Similar but Different:

The Currency Development in the Visegrad Countries

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Abstract

This thesis examines the currency developments in the Visegrad countries (the Czech Republic, Hungary, the Slovak Republic, and Poland). It is shown that despite the fact that these countries are similar in terms of the macroeconomic indicators, they have different currency developments, namely the long-term strengthening of the Czech and the Slovak korunas and a lack of this strengthening in the Hungarian forint and the Polish zloty. I investigate what stands behind these different exchange rate developments. Several determinants of the exchange rate are studied for the period of 1999 to 2006, namely Consumer Price Index, interest rates, balance of payments, current account, foreign trade, state budget, and the foreign (external) debt. By a comparative analysis, I find that the Czech koruna is influenced positively by all these factors, the Slovak koruna is also influenced positively, except for CPI and current account. However, the forint and the zloty are mostly influenced negatively by these determinants. This explains, at least partially, why the Slovak and the Czech koruna show a trend of appreciation, while this trend in lacking in the zloty and the forint.

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Introduction

The Visegrad countries (the Slovak Republic, the Czech Republic, Hungary and Poland) share many similar features, from geographic proximity, comparable history and similar fate under the communist rule to its overthrow in 1989. These countries also have similar economic development in terms of various indicators, such as GDP per capita, foreign direct investment (FDI), unemployment rate, and others. Contrary to what one would expect, however, the currency development is very different in the Visegrad four. The pattern that can be observed is the long-term strengthening of the Slovak and the Czech korunas, however no such pattern is present in the Polish zloty or the Hungarian forint. This research will, therefore, answer the question: why do the Visegrad countries, despite their similar economic development (in terms of FDI, GDP per capita and other macroeconomic indicators), have different currency development?

While a lot has been written on the topic of exchange rate in general[1] and on the determinants of real exchange rate,[2] the most appropriate exchange rate regimes,[3] and forecasting

[1] See for example: Sebastian Edwards and Miguel A. Savastano, "Exchange Rates in Emerging Economies: What Do We Know? What Do We Need to Know?" Paper presented at the Stanford University Conference on "Economic Policy Reform: What We Know and What We Need to Know," (May 1999): 6, <http://www.anderson.ucla.edu/faculty/sebastian.edwards/emerging.pdf> (3 May 2007).

[2] See for example: Austin Murphy, "The Determininats of Exchange Rates between Two Major Currencies," *Multinational Business Review*, (Spring 1996): 1-7; Yu Hsing, "Analysis of Exchange Rate Fluctuations for Slovakia: Application of an Extended Mundell-Fleming Model," *Applied Financial Economics Letters* 1 (2005): 289-292; Selahattin Dibooglu and Ali M. Kutan, "Sources of Real Exchange Rate Fluctuations in Transition Economies: The Case of Poland and Hungary," *Journal of Comparative Economics* 29, (2001): 257-275; Panagiotis Liargovas, "An Assessment of Real Exchange Rate Movements in the Transition Economies of Central and Eastern Europe," *Post-Communist Economies* 11, no. 3 (1999): 299-318; Peter Part, "Real Exchange Rate Developments in the Accession Countries," *Working Papers 1/2003* (July 2003): 1-18, <http://english.bmf.gv.at/Publications/wp1_2003.pdf> (3 May 2007); Beatrice Kalinda Mkenda, "Long-run and Short-run Determinants of the Real Exchange Rate in Zambia," *Working Papers in Economics 40* (April 2001): 1-67, <http://www.handels.gu.se/epc/data/html/html/PDF/gunwpe0040.pdf> (2 May 2007).

[3] For exchange rate regimes in general see for example: H. Robert Heller, "Determinants of Exchange Rate Practices," *Journal of Money, Credit and Banking* 10, no. 2 (August 1978): 308-321; Ghosh et al., "Does the Nominal Exchange Rate Regime Matter?" *Working Paper 5874* (January 1997): 1-29, <http://www.nber.org/papers/W5874> (1 May 2007).

of movements in exchange rate in particular,[4] the topic of nominal exchange rate has not received the attention it deserves. Similarly, the countries of Central and Eastern Europe were studied rather from a particular angle, namely which exchange rate regime is the most suitable for these countries.[5] There are certain exceptions to this, among others works by Juraj Stančík and Jesús Crespo-Cuaresma, Jarko Fidrmuc and Ronald MacDonald.

Stančík in his article examines the sources of exchange rate volatility for the period of 1999 to 2004 in six Central and Eastern European countries. He focuses on the impact of three particular factors, namely the openness of an economy, the "news" factor, and the exchange rate regime on the movements of exchange rate.[6] Despite the fact that this study is similar to the one at hand, there are still significant differences, mostly concerning the determinants of exchange rate movements, the period and the countries studied. Moreover, Stančík's study only discusses the impact, whether positive or negative, of particular determinants and the size of this impact on individual currencies. However, no connection is drawn between the developments of the currencies and no trends are identified either.

A study by Crespo-Cuaresma, Fidrmuc and MacDonald also focuses on the nominal exchange rate of the countries in Central and Eastern Europe. The authors analyze panel data on the Czech Republic, Hungary, Poland, Romania, Slovakia and Slovenia from September 1994 to March 2002 by adopting the monetary approach to explain the movements in the individual

[4] For example: Lucio Sarno and Giorgio Valente, "Exchange Rates and Fundamentals: Footloose or Evolving Relationship?" (2005): 1-38, <https://zeus.econ.umd.edu/cgi-bin/conference/download.cgi?db_name=res2007&paper_id=83> (3 May 2007).

[5] For exchange rate regimes in Central and Eastern Europe see: Ramona Toma, "Exchange Rate Arrangements in Central and Eastern European Countries – Evolutions and Characteristics," *MPRA Paper1967* (March 2007): 1-7, <http:// mpra.ub.uni-muenchen.de/ 1967/> (20 April 2007); Mateusz Szczurek, "Exchange Rate Regimes and EMU Accession Strategies," (2006): 1-16, <http://www.euroframe.org/fileadmin/user_upload/euroframe/docs/2006/session2/eurof06_szczurek.pdf> (23 April 2007).

[6] Juraj Stančík, "Determinants of Exchange Rate Volatility: The Case of the New EU Members," *GERGE-EI Discussion Paper 2006- 158* (January 2006): 1-27, <http://www.cerge-ei.cz/pdf/wbrf_papers/J_Stancik_WBRF_Paper.pdf> (3 May 2007).

nominal exchange rates. The authors use monthly data on nominal exchange rates vis-à-vis the euro, the money stock (M2), industrial production, deposit interest rates, and the ratio of consumer prices to producer prices.[7] This thesis differs from the study by Crespo-Cuaresma, Fidrmuc and MacDonald in the following aspects: the period and the countries under examination and the determinants of the exchange rate studied. This thesis will focus solely on the Visegrad region due to similar features shared by these countries. Furthermore, in the present thesis the determinants of the nominal exchange rates will be examined to see which factors stand behind the different currency developments. This question has not been addressed by any of the previous research, as no comparative analysis so far has been undertaken concerning the nominal exchange rates developments in these countries.

It is important to investigate this relationship and find out what stands behind the different development of currencies in the Visegrad region and why particularly the currencies of Slovakia and the Czech Republic are doing so well, while the Polish and the Hungarian currencies are not. An explanation of this discrepancy between the two currency patterns will have important implications for monetary policy, since improper monetary policies often are at heart of currency crises, which as recent experience shows us, occur across time and all around the world (for example, the Russian Crisis 1998, the East Asian financial crises 1997). The strength of a currency has implications on country's entry to Eurozone, because it is crucial what will the exchange rate be at the time of the accession as this might have other impacts on country's economy and its competitiveness. This is because, while importers, consumers, and those who go for holidays abroad enjoy the benefits which stem from strong currency, currency appreciation is hurtful to country's exports. The explanation is as follows, the exporters get euros or dollars for

[7] Jesús Crespo-Cuaresma, Jarko Fidrmuc and Ronald MacDonald, "The Monetary Approach to Exchange Rates in the CEECs," *BOFIT Discussion Papers 14*, (2003): 1-23, <http://129.3.20.41/eps/mac/papers/0401/0401013.pdf> (1 May 2007).

their products.[8] In order to pay for the wages, however, they have to exchange these foreign currencies to the domestic one.[9] When currency gets stronger, exporters receive less domestic currencies for the same amount of foreign currency.[10] As such, currency appreciation has further impacts on competitiveness of the economy of the underlining country. On the other hand, currency depreciation can be perceived by foreign investors as a sign of weak economy and therefore, they are reluctant to invest capital in that country.

In order to answer the aforementioned research question, various methodology techniques will be performed in chapter 3. Firstly, exchange rate movements will be analyzed. The values of weekly exchange rates for all four countries were collected from Poštová banka, Bratislava, Slovakia for the period of 1 January 1999 till 31 December 2006. It will be shown which currency was strengthening and which one was weakening compared to Euro and how large was the effect of strengthening and weakening. Afterwards, data collected from Bloomberg will be used to explain the movements in the currencies and the differences that there are among the four countries in terms of their currency development. This will be done by performing comparative analysis on several determinants of the exchange rate, namely Consumer Price Index, interest rates, balance of payments, current account, foreign trade, state budget, and the foreign (external debt).

The findings of this thesis suggest that the Czech koruna is influenced positively by all these determinants studied, the Slovak koruna is also influenced positively, except for CPI and current account. However, the forint and the zloty are mostly influenced negatively by these

[8] Ľuboš Jančík. "Koruna je v novom rekorde, chemici placu," *SME on the Web*, 7 November 2006, <http://ekonomika.sme.sk/clanok.asp?cl=2987303> (25 November 2006).
[9] Ibid.
[10] Ibid.

determinants. This explains, at least partially, why the Slovak and the Czech koruna show a trend of appreciation, while this trend in lacking in the zloty and the forint.

The remainder of this thesis is organized as follows. The next chapter presents firstly the theoretical framework, which is applied later in chapter 3, while the second part reviews existing literature on the subject matter. Chapter 2 gives a brief overview of historical economic similarities among the Visegrad four, as well as overview of development of the four currencies (the Czech koruna, the Slovak koruna, the Polish zloty and the Hungarian forint). Chapter 3 analyzes the currency developments between years 1999 till 2006 and explains these currency patterns. Last section concludes.

Chapter 1- Theoretical Framework

This section will discuss the determinants of exchange rate in general which will form a theoretical framework to be applied later for the study of the movements in exchange rates of the Visegrad countries from 1999 till 2006. Furthermore, this section will provide an overview of relevant literature on this subject. The literature considered in this section will discuss similar studies conducted on the countries of Central and Eastern Europe as well as research which studied Visegrad currencies separately. It will be shown that cross country study as this one is needed in order to reveal the causes of differences of otherwise similar countries.

1.1 The Determinants of Exchange Rate

Exchange rate or foreign exchange rate is the value of one currency in terms of another currency.[11] As Fuller explains, the exchange rate is the price of foreign currency. Therefore, as price for goods or services, it is determined by supply and demand[12] and shifts in supply and demand for exchange rate cause movements in the currency.[13] Various factors that influence shifts in the supply and demand for the exchange rate will be analyzed in this section. As such, this section will provide the theoretical framework for the analysis which will follow. In chapter 3, the factors influencing the exchange rate will be scrutinized with regards to the four currencies that are subject to the analysis in this thesis in order to see what stands behind the different currency developments of the Czech Republic, Slovakia, Poland and Hungary. Before the theoretical framework is set, several other theoretical concepts, such as types of exchange rates

[11] Lipsey et al., *Economics* (New York: HarperCollins, 1993), 813.
[12] Neill Fuller, *Fundamental Economics* (Merseyside: Tudor, 1990), 245.
[13] Ryan C. Amacher and Holley H. Ulbrich, *Principles of Economics* (Cincinnati: South-Western Publishing Co., 1992), 915.

and exchange rate regimes, devaluation, revaluation, depreciation, and appreciation will be explained.

Exchange rate can be either nominal or real. The Czech Central Bank (Česká Narodní Banka) gives a definition of the nominal exchange rate "as the number of units of the domestic currency that can purchase a unit of a given foreign currency." The real exchange rate is then defined as "the ratio of the domestic price level and the price level abroad, where the latter is converted into domestic currency units via the current nominal exchange rate." The nominal exchange rate, therefore, indicates "how many times more goods and services can be purchased abroad (after conversion into a foreign currency) than in the domestic market for a given amount."[14] In this thesis, the primary focus is on the nominal exchange rate, since I want to see the impact of inflation on the movements in the exchange rate as well, which is incorporated in the real exchange rate. When a reference is made to exchange rate, I mean the nominal exchange rate.

