "Cointegration and Error-Correction: Representation, Estimation and Testing", Econometrica 55, 251-276;

Ericsson, N.R., D.F. Hendry and G.E. Mizon (1998), "Exogeneity, cointegration and economic policy analysis", Journal of Business and Economic Statistics, 16, 370-387

Faust, J. and J. (1999), "Monetary Policy's Role in exchange rate behavior", Board of Governors of the Federal System, International Finance Discussion Papers No 652;

Favero, A. C. (2001), "Applied macro econometrics", Oxford University Press

Feldstein, M. and C. Horioka (1980), "Domestic Saving and International Capital Flows," Economic Journal 90 (June): 314-29.

Feyzioglu, T. (1997), "Estimating the equilibrium real exchange rate: an application to Finland", IMF working paper WP/97/109;

Fischer, C. (2002), „Real currency appreciation in accession countries: Balassa-Samuelson and investment demand", Economic Research Centre of the Deutsche Bundesbank, Discussion paper 19/02.

Fischer, S. (1998), "Capital-Account Liberalization and the Role of the IMF: Should the IMF Pursue Capital-Account Convertibility?., in Essays in International Finance No. 207, Princeton: Princeton University

Frankel, J. A. (1991), "Quantifying International Capital Mobility in the 1980s" NBER Working Paper No. 2856

Freytag, A. (2001), „Accession to EMU and exchange rate policies in Central Europe – Decision under institutional constraints", International Center for Economic Growth

Garber, P. M. (1998), "Buttressing Capital Account Liberalization with Prudential Regulation and Foreign Entry", Essays in International Finance No. 207, Princeton University Press

Gardeazabal, J., M. Regulez, and J. Vasquez (1997), "Testing the canonical model of exchange rates with unobservable fundamentals", International Economic Review;

Golinelli, R. and R. Orsi (2001), "Modelling Inflation in EU Accession Countries: The Case of the Czech Republic, Hungary and Poland", paper present at "East European Transition and EU Enlargement: A Quantitative Approach"

Grafe, C. and C. Wyplosz (1997) "The Real exchange rate in transition economies", Paper presented at the Third Dubrovnik Conference on Transition Economies in Dubrovnik, Croatia;

Greene, W.H. (2000), "Econometric Analysis", Prentice Hall International, Inc.

Grilli, V. and G. M. Milesi-Ferretti (1995), "Economic Effects and Structural Determinants of Capital Controls," IMF Working Papers 95/31

Halpern, L. and C. Wyplosz (1997), "Equilibrium Exchange rates in transition economies", IMF staff working paper 44, 430-461;

Halpern, L. and C. Wyplosz (1998), "Equilibrium exchange rates in transition economies: further results", prepared as part of a CEPR project on "Equilibrium and Adjustment Dynamics of the Exchange Rates of the Associated Countries of Central and Eastern Europe";

Halpern, L. and C. Wyplosz (2001) "Economic Transformation and real exchange rates in the 2000's: the Balassa-Samuelson Connection", UNECE working paper;

Hamilton, D. J. (1994), "Time series analysis", Princeton University Press

Harberger, A. C. (1978), "Perspectives on Capital and Technology in Less Developed Countries", in M. Artis and A. Nobay (Eds): Contemporary Economic Analysis, 151-69, London: Croom Helm.

Harberger, A. C. (1980), ”Vignettes on the World Capital Market,” The American Economic Review, 70 (2): 331-337.

Harjes, T. (2003), „An asessment of the real exchange rate in Romania”, IMF country report for Romania

Harvey, A. C. (1989), “Forecasting, Structural Time Series Models and the Kalman Filter”, Cambridge: Cambridge University Press.

