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FINANCIAL & CURRENCY CRISIS IN THE COUNTRY OF HUNGARY

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EXECUTIVE SUMMARY

Our contention, as stated in this thesis, is that by the use of preeminent elements of the three generation of currency crisis models, put into the framework of the Minsky-Kindleberger and Kondratieff cycles, Hungary has recently experienced both a financial and a currency crisis. Through the *lead up to crisis* section two primary factors are highlighted as the primary reasons for the worsening of the Hungarian economy as the global financial crisis engulfed Europe; 1) the abandonment of the fixed exchange rate regime in February 2008, and 2) with significant increases in loan taking during the past decade in Hungary, forint denominate loans fell as foreign denominated loans increased, primarily being in Swiss francs. During the *intensive crisis period* the weakening HUF combined with a decline in house price of 10%-30% in the spring of 2009 is brought to light as key factors in the ongoing Hungarian turmoil. In addition the foreign denominated debt level of 125% of GDP is emphasized, additionally Hungarian investors started to default on their loans, primarily in Swiss francs, expressed in the rising nonperforming loan figures. In relation to Hungary's stance compared to its emerging market neighbors in the CE3, it is evident that the country stands out in many key economic spheres as highlighted in *Hungary in a regional context*. Accentuated is the interdependence to Euroland and the fact that Hungary takes the lead in the entire CEE region with a loan-to-deposit ratio of 140%. This is in line with the excessive loan taking that was concluded during both the *lead up to crisis* and *intensive crisis period* sections. As for the *theoretical application to Hungary* section it is concluded that both the Minsky-Kindleberger framework and the three generation of currency crisis models can deduce a recent crisis in Hungary. However the models on both financial and currency crisis theory cannot be confirmed satisfying in explaining the Hungarian turmoil to the fullest, due to unspecific outlines of the use of these models. For this specific reason the section of *adjusted crisis theory on Hungary* seeks to put together the best elements of the three generation of currency crisis models with the interpretive stages of the Minsky-Kindleberger framework. This is all put into context of the Kondratieff cycle and results in the Emerging Market Crisis Model. While not flawless, the EM Crisis Model succeeds in concluding that Hungary has recently experienced both a financial and currency crisis. Lastly the final chapter *where are we heading* emphasizes a general negative scenario in Hungary in the long run, substantiated in the authors overall global view, accentuated in the fact that borrowed stimulus is currently running the world economy and that this cannot be sustainable in the long run. Disobeying economic principles of free market power and emphasizing a business model that practically invests in itself, the authors are predominantly negative towards a quick global and Hungarian economic recovery.

ABBREVIATIONS AND ACRONYMS

NBH	National Bank of Hungary
HUF	Hungarian forint
CDS	Credit default swap
ABS	Asset backed securities
CDO	Credit default obligation
LLR	Lender of last resort
YOY	Year on year
BSE	Budapest Stock Exchange
RBA	Royal Bank of Australia
MFA	Ministry of Foreign Affairs
ITD	Hungarian Investment and Trade Development Agency (HU)
FM	Finansministeriet (DK)
NPL	Nonperforming loan

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1 PREFACE

This master's thesis has been written at the Master of Science in Finance and Strategic Management (FSM), Copenhagen Business School. The report has been in progress from May 2009 to November 2009.

As fulltime financial associates in the international banking sector our close association with financial and capital markets as well as hands-on experience with investors during the recent global crisis, have naturally ignited the wish to initiate an in-depth analysis of a crisis exposed country. With primary experience in the foreign exchange markets the topic of this report is of great personal interest to the two authors.

We would like to start by giving our thanks to various colleagues and acquaintances in the financial industry for their helpful advise and comments throughout the process.

Accordingly, a thank you is given to supervisor, Mr. Finn Østrup, for his guidance, interest and helpful insight during the working process.

Copenhagen, 5 November 2009

Kasper Karstensen

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1.1 INTRODUCTION

By 2004 Hungary had become a member of the European Union, leaving behind its communist past and successfully transforming itself from a centrally planned to a market economy experiencing encouraging growth performance and similarly to other new EU member states, it then embarked on a path towards convergence with the old EU member states. As the financial crisis started rippling over Europe in 2008, Hungary – a recent favourite of western investors - suddenly found itself particularly vulnerable and dramatically burdened with heavy foreign debt. The global financial turmoil led Hungary to a crisis with mid 2008 being a major turning point in the country of Hungary. A key worry was enormous foreign debt levels in e.g. Swiss francs, which became a major problem as the local currency, the forint, started to drop. Andreas Simor, former head of the National Bank of Hungary, was interviewed in October 2008 saying that the bank had campaigned for a while to slow foreign-exchange borrowing; *"If you borrow foreign exchange, you take a risk, but the public was not fully aware of the risk"* (New York Times 2008a). Mr. Simor further pointed to the fact that Hungary's banks were not taking chances equivalent to those in the United States, where mortgages were given out with small amounts paid or scant documentation. Nevertheless, by the fall of 2008 the Hungarian crisis could no longer be neglected and confirming the crisis was the IMF stating, already in mid 2008 that; *"Government debt and net external liabilities (relative to GDP) in Hungary are by far the largest among new EU member states"* (IMF 2008a). As money left the capital markets expressed in dropping debt and equity figures of the capital flows, rising government bond yields and widening CDS spreads the Hungarian forint continued to decrease, reaching an all time low of close to 320 to the euro in March of '09. At the same point in time Hungary was exposed to 125% of GDP in foreign debt combined with a significant decline in the house prices of 10%-30% in the first quarter of 2009. Despite an October 2008 $25bn rescue package put together by the IMF, the EU and the World Bank, the crisis had become so severe in the spring of 2009 that a 6.4% yoy contraction was seen in GDP figures while there existed an expectation of 24% default possibility of Hungary expressed in the CDS market. Based on an in-depth analysis of the country of Hungary and by the help of pertinent theory, the following thesis determines to what extent the country has experienced both a financial as well as a currency crisis. Furthermore it is found of interest to verify to what extent known theory is capable of explaining the complex crises of today's ever so changing financial markets, based on the situation in Hungary.

2 PROBLEM STATEMENT

The above introduction clearly points to an interesting topic of research of Hungary and precise focus of the master thesis is highlighted in the below research question and supportive questions.

Research question

Based on analysis of an intensive crisis period in Hungary while considering pertinent theory, to what extent has Hungary experienced a recent financial and currency crisis?

Supportive questions

***Hungary analysis*:** Which economic factors throughout the past decade have led to the Hungarian turmoil of mid 2008 and most recently, which key factors have notably led to a continuous crisis formation?

Hungary in a regional context: Comparing Hungary to its emerging market neighbours, to which extend does Hungary stand out in the current crisis context?

Theoretical approach to Hungary: According to the Minsky-Kindleberger framework on financial crisis as well as the three generation-models of currency crisis theory, to what extent has Hungary experienced a financial crisis and a currency crisis, and which combination of these theories can optimally explain the recent Hungarian turmoil?

Where are we heading: Considering firstly the current state and predictions towards the global financial crisis and focusing on the conclusions in the Hungary analysis, how may the near-term future of Hungary develop?

2.1 DELIMITATION

As the report has been conducted with a focus on a current crisis, an opening date as well as a cut-off/expiry date for primary empirical data collection and analysis were specified. While naturally slightly broadening the project scope to give the reader an idea of past and most recent historic and economic happenings in Hungary, the explicit analysis of Hungary is focused on a timeframe ranging from July 1st 2008 to June 1st 2009. Therefore, relative to the Minsky-Kindleberger framework as well as the theory on generation models for currency crises, data collection for a prior or later period may be used. Furthermore, as the thesis operates with very recent events it has not always been possible to get the newest information available, simply due to data not yet published or even analyzed. Some text or illustrations may therefore contain very up-to-date information, while in other cases it has not been possible to collect at the time of writing. For these reasons, the time span in figures and tables may differ slightly; obviously this does not impede the validity of the study.

Also, it is important to mention that the report is focused on crisis in Hungary and the country's exposure to global financial crisis happenings. Naturally, it is interesting to put emphasis on other countries exposure to Hungary, e.g. Austria with an exposure equivalent to 75% of its GDP to Eastern European countries and Sweden with 25%. However in this context it is important to mention that the writers of this report consider financial crisis to contain either a currency crisis or a banking crisis or a combination of these two (so-called twin crises). Hence, it has been decided not to initiate an in-depth analysis of the banking sector or the question of an actual happening of a banking crisis in Hungary. Nevertheless, data for Western European bank's exposure towards Hungary and other CEE countries will be brought to light in the analysis to put a potential failure of Hungary into context.

Furthermore and relative to specifics in five of the main report chapters; *discussion of theory, Hungary analysis, theoretical application to Hungary, Hungary in a regional context* and *where are we heading,* key points of delimitation are emphasized below.

In regards to ***discussion of theory*** the Minsky-Kindleberger part emphasizes the business cycle, or so-called framework, hence we do not to go into great detail on specific details relative to the individual theories by Minsky or Kindleberger. Although Fisher's (Fisher, Irving 1993), 'The Debt-Deflation Theory of Great Depressions' is often associated as a cycle-theory to the Minsky-Kindleberger framework, it has been decided not to include this theory in this report. On the other hand, and not to refrain from the question of inflation/deflation relative to the current crisis, the so-called Kondratieff theory will be applied. Relative to the three generation-models of currency cri-

ses, only the theorists considered key for this analysis are chosen as focus. Some newer models than third generation models do exist and these are not in focus either.

The ***Hungary analysis*** will be kicked off by a *lead up to crisis* and will include four key topics focusing considered significant to explain the factors applicable to the downturn in Hungary. These were chosen to limit the span of data as well as methods of analysis. As mentioned above, the explicit analysis of Hungary is focused on a timeframe ranging from July 1st 2008 to June 1st 2009. Data included in the analysis is chosen carefully and seek to cover this period exactly, however it might be the case that some data will not be able to cover the entire period up until 1st of June.

When analyzing ***Hungary in a regional context*** the benchmark countries are primarily the two other CE3-countries, Poland and Czech Republic. Sometimes the context chapter will include Slovakia that together with the three other countries forms the CE4 region and sometimes, general parallels will be drawn to other countries in the CEE-region. Similarly for both the *Hungary analysis* and the *Hungary in a regional context* sections is the fact that data has been chosen solely by the writers of this thesis and their view on information needed to best possibly describe and give answers to the defined phases of crisis.

As for the ***theoretical application to Hungary*** firstly the Minsky-Kindleberger framework and then the currency generation models are used on the analysis on Hungary. The use of the models is solely utilized according to the writers' broad interpretations of the model essentials.

The final chapter of the thesis, ***where are we heading***, will begin with a section that is solely the view of the writers on the global financial crisis. The future views of Hungary will be expressed in four scenarios compiled to create a picture of the Hungarian economy in a shock-, base case-, negative case- and positive case scenario, all based on the conclusions made throughout the thesis and the personal views of the two authors towards the global financial crisis.

Finally, as an overall significant point of explanation to the structure and language of the thesis it is important for the reader to be aware that a large part of the Hungary analysis was conducted in mid 2009. While the final touch to the thesis was given in late 2009 (including a brief overview of key events happening from mid to late year in the final chapter) the writer's hereby stress the importance of the reader's awareness to the fact that some parts of the report may be written in present tense while some parts in past tense. Also, in a few instances due to difficulties obtaining new data, already produced charts from well-recognized banks and financial institutions have been used in the report.

2.2 STRUCTURAL APPROACH

The following briefly describes the basics of the thesis structure to provide the reader with a clear overview.

The report is divided into five main chapters (chapters 3 to 7) of which one is descriptive and explanatory while the remaining four are based on analytical approaches. The *third* chapter provides explanation as well as discussion of the theory used in the report and therefore includes relevant theory on financial crisis, currency crisis and deflation-cycles. The *fourth* chapter is an in-depth analysis of Hungary emphasizing a lead up to crisis phase and hereafter a detailed analysis on an intensive period of crisis in Hungary covering roughly twelve months. The *fifth* chapter emphasizes Hungary in a regional context with main focus on the remaining CE3-countries. With the third, fourth and fifth chapters creating a framework for further analysis, the *sixth* chapter is the link between theory on respectively financial crisis and currency crisis to the in-depth analysis on Hungary. Additionally, this chapter presents a tailored crisis model applicable specifically to the country of Hungary as well as other emerging markets. Finally, the *seventh* chapter firstly presents the writer's observation on the global financial crisis. Hereafter, future views on Hungary are expressed in four scenarios, all based on the conclusions made throughout the thesis and the personal views of the two authors towards the global financial crisis.