Exchange rate regime refers to "the system under which the government allows the exchange rate to be determined."[15] There are three main types of exchange rate regimes, namely fixed, floating, and managed float, however as it will be shown, there are many different regimes in-between these three main kinds. Floating exchange rate (also known as free or flexible) is "set in a freely competitive market, with no intervention by the central bank. Like any competitive price, this rate fluctuates according to the conditions of demand and supply."[16] These types of exchange rate "change freely and are determined by trading in the forex market."[17] On the other

[14] Česká Národní Banka, "Nominal and Real Exchange Rate," <http://www.cnb.cz/www.cnb.cz/en/monetary_policy/basic_terms/nominal_real_exchange_rate.html> (13 April 2007).
[15] John Sloman, *Economics* (New York: Harvester Wheatsheaf, 1991), 692.
[16] Lipsey et al., 823.
[17] Investopedia, "Floating Exchange Rate," <http://www.investopedia.com/terms/f/floatingexchangerate.asp> (13 April 2007).

hand, fixed exchange rate (also known as pegged) means that the exchange rate is fixed at a particular value[18] to another country's currency by the government or central bank.[19] This way, the exchange rate moves only within a narrow band.[20] Today, most countries do not follow these clear cut cases, rather there are several mixed systems, such as managed float, also known as dirty float,[21] or target zones, crawling pegs and bands.[22] As Sloman explains, intermediate regimes refer to a system where the exchange rate is partially determined by the market; however, the government can intervene to influence it too. Managed or dirty floating is "a system of flexible exchange rates, but where the government intervenes to prevent excessive fluctuations or even to achieve an unofficial target exchange rate." Crawling peg, on the other hand, allows government to gradually adjust the exchange rate. Exchange rate band, which is used in many countries of Central and Eastern Europe, allows the currency to move only within certain upper and lower band, while movement outside of this band is not possible. However, in case of hitting either the ceiling or the floor, it can be adjusted. The width of the band can be set to very narrow as well as rather broad.[23] This type of exchange rate is also called floating within a band (target zone).[24]

Depending on whether the country is following the floating or the fixed exchange rate regime, we can talk about appreciation and depreciation or revaluation and devaluation of the currency. Appreciation refers to an increase in the foreign exchange rate.[25] It occurs when

[18] Lipsey et al., 824.
[19] John Beardshaw, *Economics: a student's guide* (London: Pitman, 1992), 593.
[20] Investopedia, "Fixed Exchange Rate," <http://www.investopedia.com/terms/f/fixedexchangerate.asp> (13 April 2007).
[21] William J. Baumol and Alan S. Blinder, *Economics: principles and policy* (New York: Harcourt Brace Jovanovich, 1994), 923.
[22] J. Lawrence Broz and Jeffry A. Frieden, "The Political Economy of International Monetary Relations," *Annu. Rev. Politic. Sci.* 4 (2001): 322.
[23] Sloman, 693, 698, 699.
[24] Edwards and Savastano, 6.
[25] Fuller, 251.

exchange rates of nation's currency "change so that a unit of its own currency can buy more units of foreign currency."[26] Depreciation is then the opposite, meaning it refers to a fall in the exchange rate.[27] During real appreciation, domestic goods become more expensive relative to foreign goods. As such, exports decrease, while imports increase "as a result of change in competitiveness."[28] If, however, one deals with the fixed exchange rate regime, reduction in the official value of a currency is called devaluation. On the other hand, revaluation is an increase in the official value.[29] Both reduction and rise of the par value are deliberate decisions.[30]

As some of the concepts have been explained and defined, the theoretical framework can now be set up, which will later be used for further analysis. In order to later analyze what can explain different currency patterns of the four Visegrad countries, factors causing movements in currencies will now be discussed in general. The shifts in demand and supply cause the changes in exchange rates. There are, however, many factors that influence exchange rate, as such the most important ones will be considered here and will be subject to analysis later on.

Lipsey and others enumerate several factors that cause changes in exchange rates, namely, a rise in the domestic price of exports, a rise in the foreign price of imports, changes in the overall price levels, capital movements, and structural changes.[31] Amacher and Ulbrich mention the same and similar factors that cause shifts in supply and demand for foreign exchange, more specifically changes in relative price levels, relative incomes, relative interest rates, tastes and preferences, population, technology, input cost and availability, tariffs, quotas, and nontariff barriers, and

[26] Baumol and Blinder, 902.
[27] Fuller, 251.
[28] Broz and Frieden, 331.
[29] Baumol and Blinder, 902.
[30] Fuller, 250.
[31] Lipsey et al., 826-827.

export subsidies.[32] I will now look at each of these factors separately in order to see what the impact of these factors is on the exchange rate movements.

It is often argued that change in relative prices levels (inflation) is the most significant determinant of exchange rate.[33] When inflation occurs in one country but not in the other, the result is depreciation in the value of the currency of the country that experienced the inflation. This is because as the price level in one country increases, imports become less expensive and therefore, more attractive as compared to domestic goods. On the other hand, exports become less attractive to foreigners at higher prices. As such, the demand curve for currency of the country undergoing inflation will shift to the left, while the supply curve will shift to the right. The new equilibrium of this currency will fall, or in other words depreciate in value.[34]

Similarly, if there is inflation in both countries, only the rates are unequal, meaning the inflation rate is higher in one country (country A) than in the other (country B), the price of A's currency will fall. By analogy, if the price level changes in both countries by an equal percentage, the equilibrium exchange rate will remain unchanged.[35] Some stress the interconnection of inflation and interest rates, where the former has an impact on the latter. Therefore, currency appreciates when interest rates are high but this must be caused by positive economic performance and growth where concerns about inflation are mild. On the contrary, currency tends to depreciate when high interest rates reflect inflation rather than economic growth.[36]

Lipsey and others also explain what impact has the rise in the domestic price of exports and foreign price of imports on the currency movement. The result of this impact is dependent on

[32] Amacher and Ulbrich, 915.
[33] Amacher and Ulbrich, 915.
[34] Lipsey et al., 826.
[35] Lipsey et al., 826.
[36] Trading Markets, "Part V: What Influences Forex Prices?" <http://www.tradingmarkets.com/.site/forex/commentary/fxarticles/What-influences-Forex-Prices.cfm> (12 December 2006).

the elasticity of the demand. In case the domestic price of exports rises, and the demand is elastic, the demand curve for the currency of the country exporting will shift to the left and this currency will depreciate. On the other hand, if the demand is inelastic, the currency will appreciate, since the demand will shift to the right. When the foreign price of imports rises and the demand is elastic, the supply curve of our currency will appreciate since the supply curve moves to the left. On the other hand, if the demand for these imports is inelastic, the supply of our currency will move to the right, which causes it to depreciate.[37]

Capital movements are another important factor that can cause currency to either depreciate or appreciate. Lipsey and others explain that as the capital moves to one country, the effect is appreciation of this currency. On the other hand, the capital-exporting country's currency depreciates. Capital movement is also closely connected to interest rates. The higher the interest rate in a country, the more capital moves to this country, assuming high interest rates do not reflect high inflation. This concerns mostly short-term capital movements and the so-called speculative capital, where speculations are made about country's exchange rate. Here also expectations play a role, since capital moves to a country whose exchange rate is expected to appreciate and not to the one where the exchange rate is thought to depreciate. Long-term capital movements are similarly affected by "long-term expectations about another country's profit opportunities and the long-run value of its currency."[38]

Furthermore, a balance of payments surplus implies a high demand for this country's currency; therefore, the exchange rate would appreciate. A balance of payment deficit, however, indicates a rather weak currency.[39] If the net balance on the current account shows deficit, exchange rate tends to depreciate, while when the net balance on the current account closes with

[37] Lipsey et al., 826.
[38] Lipsey et al., 827.
[39] Fuller, 246.

a surplus, exchange rate will most likely appreciate.[40] Concerning trade balance, running trade surplus leads to an increase in the strength of a currency.[41] This is because the demand is increased since foreigners need to convert their currency into the exporters' currency.[42]

Structural changes can also shift the demand and supply for foreign exchange. Structural changes encompass everything that "affects the pattern of comparative advantage," one of them being technology. As country's products improve, consumers' demand shifts toward them, which leads to appreciation of its currency, as the demand for it moves rightward.[43] Preferences for a certain currency will also cause a shift in the demand curve for this currency rightward, which will result in currency appreciation.[44] Amacher and Ulbrich note that changes in taste, population, and income can also move the demand and supply curve for foreign exchange. Furthermore, various restrictions on trade imposed by governments, among others tariffs, quotas, and nontariff barriers can move the demand curve for foreign exchange. Similarly, export subsidies and promotions can also shift the curves for foreign exchange.[45] Concerning the increase in income in one country, this will cause depreciation of its currency.[46]

Public or government debt, which is created by borrowing money by government to pay for its spending, encourages inflation, which in turn causes the currency to depreciate.[47] Therefore, the rating of country's debt by, for example, Moody's or Standard & Poor's also has an important influence on the exchange rate, since it grants some kind of insurance that country

[40] Dimitris N. Chorafas, *Treasury Operations and the Foreign Exchange Challenge: A Guide to Risk Management Strategies for the New World Market* (New York: John Wiley & Sons, Inc., 1992), 111.
[41] Valentino Piana, "Exchange Rate," *Economics Web Institute*, 2001, <LINK> (12 April 2007)
[42] Trading Markets. "Part V: What Influences Forex Prices?" <http://www.tradingmarkets.com/.site/forex/commentary/fxarticles/What-influences-Forex-Prices.cfm> (12 December 2006).
[43] Lipsey et al., 827.
[44] Fuller, 246.
[45] Amacher and Ulbrich, 914, 915.
[46] Joseph E. Stiglitz, *Economics* (New York: Norton, 1993), 950.
[47] Forex Blog, "Factors which influence exchange rate," 16 February 2005, <http://www.forexblog.org/2005/02/before_you_unde.html> (12 December 2006).

will not default on its obligations.[48] Another important factor influencing currency is the political factor. Within this, various notions are included such as elections, statements made by politicians or political stability of a country. With regards to the statements of political figures, these usually take place during various press conferences, meetings, summits and presentations and can influence the money market as much as economic variables.[49] Investors seek countries, which are not only economically but also politically stable.[50] Therefore, currencies of countries with stable political situation tend to be stronger.

Besides economic and political factors, other aspects can also influence currency such as the situation and events taking place in the region (for example the Visegrad region).[51] This means that when currency of one country strengthens, this pulls all the other currencies in the region as well. Here one has to be careful though, since the effect is not always as straightforward. Let me illustrate this by an example. Due to the fact that Slovakia is a small country, it can enjoy the benefits of its currency being pulled, however it does not have the same impact on the other currencies of the region.[52] On the other hand, the Czech koruna in the past few years strengthened together with the other currencies of the region, however, it did not always react the same way when the currencies of the region were weakening. This is because the volume of the so-called "quick" capital, that is the capital which can depart from the country relatively fast in case of rising aversion towards the emerging markets or in case there are

[48] Jason Van Bergen, "Forces Behind Exchange Rates," 7 May 2004, <http://www.investopedia.com/articles/basics/04/050704.asp> (12 December 2006).
[49] ICForex, "Influence on currency exchange rates," <http://icforex.com/school_to_trade/rate_of_currency/> (12 December 2006).
[50] Jason Van Bergen, "Forces Behind Exchange Rates," 7 May 2004, <http://www.investopedia.com/articles/basics/04/050704.asp> (12 December 2006).
[51] TV TA3, "Prečo sa koruna posilňuje a dokedy ešte bude," Analýzy a trendy, 24 October 2006, <http://www.ta3.com/sk/relacie/6_analyzy-a-trendy/294_relacia-koruna-na-ceste-hore> (12 December 2006).
[52] Ibid.

problems in a particular country, is significantly lower in the Czech Republic than in the rest of the Visegrad countries.[53]

The factors influencing foreign exchange rate discussed until now are the ones which are often hard to control. There are, however, other ways how exchange rate movements can be influenced deliberately. The Central Bank (CB) can influence what is happening to the currency of the particular state. There are several ways how the CB can do this. Firstly, there is a possibility of verbal interference. This means that the governor of the CB can make a statement, which can influence the movement of exchange rate. Furthermore, by increasing or decreasing liquidity, the CB can depreciate or appreciate the currency, respectively. Moreover, by adjusting reference interest rates, the CB influences the exchange rate. More precisely, by increasing the reference interest rates, the demand for this currency is also increasing, which in turn leads to strengthening of a currency. On the other hand, by decreasing the reference interest rates, the demand goes down, which weakens the currency.[54]

This section, which constitutes the theoretical framework of this thesis, discussed several possible factors that can influence the exchange rate, more precisely the demand and the supply of the foreign exchange, which in turn results in either appreciation of the currency or its depreciation. The most important of these factors will be selected and applied in chapter 3 in order to see whether they can explain the two currency patterns of the four Visegrad countries. Before this is done, existing literature on this topic will be reviewed and analyzed, whereby gap will be revealed, which this thesis aims to fill.

[53] Česká Spořitelna, "Ekonomika pod Lupou," Ekonomické a strategické analýzy (1st Quarter 2007): 11, <http://www.csas.cz/banka/content/inet/internet/cs/Ctvrtletnik_2007_02_01.pdf> (20 April 2007).
[54] Alžbeta Záhumenská, Chief Dealer at the Money Market of a commercial bank, Personal Interview, 20 November 2006.