Hendry, F. D. and K. Juselius (2000), “Explaining Cointegration Analysis: Part II”, Energy Journal 21

Hinnosar, M., R. J., H. Kaadu and L. Uusküla (2003), “Estimating the Equilibrium Exchange Rate of the Estonian Kroon”, Bank of Estonia

Huizinga, J. (1987), An Empirical Investigation of the Long-Run Behavior of Real Exchange Rates; Comment, Carnegie - Rochester Conference Series on Public Policy, p.225-31

Isărescu, M, (2005a), “Liberalizarea fluxurilor de capital”, Paper presented at the conference "Liberalizarea contului de capital", www.bnro.ro

Isărescu, M, (2005b), “Obiectivele pe termen mediu ale politicii monetare şi cursului de schimb”, Paper presented at "EDIȚIA 2005 a PROGRAMULUI ECONOMIC DE PREADERARE", www.bnro.ro

Jazbec, B. (2002), “Balassa-Samuelson effect in transition economies: the case of Slovenia”, William Davidson Institute Working Paper No. 507

Johansen S. and K. Juselius (1990), “Maximum Likelihood Estimation and Inference on Cointegration - with Applications to Simultaneous Equations and Cointegration”, Journal of Econometrics, 69

Johnston, R. B. and N. T. Tamirisa (1998), “Why do Countries use Capital Controls?”, IMF Working Papers, 98-181

Kim, B.Y and I. Korhonen (2002), “Equilibrium exchange rates in transition countries: Evidence from dynamic heterogeneous panel models”, BOFIT Discussion Paper 15;

Klein, M. (2003) “Capital Account Openness and the Varieties of Growth Experience”, NBER Working Paper no. 9500

Klein, M. (2005) “Capital Account Liberalization, Institutional Quality and Economic Growth: Theory And Evidence”, NBER Working Paper no 11112

Klein, M. W. and G. Olivei (1999), "Capital Account Liberalization, Financial Depth and Economic Growth," NBER Working Paper No. 7384

Klein, M. W. and G. Olivei (2001), "Capital Account Liberalization, Financial Depth and Economic Growth," working paper, Tufts University

Klyuev, V. (2001), „A model of exchange rate regime choice in the transitional economies of Central and Eastern Europe”, IMF Working Paper No. 140

Knight, G. and L. Johnson (1997), “Tradables. Developing Output and Price Measures for Australia's Tradable and Non-tradable Sectors”, ABS Working Paper No. 97/1

Kocenda, E. (1998), “Detecting structural Breaks: exchange rates in transition economies”, W. Davidson Institute at the University of Michigan Business School, CEPR, London;

Kovács, M. A. (ed.) (2002), “On the estimated size of the Balassa-Samuelson effect in five Central and Eastern European countries”, National Bank of Hungary Working Paper No. 5

Kraay, A. (1998), 'In Search of the Macroeconomic Effects of Capital Account Liberalization', Mimeo, World Bank

Kutan, A.M. and S. Dibooglu (1998), "Sources of real and nominal exchange rate fluctuations in transition economies", The Federal Reserve Bank of St Louis, working paper 1998-022A;

Lane, P. and G.M**.** Milesi-Ferretti (2001), "The External Wealth of Nations: Measures of Foreign Assets and Liabilities for Industrial and Developing Nations," Journal of International Economics 55: 263-294

Lastrapes, W.D. (1992), "Sources of fluctuations in real and nominal exchange rates", The review of economics and statistics, Volume 74, Issue 3, 530-539.

Lavrac, V. (2002), "Exchange rate regimes of Central and Eastern European EU candidate countries on their way to EMU", International Center for Economic Growth, European Center, Working Paper No. 7

Levchenko, A.A. (2005), "Financial Liberalization and Consumption Volatility in Developing Countries", IMF Staff Papers, vol. 52, number 2

Lim, J. J. (2001), „Optimal choice of an exchange rate regimes: the case of Australia", Institute of Southern Asian Studies

Lommatzsch, K. and S. Tober (2002), "What Is behind the Real Appreciation of the Accession Countries' Currencies? An Investigation of the PPI-Based Real Exchange Rate", presented at "Exchange Rate Strategies during the EU Enlargement." Budapest

MacDonald, R. (1997) "What determines the real exchange rate? The long and short of it", IMF working paper WP/97/21;

MacDonald, R. (2001), "Modelling the long-run real effective exchange rate of the New Zealand Dollar", Reserve Bank of New Zealand, DP2002/02;

MacDonald, R. and A. Wójcik (2002) „Catching up: The Role of Demand, Supply and Regulated Price Effects on the Real Exchange Rates of Four Accession Countries", Focus on Transition 2/2002

Magud, N. and C.M. Reinhart (2005), "Capital Controls: An Evaluation", University of Oregon Economics Department Working Papers, 2005-19,

Mihaljek, D. (2002), "The Balassa-Samuelson effect in central Europe: a disaggregated analysis", paper presented at the 8th Dubrovnik Economic Conference, Croatia

Miniane, J. (2004), "A New Set of Measures on Capital Account Restrictions," IMF Staff Papers, 51(2): 276-308.