3 DISCUSSION OF THEORY

Looking back at recent decades numerous theories on *financial crises* have come to exist. In the following only few of these will be emphasized relative to the analysis of the financial crisis in Hungary. The Minsky-Kindleberger framework (also called the Minsky-Kindleberger business cycle) based on Minsky (Minsky, Hyman 1977) and Kindleberger (Kindleberger, Charles & Aliber, Robert Z. 2005) is a blend of past and present ideas on financial crisis and is considered useful in this particular case in point. Financial crisis as defined by the Minsky-Kindleberger framework can lead to a *currency crisis*, which is also a key theoretical focus in the report. Finally, a way to explain and map the evolvement of both short- and long-term crisis in general will be explained through The Kondratieff Cycle (Kondratieff, Nicolai 1925).

Numerous texts exist on Minsky-Kindleberger framework while the number of theories on currency crises are also immense and hard to grasp. This is the reason for choosing only a few key stakeholders of each of the theories throughout this report. Relative to the Minsky-Kindleberger framework the work of the two theorists Minsky (Minsky, Hyman 1977) and Kindleberger (Kindleberger, Charles & Aliber, Robert Z. 2005) are primary to the analysis, not their separate views and interpretations - only the common framework is of interest. The two are key stakeholders to the theory on the Minsky-Kindleberger framework, which is the *first* theoretical focus analyzing financial crisis in Hungary. Currency crisis as defined by the generation models is the *second* key theoretical focus in the report. Although there exist numerous theorists and models to describe and analyse currency crises, the essentials of the well-known and empirically based 1st, 2nd, and 3rd generation models of currency crises are emphasised and the key stakeholders related to these are chosen. Relative to both theory on financial and currency crises, the cycle theory by Kondratieff (Kondratieff, Nicolai 1925), called the Kondratieff Waves with a further emphasis on inflation and deflation will be explained and will be used for further independent theory model production.

3.1 FINANCIAL CRISIS

In relation to theory on financial crisis there exist two main traditional views on the causes and explanations on the emergence of a crisis. *Firstly*, the Minsky and Kindleberger hypothesis is related to business cycles and talks of financial bubbles, while there is also a focus on real economy and disintermediation. Moreover, behavioural finance is emphasized in this view – indicative of an importance of psychological and behavioural variables involved (De Bondt 2003, p. 207), e.g. when investing smart in the stock market to gain a profit. A *second* traditional view by e.g. Milton Friedman and Anna Schwartz has a contradicting focus with monetarism, money supply, payment systems, and bank runs, being a few of the key words (Bubbles, Greed & Corporate Failure, Lecture). As an example and in contrast to Keynesian economics, monetarism maintains that changes in money supply greatly influence aggregate demand – notably Friedman, advocated a monetary rule, that is, a steady growth in the money supply to match economic growth, without allowing central banks to intervene. This second traditional view is dominated by the so-called modern finance approach, which generally speaking is built on two twin assumptions of "perfect markets and perfect people" (De Bondt 2003, p. 206).

The different theoretical views above are introduced, some will be used throughout the project, some will not. The ones that will not be used are brought into the theory section for criticism and perspective reasons, simply to put the use of especially the Minsky-Kindleberger framework into a denunciation context. It is tried argued why and why not the theories have different level of actual use throughout the thesis. Initially, Minsky and Kindleberger are used in the attempt to put some structure on the recent happenings in the current financial crisis – the aim is still to investigate how it came to the current economical situation in the country of Hungary. Eventually, particularly the views by Anna Schwartz will be used shortly as a contradictory point of discussion, later tried incorporated into the use of the framework of Minsky-Kindleberger.

3.1.1 The Minsky-Kindleberger framework

"Financial crises are like … pretty women … hard to define, but recognizable when encountered." (Kindleberger, Charles P 1989).

Amongst the key interpretations of financial crises is the Minsky-Kindleberger model, which broadly, describes three stages in a financial crisis: mania, panic and collapse. *Mania* is a period of business upswing – market players restructure their assets in favour of real and financial assets. *Panic* is characterized by the herd effect and competition in the transformation of real and financial

assets into the most liquid form of assets, money. *Collapse* is the final outcome of the process preceded by panic and mania.

Kindleberger developed a more focused economic model (based on Minsky) on financial crisis and the following is an attempt to highlight a theoretical tool later used to structure the happenings in the current Hungarian crisis and to conclude how the current crisis came into play. The six stages in the model of Kindleberger further develop the situation that Minsky describe as going from a robust to a fragile financial structure, i.e. pro-cyclical changes in the supply of credit (Kindleberger, Charles & Aliber, Robert Z. 2005, p. 22). It was the view of Minsky that as the economy moves toward its peak of the cycle, the financial structure becomes more fragile because of the upswing being largely financed by debt (Minsky, Hyman 1977). The Minsky-Kindleberger framework (name referring to the Kindleberger model that is closely related to the theory of systematic fragility by Minsky) illustrated below in *figure 1* is in this case considered a useful framework to analyze the current Hungarian crisis. The Minsky-Kindleberger framework can be summarized in six different, yet relatively contemporaneous stages of displacement, euphoria (boom), financial distress, panic, contagion, and lender of last resort.

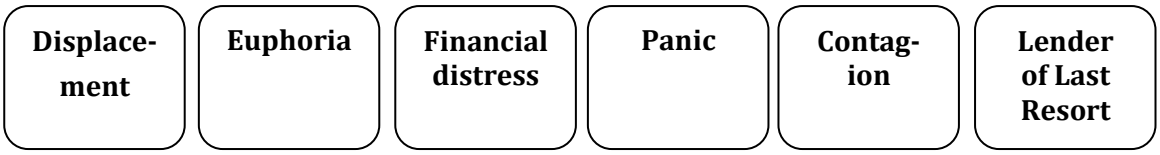


Figure 1: Compiled by the authors based on the Minsky-Kindleberger framework

As mentioned, the Minsky-Kindleberger model highlights six different, yet relatively contemporaneous stages. According to the model a crisis starts out with a *displacement*, an exogenous shock, to the macroeconomic system that alters profit opportunities in at least one sector while others close down – this stage is often associated with periods of financial innovation (Kindleberger, Charles & Aliber, Robert Z. 2005, p. 47). Individuals, firms, and businesses take advantage of the many new opportunities thus paving the way for a situation of *euphoria* or "boom", financed by credit. Thus, the kind of displacement varies and if it is large enough it will change the economic outlook and initiate the so-called Minsky-Kindleberger framework (Kindleberger, Charles & Aliber, Robert Z. 2005, p. 47). Typically, euphoria enlarges the money supply and results in an increase in credit channels. With the propagation of positive feedback the economy involves in overtrading. Overtrading signifies the exaggeration of some activity, for example, over-borrowing, over-investment, over-consumption. The speculation for profits can lead investors away from normal, rational behaviour to what Kindleberger calls mania, which clearly emphasizes irrationality. An increasing num-

ber of people seek to benefit fast without having a real understanding of the processes involved, therefore not surprisingly, swindlers appear and deceptive behaviour develops (Kindleberger, Charles & Aliber, Robert Z. 2005, p. 163). Prices and profits continue to increase until a few insiders decide to sell out to take their profits – prices begin to level off. This is a period of revulsion. This critical stage is also termed the period of *financial distress* – a term that comes from corporate finance, where a firm is said to be in financial distress when it must contemplate the possibility that it will not be able to meet its liabilities. For an economy as a whole there is a rush for liquidity and investors turn their assets into cash. This run might leave some speculators unable to pay off their loans. Furthermore, economic agents realize that the market cannot go higher. Given even a trivial shock, this realization may turn into a stampede. Consequently, a crisis breaks out and *panic* feeds on itself - investors crowd to get out of the door before it slams (Kindleberger, Charles & Aliber, Robert Z. 2005, p. 28). *Contagion* or "infectivity" of other, related or unrelated, markets is a major risk at this stage and the degree of contagion typically comes from financial linkages between e.g. markets, industries and/or interdependent countries. Essentially, the panic and the contagion stages are narrowly related and tend to overlap as the panic and contagion spreads to other markets and regions – e.g. international propagation (Kindleberger, Charles & Aliber, Robert Z. 2005, 2005). In the Minsky-Kindleberger framework, the *Lender of Last Resort* is the sixth and final stage. Nevertheless, the lender of last resort does not necessarily need to be present at the end of the cycle – it can easily act in between stages. Kindleberger (2005) divides the lender of last resort function into both pros and cons, which will be discussed further in a section focusing on lender of last resort theories. In brief, the lender of last resort should *"provide liquidity to forestall a panic"*, yet, the actions by the lender of last resort may also be the originator of the next crisis (Kindleberger, Charles & Aliber, Robert Z. 2005, p. 25).

3.1.1.1 Criticism: Schwartz in opposition to Minsky & Kindleberger on financial crisis

To support the use of Minsky and Kindleberger in the preceding analysis of the current financial crisis, the following will discuss the view on crises by Anna Schwartz (Schwartz, Anna 1986) in opposition to Minsky & Kindleberger.

Fundamentally, Schwartz (Schwartz, Anna 1986) distinguished between real financial crisis and pseudo-financial crisis. Schwartz defined a real crisis to be fuelled with fears and loss of confidence; threat to the payment system, bank runs, banks call loans, et cetera. Schwartz considered real financial crisis to be short-lived and ending when demand for cash decrease. On the contrary, Schwartz defined a pseudo-financial crisis as a decline in asset prices of equity stocks, real estate,

and commodities. Also included are exchange rate crises. Large non-financial firm crises are NOT financial crises – it is also argued by Schwartz that when these so-called pseudo-financial crises are treated like real financial crises the result is inflation and misallocation of resources. On top of this it is the view of Schwartz that in the case of a real financial crisis the lender of last resort should provide all the liquidity injections needed to reassure the public – while no need for action during a pseudo-financial crisis (Schwartz, Anna 1986, p. 11-12).

More specifically, Schwartz argues against Kindleberger and his book "Manias, Panics and Crashes", and her claim is that Kindleberger confuses manias and crashes with financial crises – a few examples: bubbles may arise anytime during a business cycle (Schwartz) – not just during up-swing (Kindleberger), bubbles are not related to money supply (Schwartz), loss of wealth is not synonymous with a financial crisis (Schwartz), Wall Street Crash 1929 was not a financial crisis (Schwartz), only real financial crisis if shift from tangible or financial assets lead to run on banks (Schwartz), (Schwartz, Anna 1986, p. 22).

Although there are differences in the general ideas of Schwartz versus Minsky & Kindleberger it is the view in this project that there are pros and cons in both theories, and elements that can be used to analyse the current financial crisis. Schwartz would define the current crisis as a pseudo-financial crisis, but even with the theories of Schwartz in mind, there are elements in the credit crisis that clearly come close to Schwartz' definition of a real financial crisis. The fact that there has been a major threat to the payment system during the current crisis is one element. The fear (by citizens, investors, governments, and financial institutions) of banks becoming insolvent and customers rush-ing to the bank to withdraw money (bank runs) has been a major issue in this crisis as well and a clear indicator of loss of confidence.

To sum up on the above, it is validated that Minsky & Kindleberger can be used to describe the cur-rent financial crisis and relative to Schwartz, it is argued that the financial crisis in today's world is not far from her view on a real financial crisis. Nevertheless the current global crisis is indeed con-sidered a real financial crisis in this report.