1.2 Literature review

This section will provide a brief literature review in the field of exchange rates in order to show which aspects of exchange rate have been thoroughly analyzed and which, on the other hand, did not receive the attention they deserve. The existing literature could be grouped to several categories of research, among others studies that examine the relationship between exchange rate and some other variable; analyze the development of real exchange rate in certain countries; assess which of the exchange rate regimes is the best for countries in transition; predict movements in exchange rates (both real and nominal). These will be discussed in turn. Not many studies, however, explain the movements in the nominal exchange rate, which is the task of this thesis. Moreover, research conducted on currencies and exchange rates usually focuses on the major currencies, such as the euro, the dollar or the yen. I will, however, concentrate on four currencies of the Visegrad countries and I will conduct a comparative analysis of their exchange rates to see what explains the different trends between these currencies.

Sebastian Edwards and Miguel A. Savastano in their article "Exchange Rates in Emerging Economies: What Do We Know? What Do We Need to Know?" provide a detailed analysis of several issues related to exchange rates and a thorough overview as well as criticisms of existing literature on this topic. The authors among others review research conducted on the relationship between nominal exchange rate and economic performance. However, the focus is on studies that examine the impact of the nominal exchange rate on the macroeconomic performance,[55] while the present thesis looks at the opposite relations, namely which determinants affect the exchange rates of the four Visegrad countries.

[55] Edwards and Savastano, 6.

A vast amount of literature on the exchange rate concentrates on the determinants of the real exchange rate. Some studies focus on the determinants of the real exchange rate of the major currencies, such as research by Austin Murphy who examines what influences the real exchange rate between the US dollar and the German Mark (DM) using data for 30 years. The author constructs a log-linear model, where the dependent variable is the log of the DM/$ exchange rate at the end of each month and there is a list of independent variables. The results suggest that there is a positive relationship between the short-term interest rates and the currency values. Similarly, expectations of higher interest rates in the future and forecasts of relatively low inflation influence the currency positively, since this creates incentives for investments, which in turn increase the demand for the currency. On the other hand, the long-term interest rates are negatively associated with currency value, since they signal future inflation and "result in losses to bond investors who send the money out of the country as a result of becoming psychologically discouraged." Trade flows are also found to influence the currency.[56]

The explanation of behavior of real exchange rate and current account balance is sought by Menzie David Chinn and Jaewoo Lee. Their data contains information on seven OECD countries (Canada, France, Germany, Italy, Japan, the UK and the US). The authors conclude that a permanent shock, such as technology innovation, results in a permanent appreciation of the real exchange rate, whereas the effect on current account is statistically insignificant. On the other hand, a temporary shock, for example monetary innovation, causes only a temporary depreciation of the real exchange rate and at the same time it improves the current account.[57]

[56] Murphy, 1-7.
[57] Menzie David Chinn and Jaewoo Lee, "The Current Account and the Real Exchange Rate: A Structural VAR Analysis of Major Currencies," *Working Paper* 395, Department of Economics, University of California Santa Cruz, (June 1998): 1- 25.

Increasing amount of literature has been recently written on transition countries and factors that might influence their real exchange rates. One such study was conducted by Yu Hsing who inspects the real exchange rate fluctuations for Slovakia. By applying the extended Mundell-Fleming model, the author finds that real exchange rate is negatively influenced by real M2 (money supply), the US Treasury bill rate, country risk, and the expected inflation rate. On the other hand, deficit spending/GDP ratio and the stock price index positively influence the real exchange rate in Slovakia.[58]

Hungary and Poland are compared in terms of the determinants of their real exchange rate fluctuation by Selahattin Dibooglu and Ali M. Kutan. The authors analyze monthly data ranging from 1990 to 1999 for Hungary and Poland by using a structural VAR model. By separating the real exchange rate and price movements into those that can be assigned to real and nominal shocks, they find that real exchange rate movements in Poland are largely influenced by nominal shocks, whereas real exchange rate fluctuations in Hungary are mostly influenced by real shocks. While the nominal shock is caused by nominal money supply shocks or devaluation of the exchange rate, the real shock is associated with changes in endowment, technology, and productivity shocks.[59]

Six transition countries and the determinants of their real exchange rate movements are scrutinized by Panagiotis Liargovas. The author examines the real exchange rate situation in Bulgaria, the Czech Republic, Hungary, Poland, Romania and Slovakia at the beginning of the 1990s. The conclusion is that there is a strong real appreciation of real exchange rate in the Czech and the Slovak Republics and Bulgaria and a weak appreciation in Hungary, Poland and Romania. While the exchange rate movements (appreciation) are rather stable in Poland,

[58] Hsing, 289-292.
[59] Dibooglu and Kutan, 257-275.

Slovakia and the Czech Republic, they are volatile in Bulgaria and Romania. Romania and Hungary also have cyclical movements of exchange rate. Most important determinants of exchange rate movements in Hungary and Poland are FDI inflows and cost increases. Large FDI inflows also stand behind the real appreciation of exchange rate in the Czech Republic.[60]

Several studies analyze which of the possible exchange rate regimes (fixed, floating or in-between) is the best practice for a particular country. H. Robert Heller also investigated this problem and concludes that there are five features which are connected with floaters. These are: a large size, a relatively small foreign trade sector, a high degree of international financial integration, an inflation rate that differs from the world average and a well diversified foreign trade pattern. Peggers are then associated with the opposite characteristics.[61]

Another group of studies focuses on possible forecasting on exchange rate movements. Lucio Sarno and Giorgio Valente, for example, study whether economic fundamental can predict exchange rates. Besides the standard monetary fundamentals, other variables from the exchange rate determination theory are used too, among others net foreign assets, interest rates differential and the trade balance. The authors use five major US dollar exchange rates from 1977Q1 till 2003Q3 and find that "the information embedded in the economic fundamentals can explain future exchange rate movements with a remarkable degree of accuracy for three out of five exchange rates." In order for this to hold, "the best model from the various set of models…[should] be used on the basis of information available." If, however, the best model is chosen *ex ante*, "the same set of economic fundamentals is not useful in forecasting exchange rates out of sample."[62]

[60] Liargovas, 299-318.
[61] Heller, 308-321.
[62] Sarno and Valente, 1-38.

Final group discussed in this literature review is the one that deals with nominal exchange rates and the factors, which can influence them. Armando Morales studied volatility of four exchange rates. The author finds that there is higher volatility of the exchange rate of the Czech koruna against the US dollar, while in Poland the volatility is higher for the exchange rate of the Polish zloty against the euro. The former is because the Czech Republic became rather early financially integrated with other European economies, whereas the latter is caused by Poland's early dollarization. The author studies the exchange rate of the aforementioned countries against both the US dollar and the euro during the period of 1997 till 2000. The difference in the volatility is traced to the differences that accompanied the respective transition of the Czech Republic and Poland, namely differences in inflation, shares of foreign currency deposits, size of external debt and openness of the economy.[63]

One study that is similar to the present one is conducted by Stančík. The author analyzes the sources of exchange rate volatility for the period of 1999 to 2004 in six Central and Eastern European countries, namely the Czech Republic, Hungary, Latvia, Poland, Slovakia, and Slovenia. He examines particularly the impact of the openness of an economy, the "news" factor, and the exchange rate regime on the movements of exchange rate. In order to do this, the threshold autoregressive conditional heteroskedasticity (TARCH) model is applied. The findings suggest that the more open the economy, the lower the exchange rate volatility in this country. The effect of news on the volatility of the exchange rate is rather large in Hungary, Slovakia and Slovenia. Whereas in Slovakia, good news decreases volatility and bad news increases it, in the Czech Republic, Latvia, and Poland good news increases volatility and bad news decreases it. In Hungary and Slovenia both good and bad news increase the volatility of exchange rate.

[63] Armando Morales, "Czech Koruna and Polish Zloty: Spot and Currency Option Volatility Patterns," *IMF Working Pape/01/120* (August 2001): 1-29, <http://www.imf.org/external/pubs/ft/wp/2001/wp01120.pdf> (3 May 2007).

Concerning the exchange rate regime, major changes in the regimes have significant impact on exchange rate volatility.[64] Despite the fact that this study gets close to the one conducted in this thesis, there are still significant differences, mostly concerning the determinants of exchange rate movements, the period and the countries studied. Moreover, Stančík's analysis only discusses the impact, either positive or negative, of particular determinants and the size of this impact on individual currencies. However, no connection is drawn between the developments of currencies and no trends are identified either.

A study by Crespo-Cuaresma, Fidrmuc and MacDonald also focuses on the nominal exchange rate of the countries in Central and Eastern Europe. The authors analyze panel data on the Czech Republic, Hungary, Poland, Romania, Slovakia and Slovenia by several cointegration methods, such as the Dynamic Least Square estimator, the Fully Modified Least Square Estimator, the Pooled Mean Group estimator. They adopt the monetary approach to explain the movements in the exchange rates. The period covered by this study is September 1994 to March 2002. The authors use monthly data for nominal exchange rates vis-à-vis the euro, the money stock (M2), industrial production, deposit interest rates, and the ratio of consumer prices to producer prices. Money supply turns out to be significant in the model, having important effect on exchange rate. The effect of interest rate is rather small. There is a negative relationship between industrial production and the nominal exchange rates. Price ratio has rather large impact on exchange rates.[65] This thesis differs from the study by Crespo-Cuaresma, Fidrmuc and MacDonald in several aspects, namely the period and the countries under examination and the determinants of the exchange rate studied. This thesis focuses solely on the Visegrad region due to similarities shared by these countries. Furthermore, in the present thesis the determinants of the

[64] Stančík, 1-27.
[65] Crespo-Cuaresma, Fidrmuc and MacDonald, 1-23.

nominal exchange rates are analyzed to see which factors stand behind the different currency developments. To sum up, this section showed that this question has not been addressed by any of the previous research, as no comparative analysis so far has been undertaken which would deal with the nominal exchange rate developments in these countries.

This chapter served twofold purposes. Firstly, it drew a theoretical framework of determinants of exchange rates which will be applied in chapter 3. Secondly, literature on exchange rates has been briefly reviewed to reveal the existing gap and to show that the present thesis will add value to the current academic debate on the topic of exchange rates. Chapter 2 will show that the Visegrad countries have similar economic development from 1918 until present and also that the two patterns of currency developments can be traced back to the establishment of these four countries after WWI and continues until now.

Chapter 2- Historical Economic and Currency Development

There is more that connects the Visegrad countries than just their geographic proximity or similar history. Not only today but also in the past, the Visegrad countries shared similar economic development. This will be discussed in this section, since it needs to be shown that in terms of macroeconomic indicators, the Visegrad four were and are similar and therefore, there is some expectation as to the similar currency developments as well, even though this is not the case in reality. This section will first discuss the economic similarities and later also the exchange rate development in the past and the present.

2.1 Historical Economic Development of the Visegrad Countries: From 1919 until Present

As Michael Charles Kaser notes in his book *The Economic History of Eastern Europe 1919-1975*, which provides a detailed economic history of seven Eastern European countries, Eastern Europe as a region "has enough in common to justify unitary analysis." The author further claims that "geographic propinquity, common interwar problems and the subsequent embrace of socialism suggest a cross-country rather than a national treatment."[66] This justification is also used in this thesis, which compares the Visegrad four in terms of their currency development which is different, despite shared economic developments. I will now turn to a brief discussion of economic development of the Visegrad region.

As the Czech and the Slovak republics constituted one state from 1919 until 1993 with a short interruption during WWII, the economic similarities are apparent even though Slovakia was

[66] Michael Charles Kaser, ed., *The Economic History of Eastern Europe 1919-1975. Vol. I: Economic structure and performance between the two wars* (Oxford: Clarendon Press, 1985), 2-3.

always considered less developed than the Czech lands within Czechoslovakia.[67] Despite this, the economic development of the Czech lands and Slovakia will be considered as similar and the historical comparison until 1993 will naturally be only among three states, namely Czechoslovakia, Hungary and Poland. From the comparison of the economic history of these countries, I will conclude that Czechoslovakia did always better than the other two countries, mainly during the interwar period; however, similarities between these three countries are considerable.

Figure 1 below displays a map of Central and Eastern Europe after the First World War, where it is indicated which empire the countries belonged to in the prewar period. As it can be seen, Czechoslovakia and Hungary were previously parts of the Austro-Hungarian Empire, while the largest part of the Polish territory used to be under the Russian empire and the smaller parts of its territory came from the Austro-Hungarian Empire and the German Empire.

Figure 1: States of East Central Europe after the First World War

Source: David Turnock, *The Economy of East Central Europe, 1815-1989: stages of transformation in a peripheral region* (New York: Routledge, 2006), 172.

[67] David Turnock, *The Economy of East Central Europe, 1815-1989: stages of transformation in a peripheral region* (New York: Routledge, 2006), 185.