Mody, A. and A. P. Murshid (2002), "Growing Up with Capital Flows," IMF Working Paper WP/02/75

Montiel, P. (1994), "Capital mobility in Developing Countries: Some Measurement Issues and Empirical Estimates," World Bank Economic Review, 8 (3): 311-350.

Montiel, P. and C. Reinhart (1999), "Do Capital Controls and Macroeconomics Policies Influence the Volume and Composition of Capital Flows? Evidence from the 1990s", University of Maryland

Mundell, R. A. (1968), "Capital Mobility and Stabilization Policy under Fixed and Flexible Exchange Rates", Chapter 18 of International Economics, New York: Macmillan, pp. 250-271

Patterson, K. (2000), "An introduction to applied econometrics: a time series approach", Palgrave

Poirson, H. (2001), „How do countries choose their exchange rate regime?", IMF Working Paper No. 46.

Quinn, D. P. (1997), "The Correlates of Changes in International Financial Regulation," American Political Science Review 91: 531-51

Quinn, D. P. (2003), "Capital Account Liberalization and Financial Globalization, 1890-1999: a Synoptic View,", International Journal of Finance and Economics, 8(3): 189-204.

Quinn, D. P. and A.M Toyoda (2003), "Does Capital Account Liberalization Lead to Economic Growth? An Empirical Investigation", working paper, Georgetown University

Quinn, D. P., C. Inclan and A.M. Toyoda (2001), "How and Where Capital Account Liberalization Leads to Economic Growth", 2001 Annual APSA Convention, San Francisco, California

Rahn, J. (2003), "Bilateral Equilibrium Exchange Rates of the EU Accession Countries against the Euro", BOFIT Discussion Paper No. 11

Rault, C. and I. Drine (2001), "Long run determinants of real exchange rates: new evidence based on panel data unit root and cointegration tests for MENA countries", EUREQUA, Sorbonne University

Rodrik, D. (1998), "Who Needs Capital-Account Convertibility?", in Should the IMF Pursue Capital-Account Convertibility, Essay in International Finance No 207, Princeton University

Rogers, J. (1998), "Monetary Shocks and real exchange rates", Board of Governors of the Federal System, International Finance Discussion Papers number 612

Rother, C. P. (2000), "The Impact of Productivity Differentials on Inflation and the Real Exchange Rate: An Estimation of the Balassa-Samuelson Effect in Slovenia", IMF Country Report, Republic of Slovenia: Selected Issues, 00/56

Samuelson, P. (1964), "Theoretical Notes on Trade Problems", Review of Economics and Statistics, 2, pp. 145-54.

Sinn, H. W. and M. Reutter (2001), "The Minimum Inflation Rate for Euroland", NBER Working Paper No. 8085, January, Cambridge, Massachusetts

Stein, J. L. (1994), "The Natural Real Exchange Rate of the US Dollar and Determinants of Capital Flows", in J. Williamson, ed., Estimating Equilibrium Exchange Rates, Institute for International Economics

Strahilov, K. (2002), "The dynamics of wages and relative prices în Estonia: Does the Balassa-Samuelson effect hold?", European University Institute, Florence

Tamirisa, N. T. (2004), "Do Macroeconomic Effects of Capital Controls Vary by Their Type? Evidence from Malaysia," IMF Working Papers 04/3

Tamirisa, N.T. (1999), "Exchange and Capital controls as Barriers to Trade," IMF Staff Papers, 46, 1:69-88

Williamson, J. (1994) Estimating Equilibrium Exchange Rates, Institute for International Economics, Washington DC.

Wolf, H. (2001), „Exchange rate regime choice and consequences", NBER Working Paper

Wyplosz, C. (1999), "Ten Years of transformation: macroeconomic lessons", Paper presented at the World Bank Annual Bank Conference on Development Economics, Washington