3.2 CURRENCY CRISIS

So far the topic of financial crisis has been the main theoretical focus. The Minsky-Kindleberger framework has played the role of main theory to explain financial crisis and will be used throughout the thesis to understand the characteristics of the Hungarian economic crisis tendencies. With the criticism of Schwartz, the writers of this thesis still believes that the Minsky-Kindleberger framework is more relevant than ever and will therefore play an important role throughout the later analysis of the country of Hungary. Kondratieff has also been included as his theory of financial crisis cycles are of great relevance in explaining both short- and long-term cycles, represented throughout four seasons and emphasised in eight important economic elements. From the financial crisis theories and with a change of focus, the so-called three generation models of currency crisis will in the following be explained. They have the purposes of looking beyond pure financial crisis[1] and introducing a new focal point being reasons and explanations for currency crisis alone.

With a focus on ***theoretical models of currency crisis*** the essence lies within a possible prediction of a potential crisis. Economic losses are usually the outcome of a financial crisis, whether that is a currency crisis, banking crises or a stock market crash. The importance of preventing a potential crisis is therefore of great significance and the reason for the creation of these so called theoretical models of currency crises. The purpose of the theoretical models is to determine the origins and more importantly the potential timing of a specific currency crisis. The various models within the area use different indicators and were created through the history of currency crises to make sense towards a certain crisis at a certain point in time.

The anticipations of currency crisis are fatal and for that matter it is important to understand the causes of these. *The first of the models, the so called "speculative attack model"* was originally created by Krugman (Krugman, Paul 1979) and used to map the crises in Mexico (1973-1982) and Argentina (1978-1981). The model states that a currency crisis can arise by inadequate macroeconomic policy and the consequences hereof. A newer model was made for the purpose of mapping the crisis in the European Monetary System (1992-1993). The characteristics of the first generation model were simply lacking and couldn't explain the causes and origin of this crisis. *This second generation model was called the "exit clause model"* and states that in spite of a healthy macroeconomic policy a country can still suffer a currency crisis. The exit clause model stress the self-fulfilling characteristics of a currency crisis and the occurrence of potential multiple equilibriums.

[1] Financial crisis is an overall definition that may include one or both of the following: currency crisis and banking crisis

The third of the currency models were developed to determine the crisis of south-Asia in the late 90s (1997-1998) and focuses on the role of moral hazard, the contagion effect and herding.

The following three sections explain each of the three models more in depth. Due to a larger relevance relative to the Hungarian crisis the third generation models are emphasized in comparison to the other two.

3.2.1 First generation models – the speculative attack models

The most common of the currency crises theories from the generation of the first models, and the only one that will be emphasized, is the one by Krugman (1979), developed on the back of a model made by Salant and Henderson (Salant, Stephen W & Henderson, Dale W 1978). Krugman states that a currency crisis is caused by a large budget deficit that is financed by a credit expansion, simply the collapse of a fixed exchange rate regime due to an inconsistent fiscal policy. In other words the currency crisis arises due to the advantage taken by arbitrary speculators in the market on the back of poor macroeconomic policy.

- Credit expansion →
- Budget deficit →
- Increasing money supply →
- Selloff of international reserves →
- Buying of domestic reserves →
- Speculative attack against the currency →
- The rate is changed from fixed to floating →
- Price of currency is floating = currency crisis

It is important to stress that neither a fixed interest rate regime nor poor macroeconomic policy alone can cause a currency crisis, it is the two combined that potentially ends with a crisis – simply the inconsistency between the fiscal policy and the fixed exchange rate regime. The above bullets outline the different steps in which a currency crisis can occur, according to Krugman. Through an expansive fiscal policy a credit expansion will cause a budget deficit. If one assumes that the interest rate parity is met, hence the rate for lending and borrowing is in balance and leaves no option for arbitrage, this credit expansion will cause an increasing money supply. This excess liquidity in the money market makes investors and market participants heighten their demand for foreign currency. To balance out this demand the central bank will sell its international reserves and buy into the domestic currency. The international reserves will therefore decrease over time due the central banks

attempt to keep the fixed exchange rate regime going. As the international reserves runs out the central bank no longer has the opportunity to maintain the current regime and this has to be changed for a crisis not to happen. Before this happens, this is where the attacks are taking place. When the level of international reserves become low enough, investors buy the remaining part of these forcing the central bank to change the regime and if, on the right side of the deal, this is where investors can gain a positive yield. After this scenario this is where the crisis will occur and where the central bank will need to change the fixed exchange rate to re-establish the balance of the economy. Until the balance is restored, a currency crisis will be unavoidable according to the model.

On the positive side the first generation models are rather efficient in predicting the possible speculative attacks, as they are based on the above discussed fixed exchange rate regimes. When the international reserves fall towards zero this is a sign of the investors not wanting to stay and wait for the collapse of the exchange rate regime through the gradual depletion of reserves.

On the more negative side of things, one can question the rather simplistic approach of the first generation models towards the government intervention, or the lacking hereof. When the government chooses to run an expansive fiscal policy it basically means that the expenses are greater than the income and this results in an increasing money supply. It is therefore rather predictable that, when the international reserves run towards zero, attacks will happen (Krugman, Paul 1979).

3.2.2 Second generation models – the exit clause models

The currency crises of the 90s were different from the ones in the 70s and 80s. The characteristic of the two-generation of crises could not be compared and writers of theories found that it was necessary to create a new genre of currency crisis models, some which would be able to explain the new era of crises. Looking at this second generation of currency crisis models, three models are particularly worth mentioning, it is the ones of Obstfeld (1994), his renewed and updated version of ’96 (Obstfeld 1996) and the model of Sachs, Tornell and Velasco (1996). All three models recognize that the cause of a currency crisis cannot be assigned to the single case of poor macroeconomic policy. A crisis is the outcome of a string of events and the crises of the 90s were generally more organic and complex than the prior of the 70s and 80s. Below, each of the three models of the second generation will be described in more detail.

3.2.2.1 The Obstfeld model of 1994

Within the models of Obstfeld (Obstfeld, Maurice 1994), emphasis is on two major subjects; the role of the nominal interest rate and the role of growth wages.

Obstfeld firstly looks at the relationship between the nominal interest rate and the devaluation rate. If nominal interest rate on public debt increases, currency depreciation is used to balance out any possible mismatches, hence one can argue that there is a government reaction towards the depreciation rate and with respect to the given interest rate. On the back of this Obstfeld points out that private investor's expectations of depreciation will rise with a higher nominal interest rate. These two reactions, government and investor, create two equilibriums, one with low interest rate and low depreciation and one with high interest rate and high depreciation. The first of the equilibriums, low interest rate and low depreciation, means that the cost of maintaining a fixed exchange rate becomes lower and the government will therefore choose to maintain the fixed rate. Vice versa in the other situation with high interest rate and higher depreciation - the cost of maintaining a fixed rate increases. If the government chooses to abandon the fixed exchange rate policy, a so-called self-fulfilling currency crisis can occur.

Looking at the role of growth wages, Obstfeld maps out how this can influence the devaluation rate. He points out that in the situation where domestic currency is expected to depreciate, trade unions will ask for higher growth of wages to maintain the same level of purchasing power. On the back of this output growth will tend to decrease and the unemployment increase. This basically means that the cost of maintaining the fixed parity, or exchange rate, will increase as well. With the experience from the situation of rising nominal interest rate from above, we know that this probably will cause the government to abandon the fixed exchange rate policy and a self-fulfilling currency crisis is a possibility.

3.2.2.2 The Obstfeld model of 1996

The Obstfeld model of '96 (Obstfeld, Maurice 1996) basically builds on the statement that original economic game theory can explain the event of self-fulfilling currency crisis.

A/B	No attack	Attack
No attack	The fundamentals are in good condition – no attacks will occur and existing currency policy is maintained	If A expects B not to attack, then A won't attack either. If A expects B to attack, then A will attack as well.
Attack	If B expects A not to attack, then B won't attack either. If B expects A to attack, then B will attack as well.	The fundamentals are in bad condition – attacks from all investors will occur and devaluation is unavoidable

Table 1: Compiled by the authors

Table 1 explains that in the situation of strong fundamentals, hence high level of foreign reserves, speculators can gain by an attack on the system and will therefore stay inactive – this is the situation in the top left corner. However, if the fundamentals are weak speculators begin to realize that profits can be made if an attack is made at the right point in time, hence when the level of foreign reserves is low – this is in the bottom right corner.

The model states that if one group of investors, let's name them A (the row in the top), expects another group of investors, B (column at the left), not to attack the currency, then neither will A and one will end in the top left corner again. However, if A expects B to attack then so will A and equilibrium will once again be in the bottom right corner.

Due to the fact that the model is build of expectations of actions taken from other investors, the model includes a certain element of psychology. This makes it different from Obstfeld's model from '94 and if one combines the knowledge from the two models of his, one would probably have a quite realistic picture of the escalation of a potential currency crisis. However, as it will be later argued, the Obstfeld model of'96 is to a very large extent covered by the herding effect emphasized by Minsky-Kindleberger and will therefore not be in focus going forward.

3.2.2.3 The Sachs, Tornell and Velasco model of 1996

Unlike the two models of Obstfeld, the model of Sachs, Tornell and Velasco (Sachs, Jeffrey, & Tornell, Aaron & Velasco, Andres 1996) also brings the element of the banking sector into the picture and how the soundness of the sector can affect the exchange rate depreciation.

The possibility of a currency crisis is in this model determined by two elements, the nominal exchange rate and banking sector-lending boom. Obviously here it is so, the lower the nominal exchange rate, the higher expected lending boom – it is simply favourable for the market participant to lend money. On the back of this Sachs, Tornell and Velasco (Sachs, Jeffrey, & Tornell, Aaron & Velasco, Andres 1996) claim that low exchange rate and high lending boom will lead to a greater degree of exchange rate devaluation.

Generally if a country has strong fundamentals the difference between domestic and foreign interest rates will be greater than the expected devaluation. This means that there will be no capital outflows and devaluation will be avoided. On the contrary, if a country has weak fundamentals the expected devaluation has a greater chance of being higher than the difference between domestic and foreign interest rates. This means that there will be a net capital outflow and if this exceeds the level of foreign reserves, devaluation is a possibility. If the capital outflow is lower than the foreign reserves the government will be able to defend the exchange rate so that devaluation won't occur.

3.2.2.4 Evaluation of the second generation theories

Generally one can say that the second generation of currency crisis models is more realistic than the first generation. The mechanical behaviour of the government, that is a big part of the first models, are not seen to the same extends in the second generation of models. The government does not have the obligation to maintain a fixed exchange rate regime and the regime will simply be abandoned if it doesn't make sense in the current market situation. This fact makes the fiscal policy of the country seem more organic and rather than being pre determined, it seems to follow the current economic situation.

However, because of the non-predictive government behaviour, attacks will take place when speculators expect the government to change the exchange rate regime and apply an exit clause. Attacks on the currency are therefore more linked to expectations of what the government might do if something happens in the market that might affect the exchange rate regime cost. High level of public dept, higher salaries, lower employment and higher interest rates are all examples of what might increase the cost of the exchange rate regime. However higher interest rates are not favourable looking from the side of the banks, possibly creating a banking crisis if interest rates become too high - people will lend less money, consumer confidence will go down, the government will earn less etc. Attacks can therefore indirectly not be linked to one single incident, but several possible incidents such as the above mentioned. The attacks are not happening because of the change in economic fundamentals but because of what drives the government to that stage. The main point is that

a potential crisis will depend on expectations and that there will be no direct explanation for loss of confidence and coordination of expectations. An attack on the government, which can lead to a crisis, cannot be predetermined and crises of the second generation models are therefore contingent and essentially a non-predictable phenomenon.

3.2.3 Third generation models of currency crisis

The first and second-generation models emphasize macroeconomic policy and consider inconsistent economic policy or an incoherent decision by the policy maker to be the source for abandonment of the exchange rate regime. Currency crises in the countries of Southeast Asia created a need for a new set of models as not only economic policy but also market imperfections or distortions in the financial system played a key role in these. The existing theory at this point faced a key challenge as previous models failed to explain the dramatic developments taking place. Three key words relative to third generation models are: moral hazard, contagion, and herding. Furthermore, there exist three models of currency crises that are recognized as underpinning the third generation models: Moral hazard based on Corsetti's model (Corsetti, Giancarlo & Pesenti, Paolo & Roubini, Nouriel 1998); financial fragility based on Chang & Velasco's model (Chang, R. & Velasco, Andres 1998); and balance sheet based on Krugman's model (Krugman, Paul 1999). The key words and key models are explained in the following.