The economic development of the Visegrad countries is very similar; however, Czechoslovakia was always doing a little better than her neighbors. This is because each of the countries had different starting point, Czechoslovakia more favorable than the other two countries. Václav Prucha stresses that Czechoslovakia "had the strongest economy of all the successor states."[68] Kaser also notes that it was the most industrialized state in Central and Eastern Europe.[69] This is because Czechoslovakia "inherited strong and largely undamaged industrial areas."[70] As such, Czechoslovakia soon attained credibility and history of success. Prucha describes the situation:

> During the time of political liability, economic chaos and startling hyperinflation in the countries around Czechoslovakia, the energetic approach of the Czechoslovak government to economic policy met a favourable response in the *Entente* countries. Czechoslovakia was considered an island of stability in Central Europe and won international credit. Business circles in *Entente* countries…exported capital to Czechoslovakia and later bought Czechoslovak crowns *en masse*, hoping to make a fortune from the revaluation of the Czechoslovak currency.[71]

Prucha shows that according to statistics, economic development was stronger in Czechoslovakia than in Austria until 1929. Also the balance of foreign trade for Czechoslovakia showed surpluses. Furthermore, both "real wages and personal consumption grew continuously until 1929."[72] The turning point came with the Great Depression, and Czechoslovakia "was one of the hardest hit by the crisis and recovery was slower than in the predominantly agricultural economies,"[73] since it was heavily dependent on its exports.[74] David Turnock notes that

[68] Václav Prucha, "Continuity and Discontinuity in the Economic Development of Czechoslovakia 1918-91 in Alice Teichova, ed., *Central Europe in the Twentieth Century: An Economic History Perspective* (Aldershot: Ashgate, 1997), 24.
[69] Kaser, Volume I, 6.
[70] Turnock, 184.
[71] Prucha, 24.
[72] Ibid, 25.
[73] Alice Teichova, ed., *Central Europe in the Twentieth Century: An Economic History Perspective* (Aldershot: Ashgate, 1997), 12.
[74] Turnock, 176.

Czechoslovakia only had modest borrowings and continued to pay its debts even during crisis. As such, it recovered slowly after 1936.[75] Despite this, Prucha writes, the exchange rate was rather high. It was fixed to gold in 1929 and the first devaluation was enacted only in 1934. The strong currency had also negative effects. It impaired "the competitiveness of Czechoslovak products abroad and stimulated imports, thus increasing the tension in the balance of payments." The Munich Agreement and subsequent division of Czechoslovakia as well as WWII hampered its economic development.[76]

Poland became independent in 1918. However, as already noted, its territory was composed of parts of three former empires. As such, its economic area was not compact either.[77] On the other hand, Poland "was not directly affected by the break-up of the Austro-Hungarian customs area," which is regarded by many economists as "the prime cause of east Europe's interwar economic difficulties."[78] Turnock notes that once WWI was over, Poland could not attain its prewar industrial output right away. In 1920-1, industrial output fell to 35% of the 1913 level. Similarly to other countries, Poland also experienced hyperinflation as prices increased 2.4 million times. Excessive printing of new money impaired the situation, which was only changed when the new government of Grabski came to power and achieved a balanced budget for 1924 as well as introduced a new currency.[79]

The Hungarian starting point was again a little different from the previous two cases. As Turnock explains, Hungary was responsible for part of the pre-war Habsburg debt, while it also

[75] Turnock, 185.
[76] Prucha, 26, 27.
[77] Henryk Szlajfer, "Promise, Failure and Prospects of Economic Nationalism in Poland: The Communist Experiment in Retrospect" in Alice Teichova, ed., *Central Europe in the Twentieth Century: An Economic History Perspective* (Aldershot: Ashgate, 1997), 45.
[78] Edward Albert Radice, "General Characteristics of the Region between the Wars" in Michael Charles Kaser, ed., *The Economic History of Eastern Europe 1919-1975. Vol. I: Economic structure and performance between the two wars* (Oxford: Clarendon Press, 1985), 33-34.
[79] Turnock, 182, 183.

had reparation obligations. This led to hyperinflation as prices increased 23 000 times[80] and the stabilization of the currency was only brought about by the loan granted by the League of Nations and its supervision of Hungary's finances.[81] Since Hungary was greatly dependent on agriculture and bauxite exports, it also "suffered a devastating depression,"[82] as every country in the region.

I will now turn to comparison of the Visegrad countries with regards to some macroeconomic indicators for the interwar period in order to see that despite Czechoslovakia being the leader of the group, these countries were economically very similar. From Table 1 below, it is clear that national income per head was in all three years (1920, 1929 and 1937) the highest in Czechoslovakia; however the differences among the countries were gradually diminishing.

Table 1: National Income per Head (in 1937 US $)

	1920	1929	1937
Czechoslovakia	115	181	170
Hungary	79	115	120
Poland	-	108	100
Romania	-	-	81
Yugoslavia	66	86	80
Bulgaria	-	60	75
United Kingdom	329	372	440
Germany	-	304	340
France	196	312	265

Source: Alice Teichova, ed., *Central Europe in the Twentieth Century: An Economic History Perspective* (Aldershot: Ashgate, 1997), 6.

Based on the work of Teichova, another comparison of the three countries can be drawn concerning the variable indicating the percentage of population that was dependent on agriculture during the interwar period. In Hungary and Poland this percentage ranged between 55 and 65

[80] Turnock, 180.
[81] Michael Charles Kaser, ed., *The Economic History of Eastern Europe 1919-1975. Vol. II: Interwar policy, the War and reconstruction* (Oxford: Clarendon Press, 1986), 121,132.
[82] Turnock, 180.

percent. Since Czechoslovakia was more industrialized, as previously noted, less than 30 percent of economically active population was engaged in agriculture, which was about the same as in the Western Europe.[83]

After WWII with the establishment of communism, all the Visegrad countries had more or less similar fate. Prucha notes that in Czechoslovakia rapid economic development in 1950s was replaced by economic stagnation during the first half of the 1960s.[84] Concerning net income in 1947, this reached 73 percent of 1983 in Hungary, little higher (78 percent of 1983) in Poland and the highest (83 percent of 1983) in Czechoslovakia.[85] Despite minor divergence, these numbers can still be considered as relatively very similar taking into account other factors (such as different starting points, different ratio of agriculture to industry, and others). Growth rates were also very similar among these three countries. For the period of 1950 till 1970, Czechoslovakia and Hungary grew at 6 percent annually, while Poland grew at 7 percent annually.[86]

Table 2 below illustrates per capita GNP in year 1960 as a percentage of that of the United States (US) by using four different methods of estimation. Again, it can be concluded that the Visegrad countries are comparable in terms of GNP per capita; however Czechoslovakia's performance is the best among the three of them, since it has the highest GNP per capita, whichever estimation method is used. Looking at the last column, which represents the mean of the previous columns, it can be seen that GNP per capita as a percentage of that of the US is very alike for Hungary and Poland (34% percent and 36%, respectively), while Czechoslovakia's GNP per capita in 1960 was half of that of the US (50%).

[83] Teichova, 7.
[84] Prucha, 31.
[85] Kaser, Volume I, 8.
[86] Kaser, Volume I, 9.

Table 2: Per capita GNP in 1960 as percent of that of the United States
US dollar at 1958 prices: index US=100

Method:	Repricing	Exchange rate	Adjusted exchange rate	Physical indicator	Mean of cols. 1, 3, 4.
	(1)	(2)	(3)	(4)	(5)
Bulgaria	34	..	..	38	36
Czechoslovakia	44	35	43	62	50
GDR	53	43	52	67	57
Hungary	34	28	35	34	34
Poland	34	22	29	44	36
Romania	25	21	27	34	29
USSR	38	..	..	50	44

Source: Michael Charles Kaser, ed., *The Economic History of Eastern Europe 1919-1975. Vol. 1: Economic structure and performance between the two wars* (Oxford: Clarendon Press, 1985), 13.

The fall of communism represented a fresh start for the countries in Central and Eastern Europe that were previously under the influence of the USSR. As was the case after WWI, in 1989, Czechoslovakia was again considered to be a little further ahead compared to the other former socialist countries "having a higher-performance economy, a higher standard of living, a comparatively high level of education, full self-sufficiency in the production of temperate-zone foodstuffs even at a high level of food consumption, and a low level of foreign debt."[87] Soon after the fall of communism, on 1 January 1993, Czechoslovakia split into two independent countries, the Czech Republic and Slovakia. Nevertheless, as it will be shown, the economic development of all four countries in the Visegrad region is generally considered to be very alike.

Tamás Réti in his article "Visegrad Economies: Chance of Convergence," discusses not only the possibility of convergence among the Visegrad countries, but also the convergence of the Visegrad countries and the old member states of the EU. The author consults various reports and analyzes several statistics in order to see what the general trend in the Visegrad countries is.

[87] Prucha, 33-34.

He concludes that according to the Convergence Report 2004 by the European Central Bank, "the four Visegrad countries economic performance are comparable, their comparative advantages are different but imbalances are more or less identical." To illustrate this, while the Czech economy was characterized by low inflation, its fiscal deficit and external deficit were large. The Hungarian economy has also rather large fiscal deficit and the public debt. Moreover, inflation plagues the country, too. The Polish economy is characterized by fast growth rate; however, the unemployment rate has been rather high. The Slovak economy had also fast growth rate, strong export growth and low current account deficit, however, the unemployment rate was very high.[88] Based on the conclusions of the Convergence Report it can be said that in terms of macroeconomic variables, the Visegrad countries are generally more similar than different.

Dorothee Bohle and Bela Greskovits also suggest that the Visegrad countries share many similar features as all four countries are consider by the authors together in one group as opposed to the Baltic states and Slovenia, as "the Visegrad countries are distinguished by their search for compromise between marketization and *both* kinds of social protection." Since the Visegrad countries are significant in many aspects, they all have in common what the authors label as 'embedded neoliberalism.'[89] Furthermore, the authors provide some data to show that the Visegrad four are also similar in terms of macroeconomic indicators. From Table 3 below it is clear that the average of general government balances for years 2000 to 2003 as a percentage of GDP is rather similar for all the Visegrad countries. The Visegrad four form a category easily distinguishable from the Baltic states or Slovenia, which can also be seen from the group averages. This is also the case concerning the variable general government debt in 2003 as a

[88] Tamás Réti, "Visegrad Economies: Chances of Convergence," Working Paper No. 7, Paper presented at the conference *Perspectives of Visegrad Co-operation in the Context of the EU Membership*, Brno 24-25, 2004, 4-5.
[89] Dorothee Bohle and Bela Greskovits, "Neoliberalism, Embedded Neoliberalism, and Neocorporatism: Paths towards Transnational Capitalism in Central-Eastern Europe," Forthcoming *West European Politics*, (May 2007): 1-4.

percentage of GDP, where the Visegrad countries score about the same. Finally, the general government expenditures from 2000 to 2003 as an average of GDP were about the same in all Visegrad countries.

Table 3: Macroeconomic stability

	General government balances (2000-03 average % of GDP)	General government debt (2003, % of GDP)	General government expenditure (2000-03 average % of GDP)
Estonia	+2,3	5,3	35,5
Latvia	-2,1	13,4	35,7
Lithuania	-2,1	21,9	31,7
Baltic average	**-0,6**	**13,5**	**34,3**
Czech Republic	-7,2	38,8	42,4
Hungary	-5,4	57,4	49,8
Poland	-3,4	45,3	42,9
Slovak Republic	-6,9	42,6	50,4
Visegrád average	**-5,7**	**45,9**	**46,4**
Slovenia	**-2,6**	**29,3**	**48,1**

Source: Dorothee Bohle and Bela Greskovits, "Neoliberalism, Embedded Neoliberalism, and Neocorporatism: Paths towards Transnational Capitalism in Central-Eastern Europe," Forthcoming *West European* Politics, (May 2007): 42.

Table 4 below shows the GDP per capita of the Visegrad countries in millions of euro for the period of 1999 to 2006. It is clear from the table that in terms of this macroeconomic indicator, performance of the Visegrad four is very similar. For the period of 1999 to 2002, the Czech Republic had slightly higher GDP per capita than the rest of the countries in the Visegrad region. However, from 2003 onwards the difference began to diminish and despite the fact that the Czech Republic is still a leader in terms of GDP per capita, it can be conclude that concerning macroeconomic indicators, the Visegrad region is comparable. This is also confirmed by the comparison of the averages of GDP per capita for this period.

Table 4: GDP per capita
In millions of EUR from 1999 till 2006

Year\GDP per capita in millions of EUR	Slovakia	Hungary	Czech Republic	Poland
1999	4679,42	4 431	7 177	4550,88
2000	5165,99	5 276	7 561	5087,21
2001	5599,26	5 970	8 133	5325,68
2002	6097,30	6 740	8 529	5524,53
2003	6652,84	7 437	8 927	5762,55
2004	7435,99	8 156	9 641	6322,29
2005	8072,60	8 697	10 307	6720,54
2006	8978,72	9 303	11 075	7201,99
Average	6585,27	7 001	8 919	5811,96

Source: Original data taken from International Financial Statistics (IFS), author's calculations.

To sum up, the Visegrad countries not only share a similar history, they also used to be under the same regime and all of them had to undertake sometimes rather painful process of transition at the same time. They also applied for the membership of the European Union (EU), were subjected to the EU conditionality and had to fulfill the same requirements set by the EU in order to become members, which all of them accomplished at the same time, on 1 May 2004. This section illustrated that throughout the modern history, the economic development of the Visegrad countries was rather similar, even though Czechoslovakia used to score the highest in almost all macroeconomic indicators in the past. Overall, the Visegrad countries are comparable in this aspect; however, concerning their currency development, this is not really the case. The historical overview of exchange rates will be undertaken in the next section.