Moral Hazard: According to Krugman (1999) and Corsetti, Pesenti, and Rubini (1998), moral-hazard-driven lending is an evidence of the mechanism of crises emergence. The theories claim that a guaranteed bailing-out of struggling financial institutions was in some situations anticipated by executives of financial institutions and representatives of government. The model of moral hazard by Krugman (1999) essentially stressed the importance of independent and reliable supervision of the banking sector in preventing currency crises.

Contagion: The currency crises in the 90s; European Monetary System (1992-1993), Latin America (1994-1995), and East Asia (1997-1998) illustrate how dissimilar countries can experience the similar turmoil caused by contagion.

Herding: According to Chang and Velasco (Chang, R. & Velasco, Andres 2001) the herd effect can be described as *"information cascade where individual currency market participants tend to make their choices based on previous actions by other participants of the same or strongly correlated market".* Certain situations result in mass panic and e.g. approval of actions taken by other investors seeking refuge in a foreign currency.

Currency versus banking crisis: Although this report does not specifically analyse banking crisis it is considered worthy of note to briefly introduce the general play between a currency and a banking crisis (so-called twin crises) as this relationship is essential in third generation of currency crisis models. *Firstly* it is essential to understand that the cost of addressing a potential banking crisis lies with the government, costs such as liquidation of insolvent banks, loan guarantees to the public etc (Pesenti, Paolo & Tille, Cedric 2000, p 7). This will negatively effect the fiscal side of the economy in play, hence a change in effective public liabilities can have a negative impact on expectations of monetization of the fiscal deficit and exchange rate depreciation. On top of this, if speculators anticipate that the government policy will go towards choosing inflation over exchange rate stability to avoid bankruptcies and further strains on the banking sector rather than use central bank forces to defend the domestic currency, this is a situation where banking crisis problems can result in currency crisis tendencies. *Secondly* currency crisis can hurt a vulnerable banking sector if central bankers respond to the pressure on a domestic currency by sharply increasing interest rates. Also a weaker currency could bring mismatches between assets and liabilities, this could be due to foreign liabilities not being hedged, hence when bringing foreign liabilities into the equation, foreign currencies and thereby foreign exchange rate risk will inevitably become a possibility. *Thirdly* the dynamics of a so-called "twin crisis" or "joint casualty" leading to a stage of both a banking crisis and a currency crisis are present, could be the role of financial liberalization (Glick, Reuven, Moreno, Ramon & Spiegel, Mark 2001, p 37). Liberalization combined with the concept of moral hazard can increase banks incentive to become involved with riskier investments than would normally be the standard. This boom could be accompanied by a domestic exchange rate appreciation as inflation won't be able to adjust to the international level of inflation due to initial effects in wage contracting and price expectations (Glick, Reuven, Moreno, Ramon & Spiegel, Mark 2000, p 39). The high level of foreign borrowing may create a loophole for speculative investors and cause an attack on the currency, similar to the theory of the 1st generation models.

3.2.3.1 Corsetti, Pesenti & Roubini's model of 1998

Corsetti, Pesenti & Roubini's (1998) focused their analysis of the Asian currency crisis on the phenomenon of moral hazard. According to the model the following explains a currency crisis. As the government gives implicit guarantees to domestic bank debt it is likely that moral hazard may occur in the process of banks' providing loans – this will lead to an increase in the number of bad loans. Assuming a situation with banks' liabilities exceeding assets due to the unsustainable loans, the government will devote treasury accounts to them. The commitment of these treasury accounts lead to government budget deficits and these need to be compensated by an expansion of domestic credit

by the government. As the increase in money supply generates expectations of exchange rate depreciation, economic agents (e.g. bankers and portfolio managers) - eager to avoid losses through the anticipated depreciation - will launch speculative attacks. Whereas an attack on the monetary balances starts a currency crisis, an attack on the foreign liabilities of the financial and corporate sector will cause international creditors to pull out of the loans, this triggers a financial crisis.

Corsetti, Pesenti & Roubini's (1998) suggests that moral hazard is the cause of the crisis – Chang & Velasco (1998) on the other hand propose that financial crisis may be due to a liquidity squeeze.

3.2.3.2 Chang & Velasco's model of 1998

In essence, the focal point of Chang & Velasco's model (Chang, R. & Velasco, Andres 1998) is demand deposits, which in short are contracts between banks and citizens. In period 0 commercial banks collect the residents' endowment as deposits and hereby get their capacity to borrow from a foreign country. The bank invests in long-term technology and borrows from abroad in period 0 and 1.

In return, the depositors can choose to withdraw their deposits either in period 1 or in period 2. Furthermore, the model assumes that the banks are committed to pay back any foreign debt under all circumstances. Depositors are assumed to decide whether or not to withdraw their funds in period 1. The bank has the possibility to meet the obligations by borrowing the necessary funds from abroad, and on top of this, by liquidating the long-term investments into the illiquid technology. A bank run will take place if the withdraws exceed the bank's total liquidation value in period 1. This will be avoided if all depositors act in accordance to their type.

The above by Chang & Valasco (1998) show that bank runs can be caused by both domestic depositors and/or by panic of foreign investors. They point to the fact that the volume of short-term debt to foreign countries highly increases a country's exposure to crisis. Moreover, it is proven that fragility of a financial system and the occurrence of a crisis can be intensified by financial liberalization and the combination of bad policies and unfavourable shocks.

As explained in the above by Corsetti, Pesenti & Roubini's (1998) and Chang & Valasco (1998) it is problems in the banking sector that cause financial crises. On the contrary, Krugman (1999) presents that even without problems in the banking sector a deep financial crisis can still occur.

3.2.3.3 Krugman's model of 1999

Krugman's model (Krugman, Paul 1999) puts emphasis on the balance sheets of the companies – focus is to determine the ability of the company to invest and the effect of capital flows on the real exchange rate. Problems highlighted in the model are contagion, transfer, and balance sheet problems.

According to Krugman's model (1999) a currency crisis is likely to happen in the following scenario. Assume a situation with soon expected depreciation due to e.g. real exchange rate overvaluation – in this situation companies with a large proportion of foreign debt will be hurt by capital outflow and their ability to invest will be limited. Consequently, the real exchange rate will depreciate and this will bolster further capital outflow and thus worsen domestic firms' ability to invest. Significant real exchange rate depreciation will make foreign debt soar and output will decrease due to limited ability to invest. As a result, when foreign debt becomes unbearable for over-exposed companies, many will go bankrupt. Self-fulfilling expectations are then realized.

Krugman (1999) stresses that the following three factors can set off a financial crisis: high leverage, low marginal tendency to import, and a large currency debt to foreign countries relative to exports. In relation to the Asian crisis Krugman suggests that the most important factor was the countries' high exposure to foreign denominated debt. Additionally, Krugman presented three crises policy suggestions – here briefly summarized: Before the crisis it is important for firms to take preventive measures to avoid taking on unnecessary foreign debt. During a crisis, emergency credit lines need to be provided at early stages and another way of dealing with a crisis is by limiting capital flights. Furthermore, Krugman emphasizes the importance of entrepreneurs in the crisis aftermath, specifically to rescue and/or help creating a new set of entrepreneurs. [2]

3.2.3.4 Evaluation of the third generation theory

Fourcans and Franck (Fourcans, Andre & Franck, Raphael 2003) evaluated the third generation theory and noticed the following advantage of the theory. While the third generation models give a key role to fundamentals, the potential effects of speculators' self-fulfilling expectations are not neglected. Furthermore, the models take institutional aspects into account and hereby widen the scope of currency crisis causes.

[2] From 'A theoretical approach to currency crisis theories'

Problems of the third generation theory are that some third generation models restrict fundamentals to the banking sector. Others do not point out clearly the main cause of speculative attack from deteriorating fundamentals and speculator's self-fulfilling expectations.

3.3 THE KONDRATIEFF CYCLE

Nikolai Dmyitriyevich Kondratyev, from hereon Kondratieff (Kondratieff, Nicolai 1925), was a Russian economist of the early 1900's. He produced theories that interrelated economy and politics taking into consideration such events as war, discoveries, public opinion and weather – all of these different factors being a part of a long-term economic life cycle (Kondratieff, Nicolai 1925). When Kondratieff published his major work in 1925, "The Major Economic Cycles" his conclusions were seen as criticism of Stalin's way of running, and his future intentions of, the Soviet economy. As a result, Kondratieff was sent to Gulag and received death penalty in 1938 and died at 46. In honour of his work, Joseph Schumpeter named the cycles "Kondratieff waves" in his 1939 work called "Business Cycles". In later years it has been widely used to divide the Kondratieff cycles into four seasons:

- Summer inflation → acceleration in the economy
- Autumn disinflation → recession, reaching a plateau level, tendency to downwards trend
- Winter deflation → downwards acceleration
- Spring reflation → improvement, might be coming from a plateau kind of state

The cycles last an average of 50 years and typically range from 40 to 60 years. Since the beginning of the 1800's economists believe we've seen five Kondratieff long-term cycles, a bit of discussion can rule in regards to the exact years that parts the cycles from each other. The first industrial revolution, cotton based production, was the first of the cycles ranging from 1800 to 1850, then came the second industrial revolution being the age of steam, shipping, railways and heavy industry in general ranging from 1850 to 1900. Then came the third industrial revolution based on the age of electrification and chemicals from 1908 to 1947 – here with the Great Depression being the "fall"/"winter" period of the cycle. Then came the post war boom from 1947 to 1991 and at this stage we're in the middle of the fifth cycle with technology being the carrying factor of this period. The question of true relevance is in which season do we currently operate? The use of Kondratieff in the chapter *theoretical application to Hungary* will bring this to light.

While the model covers long-term cycles it is likewise used as a short-term cycle model. During these 50-year cycles several shorter-term cycles are occurring. Hence the model is able to explain and map out crises lasting somewhere between one and five years. This is primarily the function in which the Kondratieff Cycle will be used in this thesis. The principles of the model are exactly the same when using the model to explain a short-term cycle in comparison to a long-term, and the point is to try to locate the summer, autumn, winter and spring phases of the cycle. Contributing to the four seasons of the cycle is eight very important economic fundamentals that are to be analyzed during the life of the cycle.

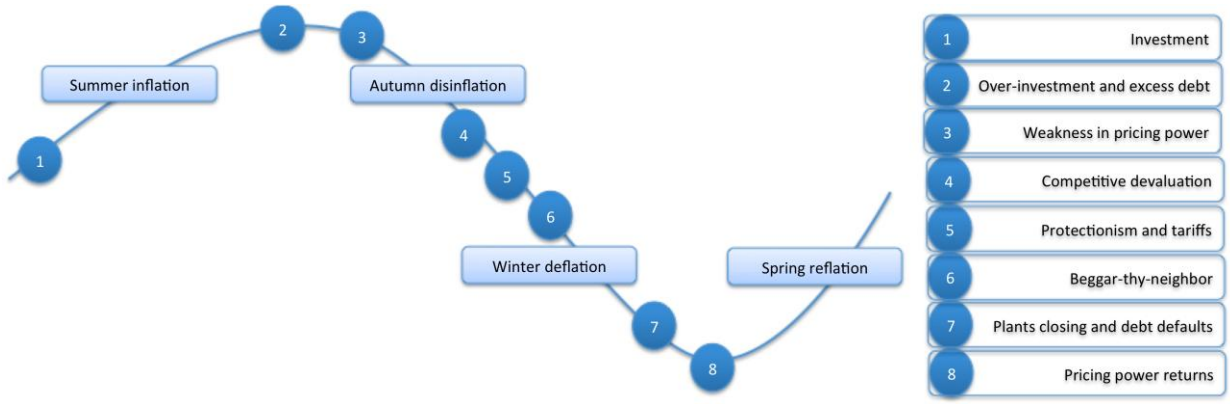


Figure 2: Compiled by the authors based on the theory of Kondratieff

Figure 2 of the Kondratieff wave cycles kicks off with *summer inflation* as point number one being general investment. When moving towards *autumn disinflation*, the markets might see tendencies of *over-investment and excess debt* while also *weakness in pricing power*. As for a couple of the more interesting points along the cycle is *protectionism and tariffs* and *beggar-thy-neighbour*, the first one respectively being restrictions to prevent foreign take-over of local markets and the latter being the function of increasing the demand for domestic exports while decreasing the dependence on imports, e.g. devaluating the domestic currency to make the exports cheaper relative to other countries.