2.2 Exchange Rate Development of the Visegrad Countries

In the previous section, similar economic development of the Visegrad region has been considered. I will now also examine the long-term patterns of the currencies of the Visegrad countries. Several periods will be considered in order to determine whether there really is a trend in the development of the Visegrad currencies, namely the long-term strengthening of the Czechoslovak koruna before, now the Czech and the Slovak korunas, and the long-term weakening of the Polish zloty and the Hungarian forint in the past and no clear trend in the present.

Table 5: Exchange rates, annual averages 1913-1950
US cents of contemporary gold content per unit of currency

Year	United Kingdom pound	Germany Mark (1913–24) Reichsmark (1924–48) Deutsche Mark (from 1948)	France franc	Bulgaria lev	Czechoslovakia koruna	Hungary korona (1913–25) pengő (1925–45) forint (from 1946)	Poland mark (1920–24) złoty (from 1924)	Romania leu	Yugoslavia dinar
1913	486.6	23.82	19.30	19.30	20.26	20.26	23.82	19.30	..
1920[a]	349.5	1.37	5.93	1.64	1.60	0.201	0.18	1.97	3.82
1921	384.9	..	7.46	1.02	1.26	0.15	0.031	1.23	2.37
1922	442.6	..	8.19	0.69	2.41	0.043	0.006	0.70	1.36
1923	457.4	..	6.07	0.88	2.95	0.0052	0.00002	0.49	1.072
1924	441.8	23.80[b]	5.23	0.73	2.95	0.0017	19.23[c]	0.50	1.282
1925	482.9	23.80	4.77	0.73	2.97	0.0014	17.74	0.48	1.705
1926	485.8	23.80	3.24	0.72	2.96	17.56[d]	11.18	0.46	1.765
1927	486.1	23.76	3.92	0.72	2.96	17.47	11.29	0.60	1.760
1928	486.6	23.86	3.92	0.72	2.96	17.44	11.21	0.61	1.760
1929	485.7	23.81	3.92	0.72	2.96	17.44	11.19	0.60	1.760
1930	486.2	23.85	3.92	0.72	2.96	17.49	11.21	0.60	1.768
1931	366.1[e]	23.63	3.92	0.72	2.96	17.45	11.20	0.60	1.768
1932	350.6	23.75	3.93	0.72	2.96	17.45	11.19	0.60	1.641
1933[f]	423.7	30.52	5.03	0.87	3.69	21.47	13.89	0.73	1.761
1934[f]	503.9	39.38	6.57	1.17	4.25	28.99	18.84	0.98	2.272
1935	490.2	40.26	6.60	1.20	4.16	29.21	18.87	0.90	2.284
1936	497.1	40.30	6.11	1.21	4.01	29.49	18.88	0.73	2.297
1937	494.4	40.20	4.05	1.19	3.49	29.42	18.91	0.73	2.304
1938	489.0	40.16	2.88	1.18	3.46	29.41	18.86	0.71	2.310
1939	443.5	40.06	2.51	1.18	3.42	29.41	18.84	0.71	..
1946	402.5	..	0.84	0.35	2.00	8.52[g]	0.98	0.006	2.000
1947	402.8	..	0.84	0.35	2.00	8.52	0.98	0.67	2.000
1948	402.8	30.03[h]	0.49[i]	0.35	2.00	8.52	0.98	0.67	2.000
1949	279.9[j]	23.78	0.35[i]	0.35	2.00	8.52	0.98	0.67	2.000
1950	279.9	23.78	0.30	0.35	2.00	8.52	0.98	0.67	2.000

[a] December only.
[b] November–December only (0.00002 January–October).
[c] April–December only (0.00001 January–March).
[d] Pengő introduced at 12,500 korona from November.
[e] October–December only (482.3 January–September).
[f] Gold standard suspended in United States between 20 March 1933 and 31 January 1934.
[g] August–December only.
[h] June–December only.
[i] Average of import and export rates.
[j] October–December only (402.8 January–September).

Source: Kaser, Volume I, xii.

Table 5 above provides a thorough overview of foreign exchange rates (annual averages) of several currencies of Central and Eastern Europe. Since the exchange rates represent US cents of contemporary gold content per unit of currency, increasing numbers indicate appreciation of the listed currencies. Looking at the table, it can be concluded that during the period of 1920 until 1925, the Czechoslovak koruna was appreciating (except for year 1920), however the Hungarian korona and the Polish mark depreciated throughout this period. The above table also reveals that the Czechoslovak currency was much more stable than the Hungarian or the Polish currencies, which experienced a significant amount of volatility during the first half of the 20th century. Julius Horváth also writes that "[s]imilarly to the early 1920s, after the Second World War, and also in the period 1989-1992 the Czechoslovak currency remained to a large extent more stable than the currencies of the remaining Visegrad countries."[90]

There are several reasons why the Czechoslovak currency was stronger than the currencies of its neighbors during the interwar period. Edward Albert Radice discusses several of these reasons. For one, as it was already mentioned, conditions present in Czechoslovakia after WWI were more favorable than in the surrounding countries. Combinations of several factors assisted in faster recovery. Examples include undamaged industry, the country less devastated by war than others, as well as "the high standards of competence in financial and fiscal administration." As such, Czechoslovakia could start its reconstruction process faster. "The result was that inflation was held in check, the budget was balanced, and currency stabilization was effected as early as the end of 1922 at a rate which provided a fair basis for the Czechoslovak

[90] Julius Horváth, "On Currency and Exchange Rate Regime: Example of Slovakia." Paper prepared for a Conference "The Implications of the Introduction of the Euro on the Currencies of Central and Eastern European Countries," at the University of Duisburg, Germany, October 26-28, 2001, 6.

export trade." This in turn attracted substantial amount of foreign capital[91] and as a result of this propitious situation, the Czechoslovak koruna was stable and rather strong.

The story of Poland and Hungary was, according to Radice, rather different from that of Czechoslovakia. Firstly, the Polish territory was more marked by the destruction of the war. Secondly, up until 1926, Poland did not have a strong government. This was mirrored in the fact that adequate land reform was missing. Moreover, inflation in 1923 was catastrophic. The depreciated currency, the mark, was replaced by the zloty in 1924, which was fixed at par with the Swiss franc. This did not really help the country, since other things were not set (Poland rejected the suggestion to subject itself to the fiscal control of the League of Nations, therefore, foreign investors were unwilling to invest their capital in Poland). "From 1924, after sharply adverse trade balances, the currency once again became unstable and another inflation ensued." The zloty stabilized *de facto* in 1926, although officially only in 1927. The stabilization was brought about by American financiers who began to trust Poland after the *coup* by Pilsudski in May 1926. The situation in postwar Hungary can be characterized by political chaos and hyperinflation. In order to stabilize the Hungarian currency, Hungary had to be supervised by the League of Nations and a new unit of account, the pengo, had to be introduced.[92]

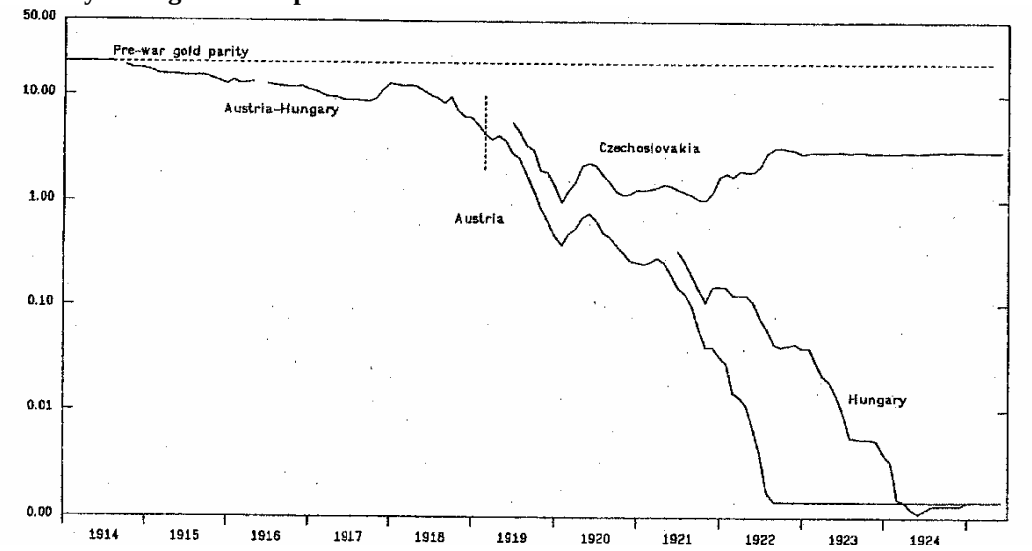
One could explain the difference between the currencies of the three Visegrad countries, namely the strong Czechoslovak koruna and the weak Polish and Hungarian currencies in the postwar period by the different monetary policies employed in these countries immediately after the end of the war. In Czechoslovakia, the success is assigned to Alois Rašín,[93] who was the first Minister of Finance in Czechoslovakia in Kramář´s government in 1918 and in 1922 also in

[91] Radice, 42.
[92] Ibid, 42-44.
[93] See for example: Malbone W. Graham, Jr., "Central and Eastern Europe in 1924," *The American Political Science Review* 19, no. 2 (May, 1925): 340 or Josef Zemánek, "Alois Rašín (1867-1923) – tvůrce československé měny," 10 September 2004, <http://www.euroekonom.cz/osobnosti/z-rasin.html> (1 May 2007).

Švehla's government.[94] After the break up of the Austro-Hungarian monarchy, the old banknotes were stamped in each country to make them legal tender on that particular territory until new notes were issued. The Austro-Hungarian Bank, however, continued to exist even after the break up of the monarchy. As Rašín himself explains, he had to undertake several measures in order to keep the new currency strong and the inflation low. Firstly, he refused the uncovered notes issued by the Austro-Hungarian Bank and later when the old notes were stamped, he did not allow them to be marked to prevent them from becoming legal tender. The uncovered notes were partially collected by means of wealth tax and compulsory loan,[95] which amounted to 80% of the money one wanted to stamp.[96] Rašín claims that as a result of these policies, the amount of the unbacked notes per capita amounted in Czechoslovakia to a significantly lower number than in other successor states. As such, Czechoslovakia had the smallest inflation of all these countries[97] and this enabled the Czechoslovak currency to appreciate. Figure 2 below shows that the exchange rate of the Czechoslovak koruna was not only stronger than that of Hungary and Austria but also more stable.

[94] Josef Zemánek, "Alois Rašín (1867-1923) – tvůrce československé měny," 10 September 2004, <http://www.euroekonom.cz/osobnosti/z-rasin.html> (1 May 2007).
[95] Alois Rašín, "An International Remedy for Depreciated Currencies," (1921): 1-4, <http://dspace.library.cornell.edu/bitstream/1813/2153/1/Rasin_Currency_1921.pdf> (1 May 2007).
[96] Jana Šetřilová, *Alois Rašín: Dramatický Život Českého Politika*, (Praha: Argo, 1997), 80.
[97] Alois Rašín, 1-4.

Figure 2: Dollar exchange rates for Austrian, Czech, and Hungarian Crowns, January 1914 to June 1925
Monthly average of cents per crown



Source: Peter M. Garber and Michael G. Spencer, "The Dissoulution of the Austro-Hungarian Empire: Lessons for Currency Reform," *Essays in International Finance*, no. 191, (1994): 27.

As František Vencovský writes, as a result of monetary policies undertaken by Rašín and others, the Czechoslovak koruna "was a leading European currency during the entire period of the original Czechoslovakia, enjoying full confidence and a firm position on foreign exchange markets." Even throughout the period of 1926-1930/1931, the koruna's exchange rate oscillated within the range of ± 0.3% from an average value of 15.33 Swiss Francs to 100 korunas as traded on the London and Zurich exchanges, making the currency "a remarkably stable currency."[98]

Garber and Spencer further explain how Rašín´s policies contributed to the strong Czechoslovak koruna as opposed to the weak currencies of Hungary and other countries in Central and Eastern Europe. Czechoslovakia was one of the first successor states of Austro-Hungarian Empire to stamp the old notes and also one of the first to exchange these for new Czechoslovak currency. As opposed to the situation in Czechoslovakia, Hungary was the last

[98] František Vencovský, "Czechoslovak National Bank Monetary Policy Debates of the 1920s and1930s in Light of Contemporary Monetary Theory and Practice" in A Collection of Lecture From the Conference in Honour of the 70th Anniversary of Central Banking in the Czech Republic, Prague, (26 April 1996): 14, 5, <http://www.cnb.cz/www.cnb.cz/en/publications/download/sbor96.pdf> (1 May 2007).

state to stamp the old notes. As such, Hungary received many notes that were withheld in the other successor states, since "unstamped notes moved across borders into those regions where they had greatest value." As Czechoslovakia introduced tax on exchange and was one of the first to stamp old notes, these were flowing away from Czechoslovakia to countries like Hungary.[99] This was, therefore, one way how inflation was curbed in Czechoslovakia and on the other hand, why it flourished in Hungary.