4 HUNGARY ANALYSIS

Based on the four subjects: *exchange rate regime and monetary policy, real economy, consumer spending, over-indebtedness* and *asset price evolvement,* the first of three major parts of the *Hungary analysis* will be examining the last decade in the country of Hungary using important economic figures respectfully belonging to each of the four subjects. All of this will be under the main header of *lead up to crisis,* and this part of the *Hungary analysis* seek to scrutinize the economic data that took the Hungarian economy to the crisis situation we are seeing today. The four phases of the section will be further described in the introduction to *lead up to crisis.*

The second part of the Hungary analysis is named *intensive crisis period,* and this section will be focusing on a period of roughly twelve months, that represents the climax of the recent Hungarian crisis, predominantly mapping the time from mid 2008 to mid 2009. The outline of the crisis will be described by dividing the section into four phases that will help understand the evolvements of the happenings in the Hungarian turmoil. The first phase is named *a turning point,* which explains the almost instant turnaround the Hungarian markets experienced in mid 2008. The second phase of the crisis is *the support phase,* named due to the $25bn rescue package that was provided to the country in October 2008. The third phase is *the post support phase* focused on the effects of the rescue package and the markets sentiment - has there been a change in a positive direction? The final phase of the *intensive crisis period* is named *continuous Hungarian recession* with an emphasis on the weak fundamentals that still rule at this stage. Again, more on the outline of the phases will be introduced in the preface to the sections.

Lastly, the third part of the Hungary analysis is named *Hungary in a regional context.* This part seeks to compare Hungary to its emerging market neighbors, bringing in figures such as real activity, dependence on Euroland and the very important Western European claims on Eastern European borrowers. While brought to light in this introduction due to its close relation to the overall analytical framework on Hungary, this component will be a separate chapter to the Hungary analysis (therefore see chapter 5).

4.1 LEAD UP TO CRISIS

The following section is an overview and analysis of the economic and political situation in Hungary that has the purpose of mapping the past for a better understanding of the current crisis situation in Hungary. The analysis will, primarily in figures and charts, explain the rapid growth and emerging tendencies that the country has shown throughout the past decade. The section is divided into four subsections. The first is called *"exchange rate regime and monetary policy"* explaining changes in the interest rate regime throughout recent years, while also commenting on the acceptance into the EU. The evolvement of the Hungarian forint is mapped out along with inflation- and interest rate levels. Further emphasis will be put on the real and nominal exchange rate and hereby the development in competitiveness. The next subsection *"real economy"* explains GDP progress, the very important FDI and capital flow figures, while also the import/export relationship. The third subsection deals with the issues of rising debt figures and increasing loans made in Swiss francs, alongside balance of payment, financial account and budget deficit overview - this all under the name *"consumer spending and over-indebtedness".* The fourth and last sub section will take up the facts of falling forint denominated asset, such as Budapest home prices and stocks in the BUX-index. This subsection is named "*asset price evolvement"*. To the extent possible figures describing the past decade have been used.

4.1.1 Exchange rate regime and monetary policy

A very important mechanism in every country's economy is the exchange rate regime. In the case of Hungary the National Bank has made some mistakes in which the market responded through noticeable reactions in the Hungarian forint. Before the time of the euro the forint was pegged to a basket of currencies in a +/-2.25% fluctuation band. The peg was a so-called crawling peg meaning that devaluation happened gradually on pre-announced dates rather than sudden and significant devaluations of the currency. In the bands largest weight, 70% was first given to the ECU[3] and then to the German mark besides of the US dollar (Hungarian MFA 2008a). Shortly after the introduction of the euro the HUF-band was widened in May 2001 from the before mentioned +/-2.25% to no less than +/-15%, with a EURHUF base of 273.50. This expansion was followed by a massive HUF appreciation as seen in *figure 3* (notice the significant EURHUF drop near mid 2001). No more than six months later on 1 October 2001, the crawling peg was abandoned and the parity was set to be 276.10 with a fluctuation band in EURHUF of 234.69 to 317.52. In January 2003 the EURHUF

[3] European Currency Unit was a basket of all currencies that was a part of the European Monetary System, EMS. The EU country's weight in the basket was dependent on the size and trade importance of the country – this was adjusted continuously.

reached a price below the band, a price of around 233. As a result the NBH bought 5.2 billion euro making the EURHUF jump to 250, *figure 3*, at the same time interest rates were cut 100bp on 17 January to 6.5%. In May that same year the NBH resold 3.8 billion euro and announced that it stopped currency market intervention. Although this intervention would be expected to make the EURHUF drop in price, the opposite happened, probably due to the announcement of the lack of intervention in the future from the NBH.

Figure 3: SaxoTrader EURHUF chart

Just after the reselling, in early June 2003, the Central Bank devalued the central parity by 2.3% to 282.36 from the before 276.10 efficiently making a devaluation of the HUF - although this was not the official statement. The HUF sled below 270 against the EUR as a reaction to the Central Bank move and the band now spread between 240.01 as the top and 324.71 as the bottom. The devaluation was due to the fact that a EURHUF lower than the 240 levels was not in the interest of economic policy. This could cause export to drop as goods could become too expensive for the rest of the Eurozone to import. This could create a deficit on current accounts, potentially leading to a deficit on the total Balance of Payments.

As an important note, on May 1st 2004 the country of Hungary took a big step towards a "brighter future" as they joined the European Union. This membership meant the acceptance in a community of democracy, security and prosperity (ITD 2008). It meant general wage and pensions increase, and not to forget free movement of labor, goods, services and capital, as well as access to a market of 450 million consumers. The acceptance also meant general enhanced business confidence, both an internal belief of being good enough and an external belief in the fact that, if Hungary were good

enough for the EU they were worth the money. This fact very much comes to show during *lead up to crisis* as 2004 in general was a year of very positive trends. The "boarder less" EU also meant the possibility of accessing foreign liquidity to an extend that was not seen before. The foreign denominated household loans, that will come to play an important role in the following, is a good example of this enhanced access to new markets, new costumers, simply new possibilities – all in the name of the EU membership.

Looking again at the exchange rate situation, in 2007 the EURHUF trading band limit of 240.01 became a problem as the central bank set a medium-term inflation target of 3%. A stronger HUF (below 240) was needed to reach the inflation target and this was not possible due to the limits of the band. The split objective between reaching the inflation target as well as keeping the exchange rate at a level where exports would not get hurt led to the governments' suggestion of abandonment of the fluctuation band. However the cabinet rejected the proposal as they argued that the abandonment would lead to substantial fluctuations in the exchange rate that could hurt the ever so important export of the country (Hungarian MFA 2008a). With a focus on appreciation - exports could get hurt, focusing on depreciation - the high level of FX household loans were threatened, as a weaker currency makes payback of the foreign denominated loans significantly tougher. Furthermore the abandonment would mean a step back from a possible acceptance into the euro alliance as the ERM-2[4] requires for a country to keep its currency within the band of a maximum of +/-15% against the euro for at least 2 years. Further, the two-year period needs to be without any significant tensions or devaluations in the currency (FM 2009). The NBH Governor András Simor argued that it would be more practical to enter ERM-2 than adjust a regime that in any case was much similar to the ERM-2.

On 25 February 2008 it was announced that Hungary was to scrap the trading limit band for the forint, betting a stronger currency would help get the inflation down around the target of 3% (Bloomberg 2008). The months after the announcement the inflation rose slightly, but as the effect of the lacking band started to kick in the inflation started to fall from around July 2008 and up until early January, see *figure 4*. The negative yoy inflation figures in the last part of the decade combined with falling prices on goods and services from around start 2007 makes it safe to say that Hungary has seen a period of deflation.

[4] Exchange Rate Mechanism is a currency cooperation between the countries in the eurozone that was established 1 January 1999 to ensure currency stability in the eurozone. It involves the countries that have not yet accepted the euro and has the euro as an anchor.

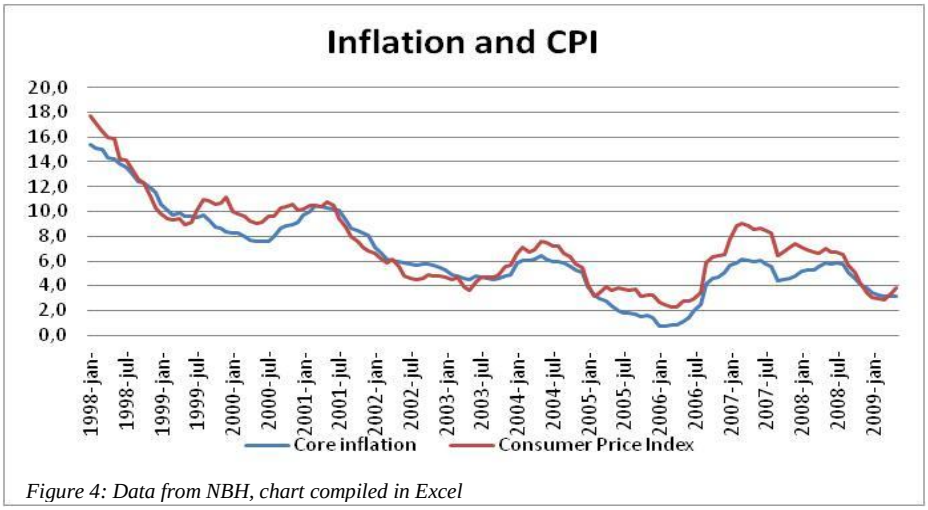


Figure 4: Data from NBH, chart compiled in Excel

The Hungarian Ministry of Foreign Affairs called the decision wise and stated that this could enhance the credibility of the country's economic policy (Hungarian MFA 2008a). Furthermore the Ministry stated that this was a decision that would bear fruit in the longer run meaning that the government was looking further down the line than the current election period, which likely helped to create goodwill in the population. Lastly, the Ministry of Foreign Affairs believed that the government preferred drastic exchange rate swings to rising interest rates and the burdens that come with a scenario like that.

Coming from figures of CPI and inflation it is of relevance to observe the *nominal* and *real exchange rate* of Hungary during the last decade. It is a known fact that a country loses competitiveness with a rise a in the real exchange rate, a so-called *real appreciation.* On the contrary a country gains competitiveness with real exchange rates falling in value, hence a *real depreciation* (Østrup, Finn 2009) as the country's cost levels decrease relative to its trading partners. The interesting observation looking at *figure 5* is the appreciation all the way up until mid 2008 and hereafter a rapid depreciation from mid 2008 towards the month on March '09 - this covers the true intense crisis period of the Hungarian turmoil. This fact will be touched upon continuously during the thesis.

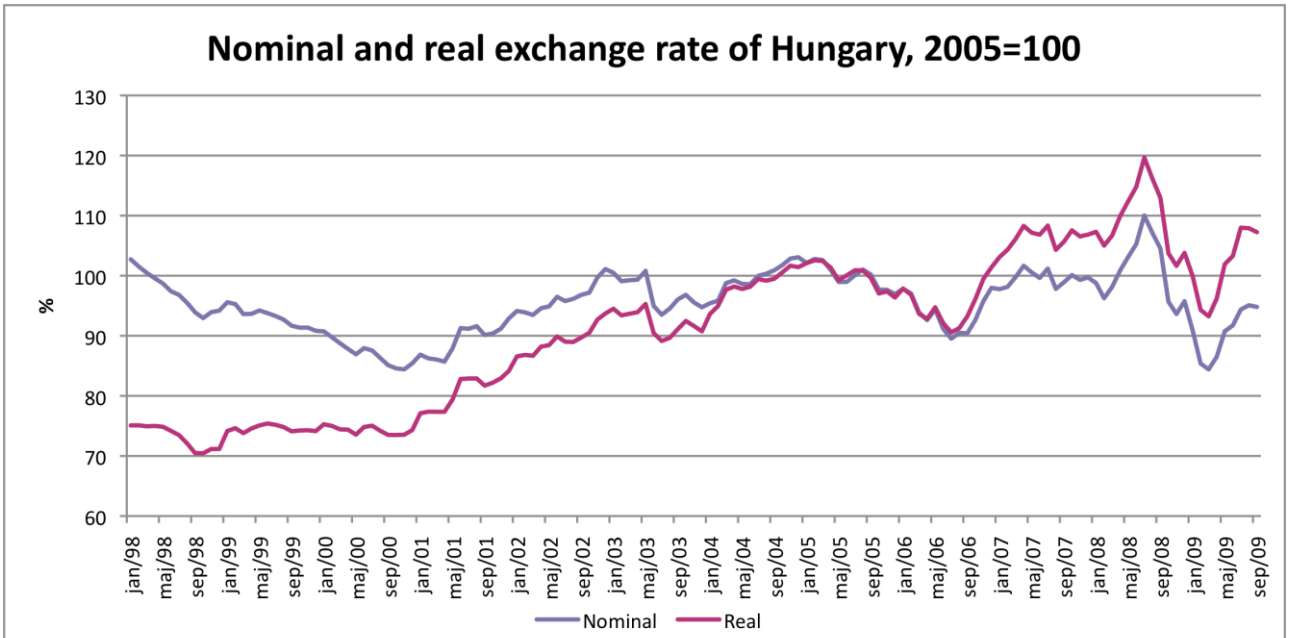


Figure 5: Data from BIS, chart compiled in Excel

The country of Hungary has had quite an impressive base rate history (*figure 6*) from sky high 27% in start 1996 to as low as 6% in mid 2005. Although the government might have preferred rate swings to rising interest rates when the band was scrapped in February 2008, this was far from what happened. On 22 October 2008 the central bank of Hungary was forced to raise the base rate with no less than 300bp from 8.5% to 11.5%. Although this was no near the highs of the mid 90's it was still a very spectacular move that initially seemed to strengthen HUF against EUR with a decline in EURHUF from 285 on the 22nd to 252 on October 30th 2008. However, from 30 October to 6 March it turned around and the EURHUF went from 252 to a 2009 high of 317 on March 6th – consequently making the 3% inflation target look even more unachievable.

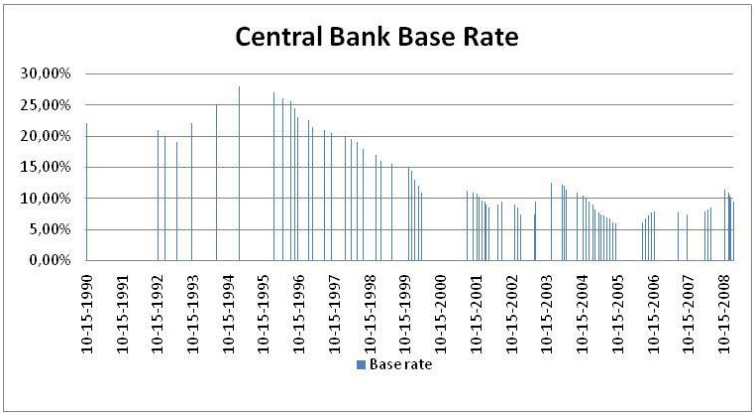


Figure 6: Data from NBH, chart compiled in Excel

In regards to the exchange rate regime it is found relevant to consider the Hungarian level of foreign reserves, as this is a very important tool in defending a regime, see *figure 7*.

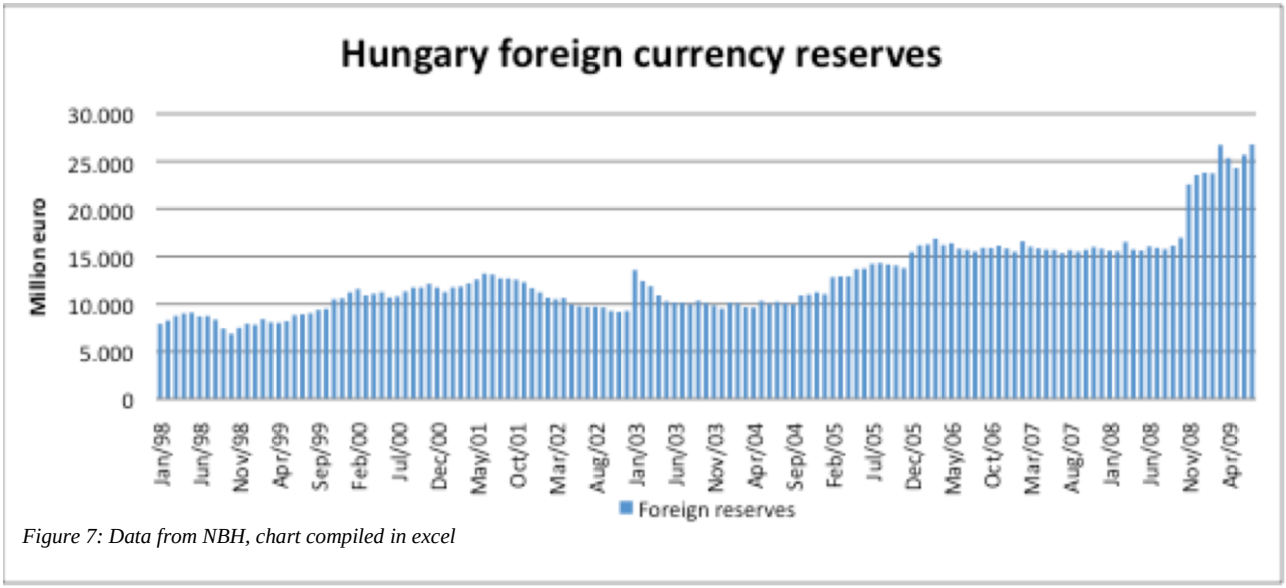


Figure 7: Data from NBH, chart compiled in excel

Constantly rising reserves seems to be the general picture; hence the government has the possibility, if needed, to use these reserves against possible attacks on the domestic currency. More on this matter to be found in chapter 6, *theoretical application to Hungary*, relative to first generation of currency crisis models.

Relative to Hungarian policies, the *lead up to crisis* section will continue with an economy overview to make it clear how the country has evolved and what key tendencies have been seen during the last decade.

4.1.2 Real economy

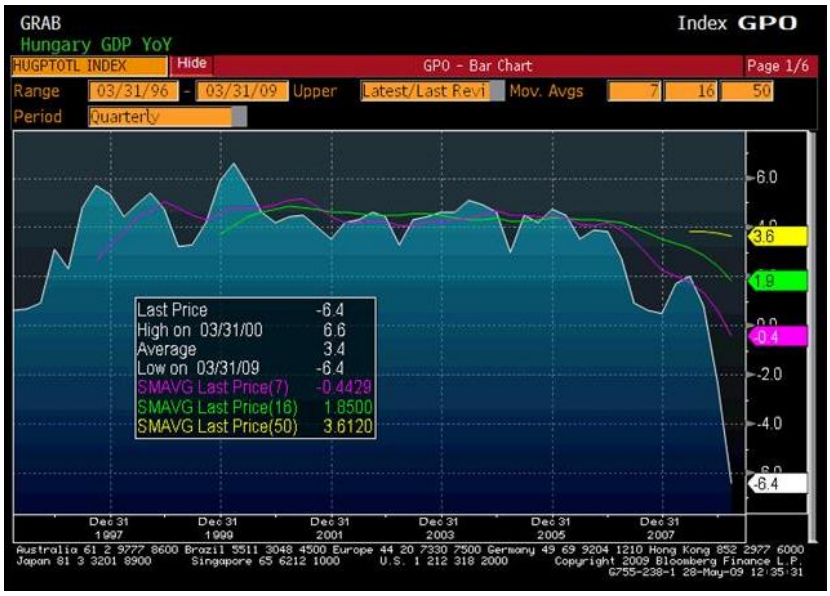


Figure 8: Bloomberg chart

This section will take into consideration the real economy figures to prove the fact of the country's emerging market status. In terms of GDP Hungary has shown a good decade with positive yoy percentage developments in general. However from end 2006 GDP numbers started a downward trend, still being positive, but significantly less than what was the case in the preceding years. As end 2008 figures showed negative percentages for the first time in the decade with -2.5% yoy, see *figure 8* in the above, Q1 2009 didn't seem to help the bad tendency with no less than -6.7% yoy (to be explained).

Combining the GDP situation with the level of foreign belief in the country one can have a look at foreign direct investments. Generally, as with the GDP figures, the decade as a whole was very positive, with significantly increasing FDI figures, this being both inward and outward flows. Similar to the case of GDP the last figure for inward flows, fourth quarter 2008, was less than the previous quarter, whereas FDI outward flows still rose, however significantly less than prior quarters, see *figure 9*. Whether this is a tendency that will continue cannot be confirmed as it is only based on one quarterly change. A really interesting consideration when looking at the FDI figures is the massive percentage increase that is seen throughout the decade. With an average yoy percentage increase of impressive 19%[5] for inward flow figures and more than 56% outward, Hungary truly shows the emerging market tendencies that has made the country such an interesting investment area for a considerable time.

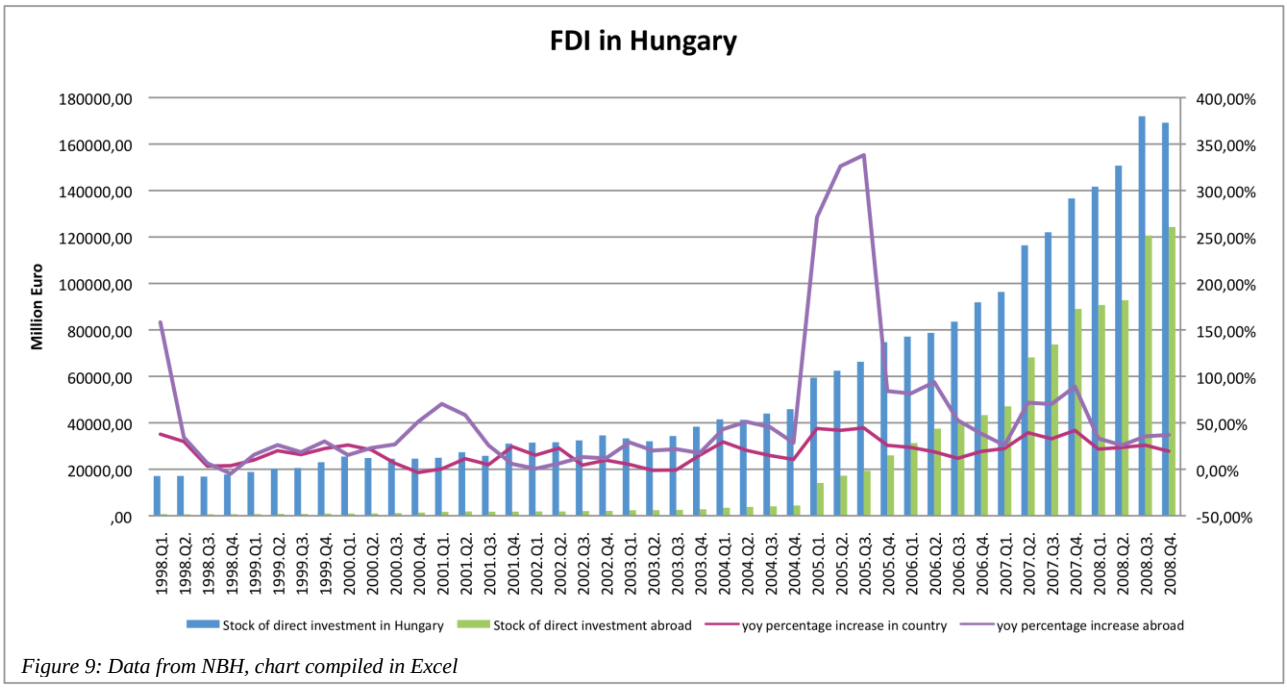


Figure 9: Data from NBH, chart compiled in Excel

Although fourth quarter inward flow figures in 2008 fell compared to third quarter in the same year, fourth quarter still shows a significantly high yoy percentage increase in late 2008 for both FDI figures. Therefore the above cannot predict the tendency into 2009. Yet, it cannot disconfirm a continuous disbelief in the country as was seen from summer 2008.