Garber and Spencer also elaborate on the second reason why inflation was high in Hungary and as such led to currency depreciation, which was the fact that large budget deficit in Hungary was financed by borrowing money from the Hungarian section of the Austro-Hungarian Bank. On the other hand, the Banking Office established in Czechoslovakia under the Ministry of Finance was not allowed to lend money to the government. As such, the authors call this second factor that enabled Czechoslovakia to have low inflation and as a result of this also strong currency, "the effective exercise of control over the supply of notes after the reform." The situation in Poland was peculiar due to the fact that its territory was composed of former territories of three different empires. As such, rubles, German marks and Austro-Hungarian crowns circulated in Poland after the war, [100] making the exchange of the old notes for the new ones difficult and the starting point for the Polish currency also disadvantageous.

Despite the fact that Rašín´s theory and his policies kept the Czechoslovak koruna strong and inflation extremely low, money had to be collected from the people by means of wealth tax, compulsory loan and pushing people to work more for less money which had twofold impact.

[99] Peter M. Garber and Michael G. Spencer, "The Dissolution of the Austro-Hungarian Empire: Lessons for Currency Reform," *Essays in International Finance*, no. 191, (1994): 10-12, 16, 18, 40.
[100] Ibid, 24, 12, 40, 44.

Firstly, he became unpopular among masses as well as other politicians and secondly, the strong currency had detrimental impact on exports.[101]

In his article "On Currency and Exchange Rate Regime: Example of Slovakia," Horváth also claims that there are two patterns in the development of the currencies in the Visegrad region, namely the long-term strengthening of the Czech and the Slovak koruna and the long-term weakening of the Polish zloty and the Hungarian forint. Table 6 below shows the exchange rates of the Visegrad countries for year 1980 and then for the period of 1988 until 2000.

Table 6: Exchange rates of Visegrad countries, 1980, 1988-2000
Annual averages, national currency units per dollar

	Unit [a]	*1980*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*
Czechoslovakia	Koruna	5.37	14.37	15.06	18.56	29.56	28.30	..	..	..	..	..	..	..	..
Czech Republic	Koruna	..	..	..	..	..	..	29.15	28.79	26.54	27.14	31.70	32.29	34.57	38.60
Slovakia	Koruna	..	..	..	..	..	..	30.80	31.93	29.71	30.68	33.62	35.23	41.36	46.33
Hungary	Forint	32.64	50.41	59.07	63.21	74.73	78.98	91.91	105.11	125.69	152.65	186.79	214.40	237.15	282.18
Poland	Zloty [c]	3.05	430.64	1439	9500	10576	13627	18136	22723	2.42	2.70	3.28	3.49	3.96	4.35

Source: Julius Horváth, "On Currency and Exchange Rate Regime: Example of Slovakia." Paper prepared for a Conference "The Implications of the Introduction of the Euro on the Currencies of Central and Eastern European Countries," at the University of Duisburg, Germany, October 26-28, 2001, 6.

From the table it is clear that throughout these years, the Polish and the Hungarian currencies were only depreciating, while the Czechoslovak koruna and later also the Czech koruna and the Slovak koruna depreciated in some years and appreciated in others. Important to note here is also that even when korunas were depreciating, it was to a much lesser extent than the currencies of the other Visegrad countries. For example, in 1995, the exchange rate of the dollar to the Czech koruna was 26.54 and in 2000 it was 38.60, the difference amounting to 12.06, which in percentage represents 45% depreciation from year 1995 to 2000. The exchange rate of dollar to the Slovak koruna was 29.71 in 1995 and in 2000 it was 46.33. The difference is

[101] See for example: Josef Zemánek, "Alois Rašín (1867-1923) – tvůrce československé měny," 10 September 2004, <http://www.euroekonom.cz/osobnosti/z-rasin.html> (1 May 2007) or Pavla Horáková, "Alois Rašín – First Czechoslovak Finance Minister," 5 March 2003, <http://www.radio.cz/en/article/38243> (1 May 2007).

16.62, in percentage this is almost 56% depreciation. The exchange rate of dollar to the Hungarian forint in 1995 was 125.69 and 282.18 in 2000. This difference of 156.49 represents 125% depreciation. The exchange rate of dollar to the Polish zloty in 1995 was 2.42 and in 2000 it was 4.35. The difference is 1.93, which means that the Polish zloty depreciated 80%. Clearly, two trends can be observed, namely rather stable korunas, and a highly volatile Hungarian and Polish currencies between the period of 1995 to 2000.

One possible explanation for these different trends among otherwise similar Visegrad countries is offered by Horváth. The author suggests that since "stable currency was typical for the period of the existence of the Czechoslovak state," "[t]he Slovak [and the Czech] policy makers inherited from the former Czechoslovakia an attitude to stable monetary policy." Therefore, "when large exogenous shocks affected the Visegrad region, the Czech and Slovak policy makers typically were able to keep stable value of their currency, while Hungarian and Polish currency on some occasions underwent periods of heavy depreciation."[102]

The following table (Table 7) shows that while Czechoslovakia was even in the past regarded as deflationist country, both Hungary and Poland were considered inflationist countries. This might also partially explain the stronger Czechoslovak currency. It could also be the case that as it was in the past, today's Slovakia and the Czech Republic are less inflationary then Hungary and Poland and therefore, their currencies are stronger and weaker, respectively.

Table 7: Prices of imports and exports of some deflationist and inflationist countries in 1924
Index numbers 1913=100

Deflationist countries			Inflationist countries		
	Imports	Exports		Imports	Exports
Czechoslovakia	145	145	Hungary	146	119
United Kingdom	141	162	Germany	134	128
			Italy	118	109

Source: Kaser, Volume I, 393.

[102] Horváth, 5-6.

In this chapter, it has been shown that the economic development was very similar in all three (later four) Visegrad countries in every stage (interwar period, communist era, after 1989 era) since their independence after WWI. Later currency development in the Visegrad countries was analyzed in the long term, where is was established that, indeed, there are two trends, more specifically, the long-term strengthening of the Slovak and the Czech currencies and weakening of the Polish and the Hungarian currencies. In the next chapter, I will first show that even within last eight years there are two patterns in the exchange rate developments of the Visegrad countries and later, I will explain what stands behind these two patterns by applying the theoretical framework developed in chapter 1.

Chapter 3- The Currency Developments in the Visegrad Countries- Analysis

In this chapter, it will firstly be shown that the general pattern of the appreciation of the Czech and Slovak korunas and a lack of this pattern in the Polish zloty and the Hungarian forint are present from 1999 to 2006. Afterwards, this trend and the causes of it in the Visegrad countries will be explained by applying the theoretical framework from chapter 1.

3.1 Two Patterns in Currency Developments of the Visegrad Countries

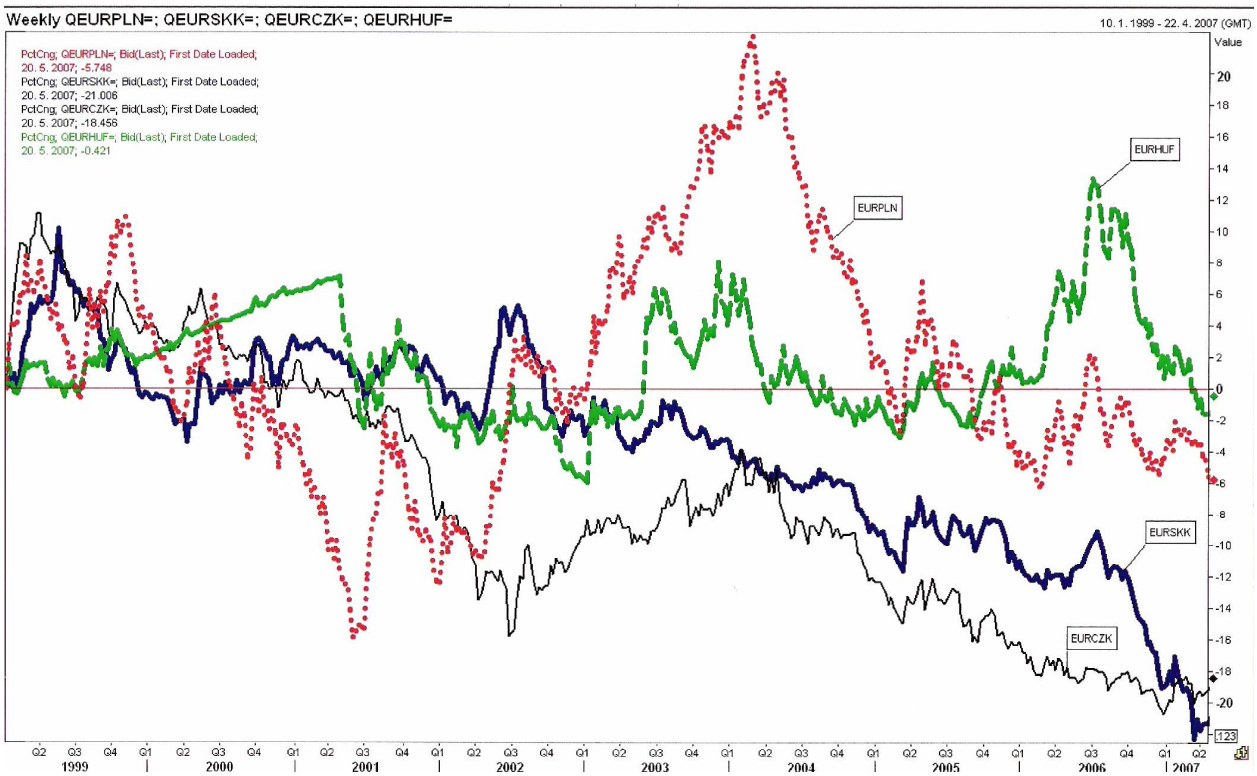
Throughout this thesis, I claim that there are two trends in the currency movements, namely the long-term strengthening of the Czech and the Slovak currencies and the long-term weakening of the Polish and the Hungarian currencies. I will now show that for the years 1999 till 2006, there is a clear trend of appreciation of the Slovak and the Czech koruna, however, this trend is not present in the zloty and the forint. The year 1999 was chosen deliberately, since this is the year when the euro, the reference currency for the Visegrad currencies was adopted. The exchange rate of the euro vis-à-vis the four currencies of the Visegrad countries will now be examined. Although it is true, as Sloman writes, that exchange rates are very volatile[103] and move every second, some trends can still be observed. Therefore, even though throughout the years studied in this thesis, all four currencies were strengthening as well as weakening, from the graphs as well as calculations below, it will be clear that the trend in korunas is appreciation, whereas in the forint and the zloty, one clear trend cannot be identified.

Figure 3 below shows an overview of the weekly percentage changes of the four currencies, namely the exchange rates of the euro against the forint, the Czech koruna, the zloty,

[103] Sloman, 722.

and the Slovak koruna from 10 January 1999 until 22 April 2007. Since the exchange rates are in the form of the euro against the Visegrad currencies (national currency units per Euro), decrease in the exchange rate means appreciation of the Visegrad currencies and increase means their depreciation. In other words, if the line goes upward this indicates weakening of the currency and vice versa.

Figure 3: Weekly overview of the four Visegrad exchange rates
Percentage changes of national currencies units per euro



Source: Reuters.

From Figure 3, a similar trend for the Slovak and the Czech currencies can be identified, namely appreciation. No such trend is present in the Hungarian forint and the Polish zloty. This can be seen from the decreasing tendencies of the exchange rates of korunas per euro. On the other hand, there is a rather increasing tendency of the exchange rate of forint and zloty per euro, which means that these two currencies tend to depreciate. It will be shown that while the Slovak

and the Czech korunas are experiencing rather clear trend of appreciation, this trend is absent in the other two currencies. Another interesting thing that can be seen from the graph above is that from 1999 until the beginning of 2001, all four currencies moved in rather similar way, even though the Polish zloty can be said to depreciate until the first half of 2001.

In the second half of 2001, one can see that the Polish zloty significantly appreciated, while the forint continued to depreciate and only in the third quarter slightly appreciated. The Slovak and the Czech koruna moved in a similar fashion, however, the Czech koruna was stronger and towards the end of 2001 and throughout the first half of 2002 it experienced appreciation. From this period until the end of 2003, the Czech koruna depreciated slightly. This changed in 2004 and since this moment up until now there is a clear trend of koruna's appreciation.

During 2001 and the first half of 2002, there was no clear trend in the Slovak koruna, as it had both slight appreciations as well as depreciations (the only exception being the middle of 2002 when the koruna experienced more significant depreciation). From the second half of 2002 until present, however, the clear trend of appreciation can be identified. From this time, the Slovak koruna was mostly strengthening.

On the other hand, the story of Hungarian forint is rather different. From 2001 until the beginning of 2003, there was no clear trend. This changed in 2003 and throughout its first half, the forint was mostly weakening. In the third quarter, it appreciated, to depreciate again toward the end of the year. In the first quarter of 2004, the forint experienced ups and downs, which was followed by appreciation. From this moment until the third quarter of 2005, there was no clear trend, as the forint fluctuated. Toward the end of 2005 until the last quarter of 2006, the forint was evidently depreciating.