On the back of the FDI figures indicating earnings on *direct investment*, it is similarly found truly relevant to observe the capital flows (*figure 10*) of *portfolio investments* characterized as earnings

[5] Own calculation based on NBH FDI figures.

from financial instruments. This will put into context the possibility of dropping demand for capital market investments. Furthermore included is the figure *other investments* that are particularly payments on foreign debt. Figures from before 2005 are not included as no significant development.

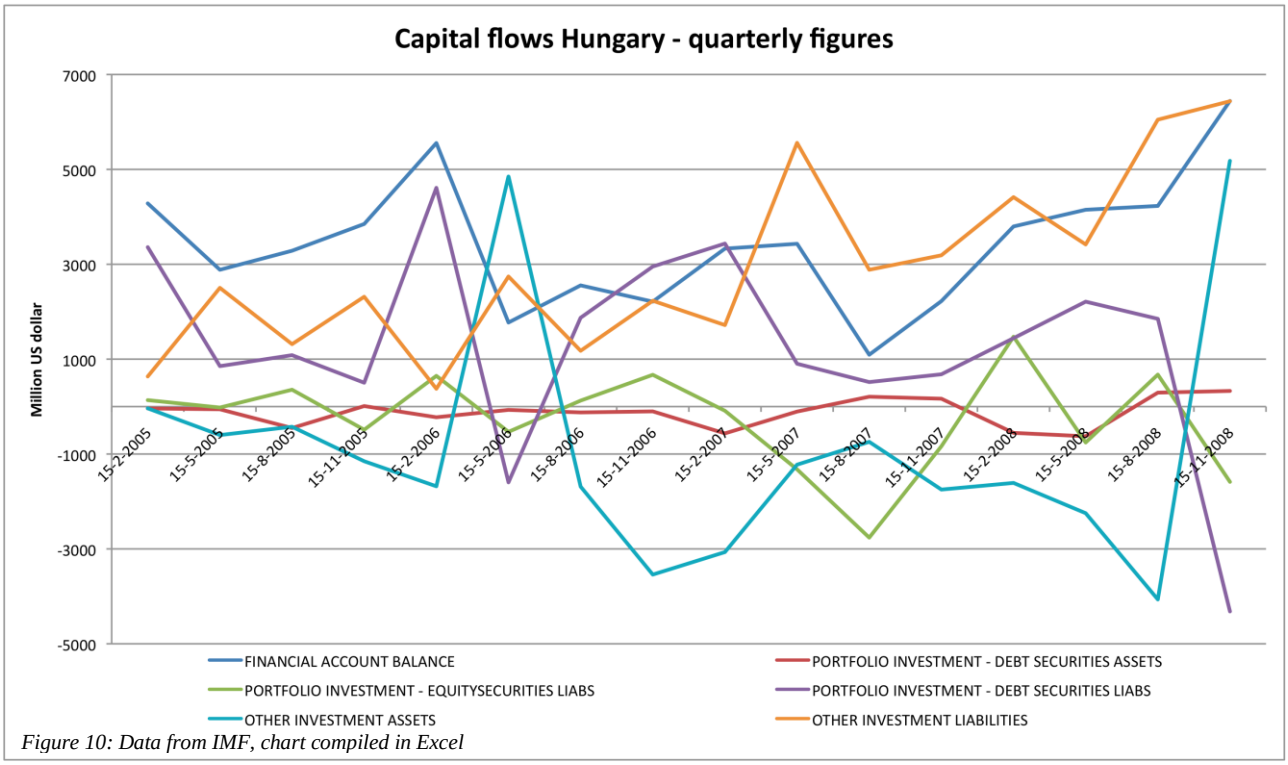


Figure 10: Data from IMF, chart compiled in Excel

Another interesting observation about the capital flows is how *debt and equity securities* liabilities drop towards the intensifying phase of the crisis in end 2008, whereas *other investments assets and liabilities* shoot up quite rapidly along with the rising total *financial account balance*. *Debt securities assets* remain quite neutral at a level around zero. The point is that a general picture of money leaving the stock and bond markets and going into the category of other investments is very particular. In the case of Hungary this will be said to be predominantly payments of foreign denominated loans. The outline of the excessive loan taking will be further analyzed in the *consumer spending and over-indebtedness* section and dropping prices in assets will de mentioned in the *asset price evolvement* section at the end of *lead up to crisis.*

On top of capital flows evolvement it is of interest to observe numbers concerning export to Euroland due to Hungary's significant dependence on this area in particular. As seen in *figure 11* Hungary's export has likewise experienced the same dropping demand – the import/export relationship pictured below has been extracted from the current account see.

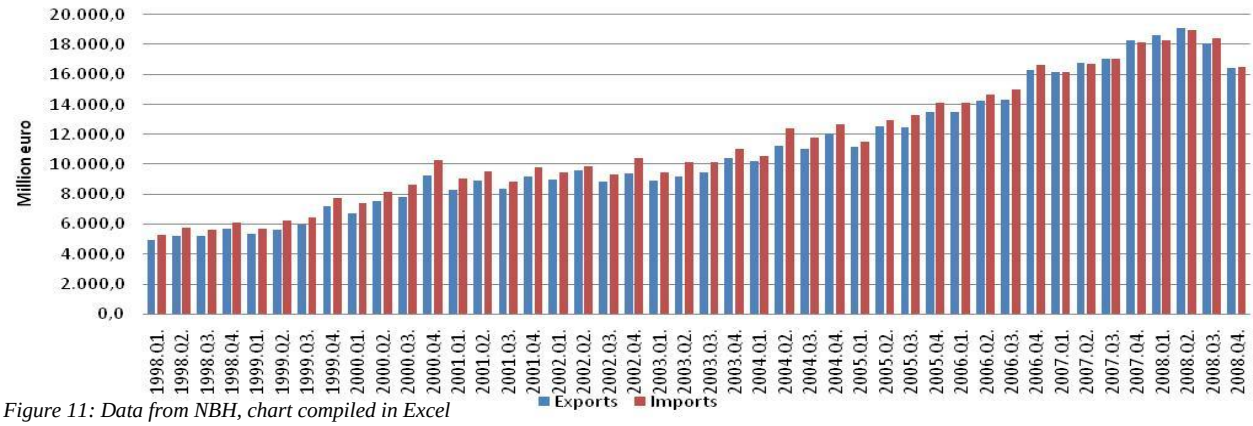


Figure 11: Data from NBH, chart compiled in Excel

The real economy figures leaves a picture of a country that has grown steadily during the last ten years. Steady GDP growth, significant rising FDI figures and increasing import/export relationship. All of these were positive trends and lasted up until mid 2008 where especially the capital flows show a shift of money from assets into loans. A deeper analysis of these negative tendencies is presented in the *intensive crisis period* section on Hungary. Moving on, the next section will try to give an idea to what extent this economic upswing has been financed by debt.

4.1.3 Consumer spending and over-indebtedness

In regards to loan taking in Hungary there has been a very clear tendency; total amount of loans has gone up and this primarily in foreign currency, euro and particularly in CHF.

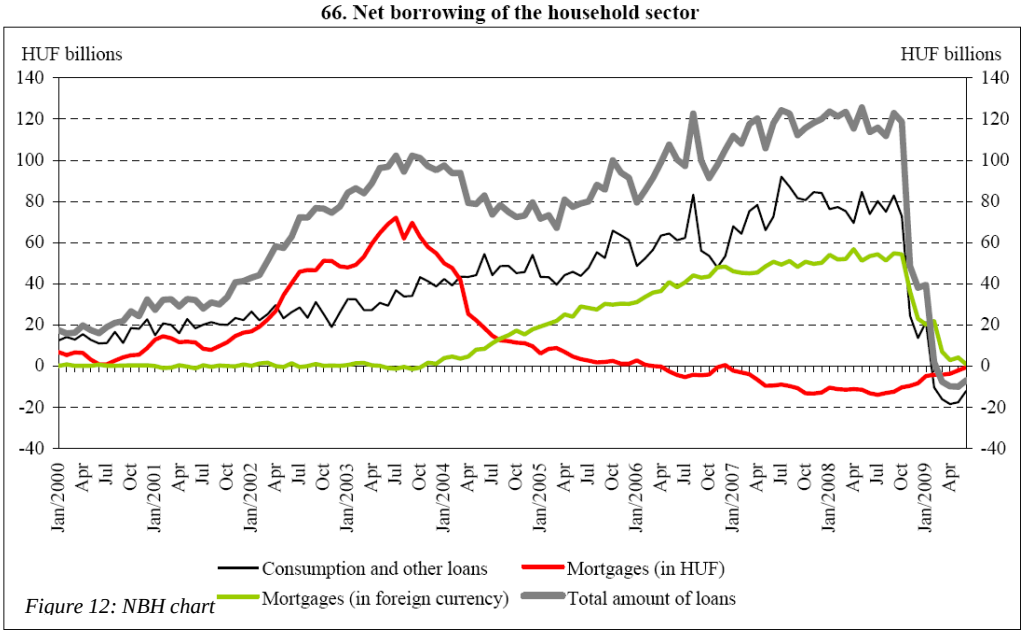
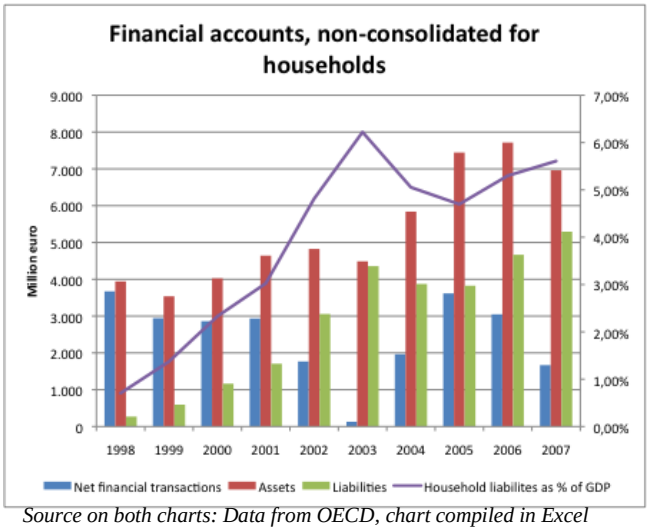


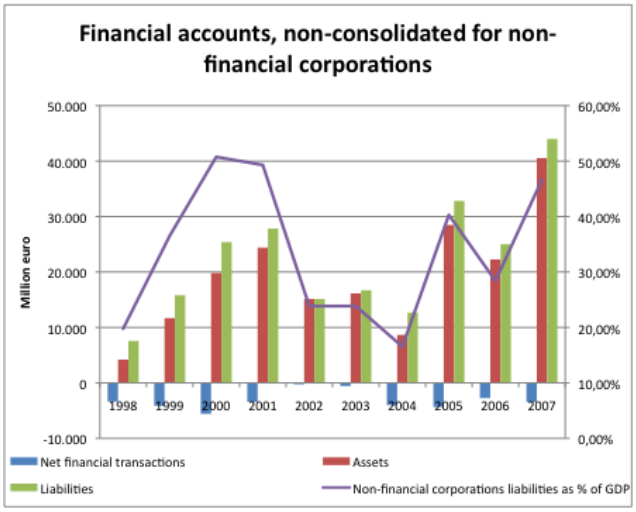
Figure 12: NBH chart

In *figure 12* one can clearly see the increasing consumption and loan taking that has been going on in Hungary. With the total amount of loans going from less than 20 billion HUF in start 2000 to more than 120 billion HUF in end 2008, this truly proves a significant increase in loans, hence the over-indebtedness that has developed in Hungary throughout the last decade. More interesting is the crossover between mortgages in HUF and mortgages in foreign currencies in mid 2004. This crossover is not just a matter of Hungarian household buyers taken loans in a currency other than their own. It is a sign of an acceptance from the rest of Europe, an acceptance of the fact that Hungary wanted to take part in the economic boom, which saw no signs of hindrance from the rest of Europe.