Even though the Polish zloty experienced significant appreciations and depreciations from the second half of 2001 until the second quarter of 2004, the trend in the zloty was clearly depreciation. For a year then, the zloty was rather appreciating, followed by depreciation, which changed back to appreciation in the second half of 2005. This trend continued until the second quarter of 2006. The zloty then depreciated to close the year by appreciation. One can say that during the period of 1999 to 2006, there were two periods of appreciation (1999 until the first half of 2001 and from the second half of 2004 until the present), which was outweighed by one period of depreciation (from the second half of 2001 until the second half of 2004). Therefore, there is no one clear trend in the zloty.

From the analysis of the graph above, it is clear there is a trend of appreciation of the Slovak and the Czech korunas, while despite the similar economic development of all Visegrad countries, this trend is absent in the zloty and the forint. From the analysis of the exchange rate movements below, this claim will be confirmed.

The data on the exchange rates of the four currencies in the form of national currency unit per euro that will now be analyzed was obtained from Poštová Banka, Bratislava, Slovakia and all the calculations in this section are based on this data. The data is weekly and contains information on exchange rates from the beginning of 1999 until the end of 2006. The data has been analyzed in the following way. For the whole period studied, weekly changes have been calculated. If the number was smaller than zero, this indicated appreciation of the currency from one week to the other and vice versa. At the end, positive as well as negative numbers were added up. This will indicate whether the currency was on average strengthening or weakening. The overall change of the currencies will be even better indicator of this and will also be discussed in turn. Furthermore, minimum, maximum, and mean values have been calculated for all four currencies. Finally, overall changes for respective years were also calculated to see

whether the currencies were experiencing appreciation or depreciation. In the next section, annual macroeconomic variables and other determinants of exchange rates will be used to explain the differences between the developments of the currencies.

As was already explained, changes from one week to another were calculated for each currency, where positive change represents depreciation and negative change stands for appreciation. Afterwards, the numbers of appreciations as well as depreciations were added up for each currency. The results indicate that the Slovak koruna experienced 206 times depreciation and 237 times appreciation. Therefore, it can be concluded that the Slovak currency was rather appreciating from 1999 until 2006. Similarly, the Czech koruna depreciated 210 times and appreciated 233 times, indicating the trend of appreciation as well. On the other hand, the Hungarian forint appreciated only 208 times, while it depreciated 235 times, showing a general trend of depreciation. While the zloty experienced 223 times appreciation and 220 times depreciation, it can be concluded that there is not really a one clear trend and the zloty experiences fluctuations.

In order to confirm the results above, another variable has been calculated, namely the overall change by adding up all the respective changes for all weeks or alternatively, by subtracting the exchange rate for the first week in 1999 from the exchange rate for the last week in 2006, which leads the same results. By analyzing these numbers, the general trend of the currencies should be clear. For the Slovak koruna, the initial value of the exchange rate in 1999 was 42.50, while the end value was 34.42. As such, the overall change amounts to -8.08. The Slovak koruna, therefore, strengthened by 8 points. The negative overall change indicates appreciation, therefore it can be concluded that the trend for the Slovak koruna is clear appreciation and the koruna has strengthened considerably from1999 to 2006. Similarly to the Slovak koruna, the Czech koruna also strengthened, as the overall change of -7.19 indicates.

Therefore, both these currencies show a trend of appreciation. On the other hand, the overall change for the Hungarian forint is 1.80. Positive overall change suggests depreciation of the currency by 1.80 points, which is rather negligible. As such, there is no clear trend in the forint. The situation of the Polish zloty is again peculiar. The overall change for this currency is -0.18. The negative number would suggest appreciation, however taking into account how small this change is, one cannot conclude that the zloty has a trend of appreciation, rather there is no clear trend in the fluctuations of the zloty. It has its both ups and downs. Table 8 below shows the minimum, maximum and mean values of the Visegrad currencies.

Table 8: Min, max and mean values for the Visegrad countries

Values\Currency	Slovak koruna	Hungarian forint	Czech koruna	Polish zloty
Min	34.40	234.55	27.46	3.37
Max	46.82	282.75	38.53	4.90
Mean	41.21	253.52	32.36	4.07

In order to explain the differences in the trends of the exchange rates of the Visegrad countries using annual macroeconomic data, which will be done in the next section, the changes (appreciation and depreciation) have to be analyzed also on the yearly basis. I have applied the same technique as above, namely I calculated the respective weekly differences of the four exchange rates. However, this time they were summed by the year. The yearly change will then indicate whether the currency depreciated or appreciated in that particular year.

In 1991, the Slovak koruna was the only currency from the studied ones that experienced appreciation, while all the other three depreciated. The yearly change for the Slovak koruna was -0.10, while for the forint it was 5.22, for the Czech koruna 1.48, and the zloty 0.16. In 2000, the situation changed a little, as the Slovak koruna (1.50) and the forint depreciated (9.98) and the

Czech koruna (-1.35) and the zloty (-0.30) appreciated. The 2001 was a good year for all Visegrad countries, since all of them appreciated. The annual changes were -1.15 for the Slovak koruna, -20.16 for the forint, -3.06 for the Czech koruna, and -0.35 for the zloty. In 2002, only the zloty depreciated (0.49), while the other three currencies experienced appreciation (-1.00 for the Slovak koruna, -8.84 for the forint, and -0.37 for the Czech koruna). The forint (23.95), the Czech koruna (1.20), and the zloty (0.64) all depreciated in 2003, whereas the Slovak koruna (-0.62) was the only one that appreciated. In 2004, again all four currencies appreciated (the Slovak koruna -2.32, the forint -13.80, the Czech koruna -2.11, the zloty -0.58). The forint was the only currency that depreciated in 2005 (5.73), while the Slovak koruna (-1.18), the Czech koruna (-1.48) and the zloty (-0.25) appreciated. In 2006, only the zloty (0.02) depreciated, while the Slovak koruna (-3.22), the forint (-0.28), and the Czech koruna (-1.53) appreciated.

To sum up, throughout the eight years studied, the Slovak koruna has experienced seven times appreciation and only one time depreciation. The Hungarian forint experienced both appreciation and depreciation four times. The Czech koruna appreciated in six years and depreciated in two years. Finally, the Polish zloty appreciated in 4 years and also depreciated in four years. These results suggest that the Slovak and the Czech koruna are strengthening in the long-run, whereas no trend can be identified in the forint and the zloty.

The section has shown that the currency developments of the four Visegrad countries are rather different despite their similar economic development. A clear trend of strengthening has been identified in both the Slovak and the Czech koruna, whereas the trend in the forint and zloty cannot be identified. Since it was already shown whether the currency was appreciating or depreciating in each of the year studied, in the next section annual macroeconomic data and other exchange rate determinants will be compared to explain what stands behind the different currency developments in the Visegrad four.

3.2 The Explanation of the Different Trends in the Visegrad Countries

In this section I will analyze and compare several annual macroeconomic variables and other exchange rate determinants from1999 until 2006. The theoretical framework developed in chapter 1 will be applied here. By comparing several exchange rate determinants across the four countries, it will become clear which particular factors stand behind the different trends in the development of their currencies, namely clear appreciation of the Slovak and the Czech koruna and no clear trend in the Polish zloty and the Hungarian forint. The exchange rate determinants studied in this section are the following: inflation, interest rates, balance of payments, net balance on the current account, trade balance, public and government debt.

Table 9: Appreciation or depreciation of the Visegrad currencies

year\currency	Slovak koruna	Hungarian forint	Czech koruna	Polish zloty
1999	appreciation	**depreciation**	**depreciation**	**depreciation**
2000	**depreciation**	**depreciation**	appreciation	appreciation
2001	appreciation	appreciation	appreciation	appreciation
2002	appreciation	appreciation	appreciation	**depreciation**
2003	appreciation	**depreciation**	**depreciation**	**depreciation**
2004	appreciation	appreciation	appreciation	appreciation
2005	appreciation	**depreciation**	appreciation	appreciation
2006	appreciation	appreciation	appreciation	**depreciation**

Table 9 above captures whether the currency appreciated or depreciated in a particular year as it was determined. I will now define the aforementioned variables (the determinants of the exchange rate) and perform a comparative analysis to show what influences the Visegrad currencies and in which direction.

3.2.1 The Description of the Variables

In this section, the variables, which will subsequently be compared, are introduced. Moreover, the definition of the variables is given as well. The original data and the definitions of all the variables were taken from Bloomberg, however, the calculations were done by the author.

Inflation, in this case Consumer Price Index (CPI) is given in percentage and was obtained by establishing the price of a fixed basket of several basic goods and services, such as food, housing, gasoline, medical care. Rise in the costs of these items is an indication of a rise in inflation. Interest rates, also given in percentage, are defined by Bloomberg as the cost of using money. Balance of Payments is calculated as a sum of Current Account, covering imports and exports, Capital Account, covering investment movements and Financial Account, covering the difference between the foreign ownership of domestic assets and the domestic ownership of foreign assets. As the information on the public debt was not available, foreign (external) debt, which forms part of the public debt together with the domestic one, is used as a proxy. Similarly, foreign trade is used as a proxy for trade balance. Finally, state budget represents the deficit of the state budget. I will now compare all these variables across the Visegrad countries.

3.2.2 Comparative Analysis

In this section, comparative analysis of all the variables mentioned above will be performed to see what influences currency developments in the Visegrad region. Table 10 below shows what the CPI and interest rates were from 1999 to 2006 in the Visegrad countries. Averages for individual countries are recorded too.

Table 10: CPI and inflation rate
In percentage

	Slovakia		Hungary		Czech Republic		Poland	
year	CPI	interest rates	CPI	interest rates	CPI	interest rates	CPI	interest rates
1999	14,2	8,8	11,2	14,5	2,5	5,25	9,8	16,5
2000	8,4	8,8	10,1	11	4	5,25	8,5	19
2001	6,4	8,8	6,8	9,75	4,1	4,75	3,6	11,5
2002	3,4	6,5	4,8	8,5	0,6	2,75	0,8	6,75
2003	9,3	6	5,7	12,5	1	2	1,7	5,25
2004	5,9	4	5,5	9,5	2,8	2,5	4,4	6,5
2005	3,7	3	3,3	6	2,2	2	0,7	4,5
2006	4,2	4,75	6,5	8	1,7	2,5	1,4	4
average	6,94	6,33	6,74	9,99	2,36	3,38	3,86	9,25

The table above reveals that in 1999 and 2000, inflation was high in all Visegrad countries. This had to be compensated by high interest rates so that people did not lose on their savings. From 2002, however, one can see that both CPI and interest rates were rather low in the Czech Republic. The average inflation for years 1999 to 2006 was 2.36%. This clearly has a positive impact on the Czech koruna throughout the years. CPI in Hungary was much higher than that of the Czech Republic, which was also reflected in high interest rates. The average CPI reached 6.74% in Hungary for the years studied, which is almost three times higher than inflation in the Czech Republic. This impacted on the forint in a negative way. Average CPI in Slovakia is very similar to that of Hungary, 6.94%. Mainly in 1999 and 2000, inflation reached high numbers, which was also mirrored in depreciation of the Slovak koruna in 2000 and high interest rates during these years. In 2003, CPI was again high (9.3%), however, due to other positive developments, such as positive economic performance and growth (see for example Table 4), which offset the negative effect of inflation, koruna appreciated even in this year. Except for 1999 and 2000, Poland had rather low inflation as well as interest rates. Average CPI is 3.86%, which is lower than inflation in Slovakia or in Hungary. Despite this, Poland's currency does not

show a trend of appreciation. I will compare the other exchange rate determinants to see how these influence the Visegrad currencies.

Table 11: Balance of payments and current account
In millions of EUR

	Slovakia		Hungary		Czech Republic		Poland	
year	BOP	CA	BOP	CA	BOP	CA	BOP	CA
1999	1221,03	-1203,25	N/A	-909,47	N/A	N/A	N/A	N/A
2000	776,48	-960,23	N/A	-1506,92	N/A	N/A	-436	-1167
2001	5,93	-2501,33	N/A	-1079,36	N/A	N/A	-918	-737
2002	4525,52	-2584,32	N/A	-1984,34	N/A	N/A	-656	-521
2003	1173,61	-2148,66	N/A	-1706,11	298,94	-939,01	-153	-738
2004	1567,78	-3153,34	N/A	-1690	525,88	-681,91	-697	-660
2005	1475,91	-3760,89	N/A	-1397	-211,70	-445,74	1084	-530
2006	-3058,50	-4018,73	N/A	-1117	-198,58	-528,72	-437	-1201
sum	7687,75	-20330,75	N/A	-11390,2	414,54	-2595,39	-2213	-5554
average	960,97	-2541,34	N/A	-1423,78	103,63	-648,85	-316,14	-793,43
sum (2003-6)	1158,79	-13081,62	N/A	-5910,11	N/A	N/A	-203	-3129
average (2003-6)	289,70	-3270,40	N/A	-1477,53	N/A	N/A	-50,75	-782,25

Table 11 records values of balance of payments and current account in the Visegrad countries. Even though, Poland had rather favorable level of inflation, balance of payments was negative in each of the year studied, indicating deficit. The only exception was in 2005, when the Polish balance of payments showed surplus, which was also mirrored in zloty's appreciation. Similarly, current account was negative throughout the period studied, influencing the currency negatively, causing it to depreciate. Hungary's current account shows only deficits throughout the period studied and it is rather large having a negative influence on the forint. The Czech balance of payments is positive for some years and negative for others. However, even when it is negative, the deficit is much lower than that of Poland. Similarly, in terms of current account, the Czech Republic seems to be doing a little better than Poland, which might have an impact on the Czech currency being stronger than that of Poland or Hungary. Even though Slovakia's current account deficit is rather high, it is offset by the financial and capital account. Therefore, in terms

of balance of payments, Slovakia is showing surpluses in all years except for 2006. The balance of payments positively influences the Slovak koruna similarly to the Czech koruna. As such, two trends can be observed concerning balance of payments, namely, surplus on the Slovak and the Czech side positively influencing their currencies and deficit in Poland and in Hungary in terms of current account, negatively influencing the zloty and the forint.

The data on the balance of payments is unavailable for Hungary. Similarly, for the Czech Republic there is no data on both balance of payments and current account for 4 years, and for Poland for one year. In order to deal with this problem, I have summed and averaged balance of payments and current account for years 2003 to 2006, in order to compare at least the three countries in terms of their balance of payments and all four in terms of current account. As previously stated, Slovakia has the highest balance of payments surplus (both sum and average), followed by the Czech Republic. Poland's balance of payments shows a deficit, however, not as high as Hungary. In terms of current account, all four countries show a deficit.

Table 12: Foreign trade
In millions of EUR

year	Slovakia	Hungary	Czech Republic	Poland
1999	-211,49	N/A	-604,75	N/A
2000	-316,43	N/A	-743,51	-1242
2001	-471,76	-410,2	-752,38	-923
2002	-378,31	-615,98	-603,12	-792
2003	-137,93	-376,57	-705,32	-623
2004	-333,95	-188,95	-340,85	-538
2005	-771,95	-142,66	-143,05	-425
2006	-374,34	-82,1	-100,99	-1119
sum	-2996,15	-1816,46	-3993,97	-5662
average	-374,52	-302,74	-499,25	-808,86

Foreign trade in millions of EUR is shown in Table 12. Looking at the average foreign trade, it is obvious that the Czech deficit (-499.25) is higher than that of Slovakia (-374.52),

which in turn is rather comparable to that of Hungary (-302.74). Only the Polish foreign trade (-808.86) shows higher deficit influencing zloty negatively.

In Table 13, state budget deficit for the Visegrad countries is shown. From average values, one can conclude that Slovakia has low budget deficit, as well as the Czech Republic, influencing their currencies positively, however Poland's deficit (-7661,46) is very high compared to both Slovakia (-1421,38) and the Czech Republic (-2365,16) as well as to Hungary (-4149,42). Hungary's budget deficit is also rather high. This trend is similar to that of the balance of payments, where both Slovakia and the Czech Republic scored well as opposed to Hungary and Poland. This is, therefore, another explanation for lacking trend of appreciation in the forint and the zloty.

Table 13: State budget
In millions of EUR

Year	Slovakia	Hungary	Czech Republic	Poland
1999	N/A	-1676,43	-900,71	-3327,18
2000	N/A	-1791,25	-1354,61	-4064,88
2001	N/A	-1928,80	-2400,71	-8602,66
2002	N/A	-6443,41	-1621,28	-10406,63
2003	-1659,55	-4203,25	-3867,02	-9766,90
2004	-2082,86	-5119,40	-3316,67	-10959,15
2005	-1004,28	-3924,57	-2000	-7540,93
2006	-938,83	-8108,28	-3460,28	-6623,39
Sum	-5685,52	-33195,39	-18921,28	-61291,72
average	-1421,38	-4149,42	-2365,16	-7661,46

Table 14 below shows the foreign (external) debt, which together with the domestic one form the public debt. In this analysis, foreign debt is used as a proxy for public debt. Comparing both sum values as well as average values, two trends are observable again. Slovakia and the Czech Republic have lower foreign debt than Poland and Hungary. Slovakia scores the best again, having average foreign debt equal to 13456.26 million EUR, followed by the Czech

Republic with 25196.35 million EUR. Hungary has the highest foreign debt (48404.54) with Poland having the second highest (31285.07).

Table 14: Foreign (external) debt
In millions of EUR

year	Slovakia	Hungary	Czech Republic	Poland
1999	7791,05	29230,94	16962,97	34245,38
2000	7791,05	32571,54	16033,24	31906,21
2001	8384,66	37386,99	16601,62	26116,68
2002	9794,46	38559,25	20021,52	28664,24
2003	13578,69	46041,12	25890,78	33739,41
2004	18253,32	55150,11	33569,04	29362,51
2005	19959,93	66239,56	33977,15	32923,74
2006	22096,91	82056,8	38514,51	33322,35
sum	107650,07	387236,31	201570,82	250280,52
average	13456,26	48404,54	25196,35	31285,07

The overall performance concerning the determinants of the exchange rates studied in this section is summarized in the Table 15 below. A plus indicates the exchange rate determinant impacts the currency positively, while a minus indicates influence in the direction of depreciation. It is clear from the table that the determinants of the exchange rate studied influence the Czech koruna positively, which is a partial explanation of koruna's appreciation. Similarly to this, according to the exchange rate determinants, also the Slovak koruna should appreciate, as four of the six determinants influence it in the positive direction, while only two influence it in the negative direction. The appreciation of the Slovak koruna is indeed the case.

Table 15: Exchange rate determinants

	CPI	BOP	Current account	Foreign trade	State budget	Foreign debt
Slovakia	-	+	-	+	+	+
Czech Rep.	+	+	+	+	+	+
Hungary	-	0	-	+	-	-
Poland	+	-	+	-	-	-

On the other hand, in the case of Poland, only two determinants point to the direction of appreciation, while others influence the zloty in the negative direction. This is also reflected in

the development of the zloty, as it sometimes appreciates, while other times it depreciates and there is no one clear trend in its development. Four exchange rate determinants influence the Hungarian currency in the negative direction and only one in the positive direction. As was shown, the forint both depreciated as well as appreciated during the years studied. This might be because the present analysis offers only partial explanation of the currency development of the Visegrad countries, due to limited determinants studied.

Similarly, at first glance, one might say that the Polish and the Slovak currency are having the same development only at the opposite side of the spectrum. However, as was shown in the theoretical framework, there are numerous factors that can determine movement in the exchange rates. As such, there might be other factors which have not been analyzed in this thesis, as well as factors which are hard to analyze, such as political situation or speculative capital, which might explain the strength of the Slovak and the Czech koruna and no clear trend in the Polish zloty and the Hungarian forint. Certainly, the large amount of speculative capital has pulled the Slovak koruna incredibly in the second half of 2006[104] and the appreciation continues. On the other hand, the political situation in both Hungary and Poland is not very stable, which influences their currency negatively despite rather positive economic situation. The perfect illustration for this instability is the dramatic events taking place in September 2006 in Hungary. Table 16 below shows the political instability in Poland by listing the results of the parliamentary elections to Sejm in years 1993, 1997, and 2001. What is remarkable about these results is the fact that the parties, who had seats in parliament for one term, did not receive enough support in the next elections to even get seats in the parliament. As such, there are constantly new and new parties in the Polish Sejm, the only exceptions being SLD and PSL, who had seats in the lower house of

[104] TV TA3, "Prečo sa koruna posilňuje a dokedy ešte bude," Analýzy a trendy, 24 October 2006, <http://www.ta3.com/sk/relacie/6_analyzy-a-trendy/294_relacia-koruna-na-ceste-hore> (12 December 2006).

parliament in all three terms. However, even here we see that, for example PSL went from 15.4% of votes in 1993 to less than half of it (7.31%). The change in people's taste or their dissatisfaction with the political parties mirrored in their constant alternation in Sejm is one of the illustrations of political instability in Poland. As such, I leave the examination of these other factors for further research. Further shortcoming of the present analysis is the fact that it was not possible to evaluate the individual impacts of the determinants studied. As such some determinants might have bigger influence on the currency, while others might have lesser. This would also be an interesting topic for further research.

Table 16: Results for parliamentary elections to Sejm- Poland 1993, 1997, 2001

1993	**votes**	**% votes**	**seats**	**% seats**
SLD - Alliance of the Democratic Left (Sojusz Lewicy Demokratycznej)	2815169	20.41	171	37.17
PSL - Polish Peasant Party (Polskie Stronnictwo Ludowe)	2124367	15.4	132	28.69
UD - Democratic Union (Unia Demokratyczna)	1460957	10.59	74	16.08
UP - Labour Union (Unia Pracy)	1005004	7.28	41	8.91
KPN - Confederation for Independent Poland (Konfederacja Polski Niepodleglej)	795487	5.77	22	4.78
BBWR - Non Party Reform Bloc (Bezpartyjny Blok Wspolpracy Wspierania Reform)	746653	5.41	16	3.47
1997				
AWS - Solidarity Election Action (Akcja Wyborcza Solidarnosc)	4427373	33.83	201	43.69
SLD - Alliance of the Democratic Left (Sojusz Lewicy Demokratycznej)	3551224	27.13	164	35.65
UW - Freedom Union (Unia Wolnosci)[1]	1749518	13.37	60	13.04
PSL - Polish Peasant Party (Polskie Stronnictwo Ludowe)	956184	7.31	27	5.86
ROP - Movement for Rebuilding Poland (Ruch Odbudowy Polski)	727072	5.56	6	1.3
2001				
SLD-UP - Alliance of the Democratic Left-Labour Union (Sojusz Lewicy Demokratycznej - Unia Pracy)	5342519	41.04	216	46.96
PO - Civic Platform (Platforma Obywatelska)	1651099	12.68	65	14.13
SO - Self-Defence of the Polish Republic (Samoobrona Rzeczypospolitej Polskiej)	1327624	10.2	53	11.52

PiS - Law and Justice (Prawo i Sprawiedliwosc)	1236787	9.5	44	9.57
PSL - Polish Peasant Party (Polskie Stronnictwo Ludowe)	1168659	8.98	42	9.13
LPR - League of Polish Families (Liga Polskich Rodzin)	1025148	7.87	38	8.26

Source: University of Essex, "Poland- Election Results," <http://www2.essex.ac.uk/elect/database/indexCountry.asp?country=POLAND&opt=elc> (25 May 2007)

To sum up, this chapter has firstly shown that there is indeed a trend of long-term strengthening of the korunas and no such trend is present in the zloty and the forint. Secondly, several determinants of the exchange rate have been analyzed in order to see whether they differ across countries and how they influence individual currencies. It was found that the Czech and the Slovak korunas are influenced positively by the factors studied; therefore, there is a clear trend of appreciation of their currencies. On the other hand, rather mixed results of Poland and Hungary in terms of these indicators reveal that there is no clear trend in their currency development.

Conclusion

The Visegrad countries do share several features. It was illustrated that in terms of general macroeconomic variables, the Visegrad countries are rather similar. It was also shown that the literature treats these countries usually as one group precisely due to their similarities. The aim of this thesis was to show that despite these similarities, there is one significant difference, namely the different currency development. However, as confirmed by the present analysis, the trend of long-term appreciation of the Slovak and the Czech koruna is lacking in the Polish zloty and the Hungarian forint as these currencies show sometimes pattern of weakening and other times strengthening. The Visegrad currencies were studied for the period of 1999 to 2006. Throughout this time, in seven years the Slovak koruna appreciated, followed by the Czech koruna which appreciated in six of the years studied. On the other hand, both the forint and the zloty appreciated in four years and depreciated in four years.

I have performed a comparative analysis to see which determinants of the exchange rates can explain the difference between the Visegrad countries in terms of their currencies. Consumer price index, interest rates, balance of payments, current account, foreign trade, state budget, and foreign (external) debt have been examined for all Visegrad countries for year 1999 to 2006. The findings of this thesis suggest that the Czech koruna is influenced positively by all these factors; the Slovak koruna is also influenced positively, except for CPI and current account. However, the forint and the zloty are mostly influenced negatively by these determinants. This explains, at least partially, why the Slovak and the Czech koruna show a trend of appreciation, while this trend in lacking in the zloty and the forint. To conclude, it is important to study the currency developments in the countries, such as the Visegrad four. This is because the currency development has several implications. For one, the appreciation like the one happening in

Slovakia, is not necessarily the preferred outcome, since while appreciation is good for some, it is bad for others, for instance exporters. As such, at the time of the accession to Eurozone, the exchange rate will be very important, since if a country joins with a rather strong currency, this might have detrimental effects on its exports. Further research could build upon the present one and investigate what is the optimal exchange rate for these currencies at the time of accession to Eurozone. At the end, the appreciation is not always what we should strive for.

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