Source on both charts: Data from OECD, chart compiled in Excel

Figure 13 (above) & figure 14 (below)



With the above in mind it is of great interest to examine the financial account of Hungary as this gives an idea of the financial transactions and the assets opposite liabilities relationship, and also to compare the level of liabilities to the one of GDP. As the two charts in figure 13 and figure 14 do not go further than 2007 (data not available at the time of research), main focus is to get an idea of past levels of liabilities in comparison to GDP levels. As for both non-financial corporations and for households this is a fact. In the case of the corporations, not only was the liabilities percentage of GDP close to 50% in 2007, the net financial transactions has been constantly negative throughout the last decade. This is contrary to the households where the assets numbers has been higher than liabilities numbers. Although the liabilities to GDP as percentage have gone higher since 1998 this has been with an increasing asset base as well. This concludes that the truly interesting type of debt in the context of this thesis is the household loans in HUF in opposition to the ones in CHF.

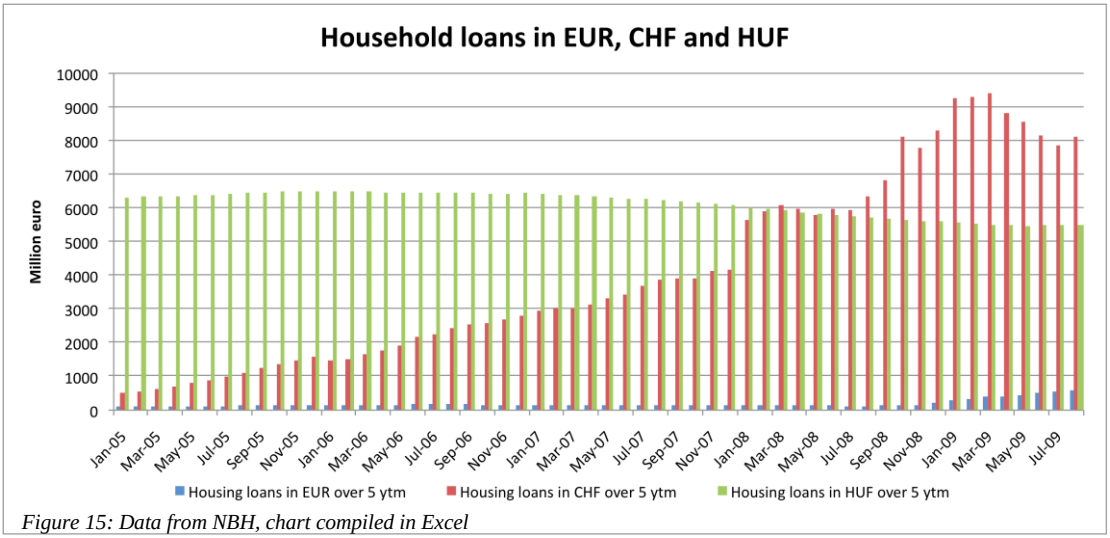


Figure 15: Data from NBH, chart compiled in Excel

Keeping in mind that the capital flow switch in money from *securities* to *other investments*, *figure 15* shows how HUF loan taking has gone down while CHF loans have increased throughout the past 4 years, hence the increase in other investments relative to capital flows. Also this is to be combined with an increasing total amount of loans. At the peak of the Hungarian crisis in early spring 2009, loans in Swiss francs reached an all time high of more than 9 billion euro.

Another tendency that has been consistent throughout the last decade and that strives a bit against the positive tendency of the FDI figures is the deficit on the current account. Hence, less income than expenses has been a fact on posts such as import, export, goods and services on an overall basis, see *figure 16* below. What one needs to consider when interpreting balance of payment is that a surplus on a part of the balance of payment isn't necessarily good, nor is a deficit necessarily bad. The overall state of the economy is what matters and how a potential deficit on the overall balance could be financed – these are the real important issues.

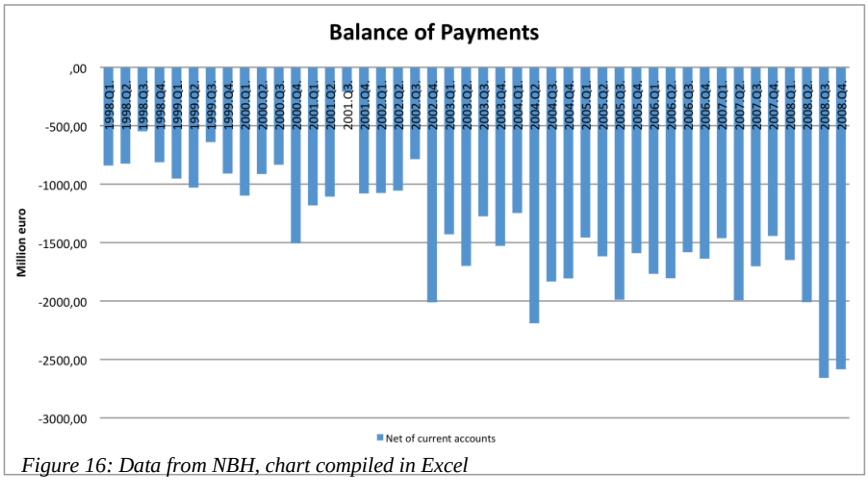


Figure 16: Data from NBH, chart compiled in Excel

The current account deficit must therefore be made up by a surplus on capital and financial account totals. A deficit on the capital account combined with a (compared to current and capital) significant surplus on the financial account has resulted in a surplus on the total balance of payments throughout most of 2008. In fourth quarter 2008 the country saw the biggest surplus in the decade with approximately 6.6bn Euros on the overall balance of payment, see *appendix 1*. Usually a country would use this surplus to invest, however Hungary's overall balance has been unstable, going from deficit to surplus from quarter to quarter and one could imagine that most of the surplus would be used to potentially take another deficit hit in the following quarter.

As for the general budget deficit as percentage of GDP this has been a negative throughout the past ten years, as one is likely to expect on the back of likewise constant current account deficits.

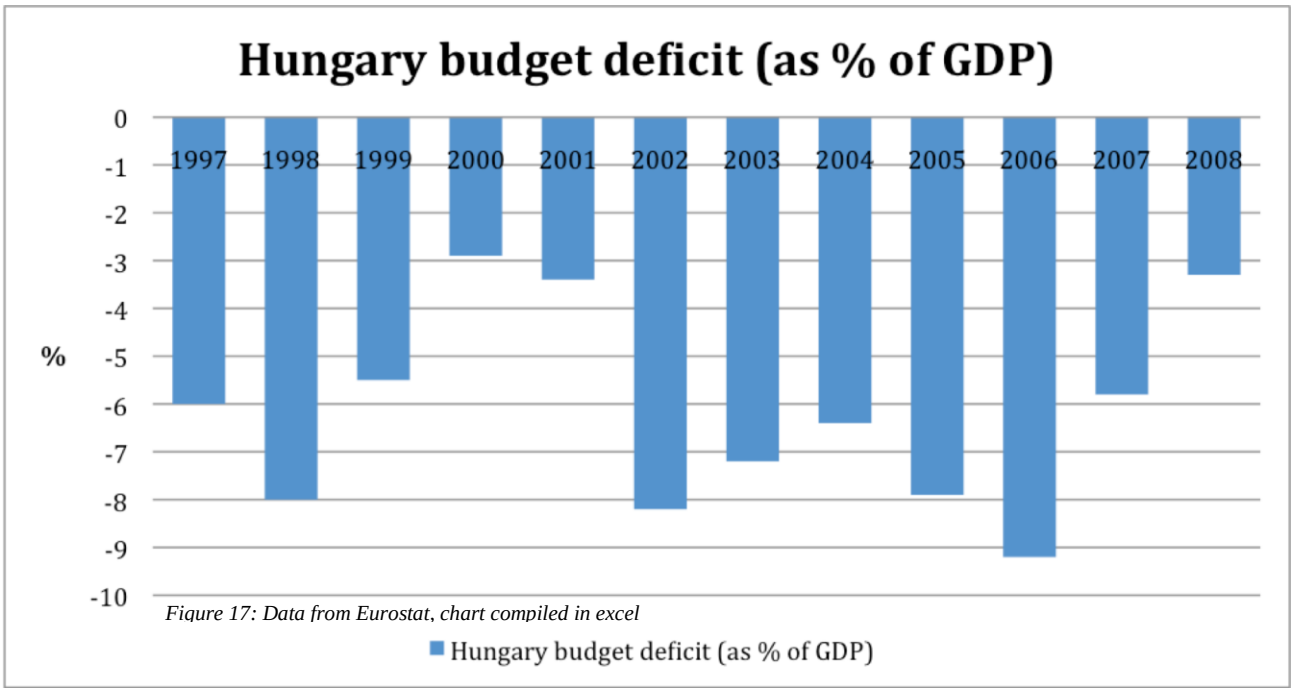


Figure 17: Data from Eurostat, chart compiled in excel

From this section it is clear that the Hungarian economic upswing pointed out in section *4.1.2 real economy* has to a large extend brought higher debt levels to the country. Even more important is the fact that due to rather awful lending conditions, as indicated in the *exchange rate regime* section, loans made in the local currency HUF were dropping while there was a significant increase in loans made in particularly Swiss francs. Deficits in current account and budget numbers have been a fact during the entire decade and on the back of this the total balance of payment has been constantly unstable. Moving forward, the next section will bring in the element of asset price evolvement, to put the excessive loan-taking and fiscal deficit into a wider context.

4.1.4 Asset price evolvement

To examine the effects that the foreign loans could have on the Hungarian economy, this section will put the above indebtedness facts together with the price level for the asset classes of stocks and house prices while Hungarian government bond yields and CDS spreads will be emphasized in the *intensive crisis period* as well as *Hungary in a regional context* sections.

Looking firstly at the house prices this is very interesting as we just learned that the Hungarian household buyers have taken still increasing amount of loans in Swiss francs. Combined with a still weaker HUF these loans will be significantly harder to pay back. If the house prices have declined alongside rising loan taking this leads to even higher burden as hereby an increased risk of loan defaults, so-called non-performing loans (NPLs).

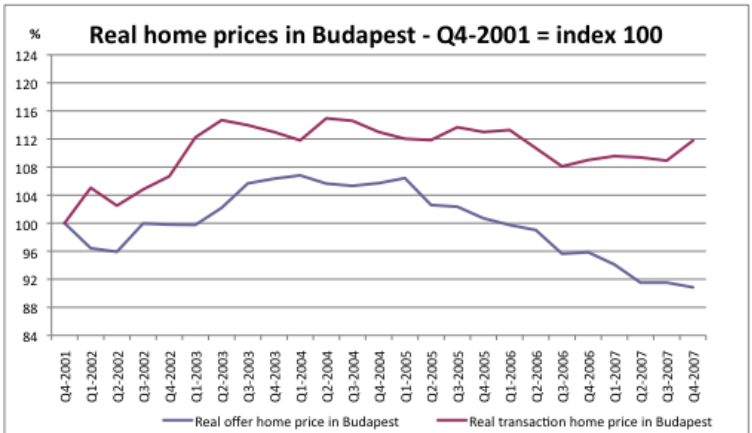


Figure 18: Data from NBH, chart compiled in Excel

Figure 18 highlights the development in house prices in Hungary's capital Budapest with the fourth quarter of 2001 indexing 100. Two things are very noticeable for this chart. The first one is the fact that over a period of more than 7 years, the real transaction home price has only gone up by approximately 12% - this is one of the lowest increases in the whole of EU (NBH 2009a). The second noticeable thing is that the gap between the offer and the actual transaction price of the homes has become only wider. In end 2007 an average Budapest home was sold for approximately 22% more than it was offered at.

However the two above facts only paints the picture up until the year of 2007 as the chart shows, while the real problems in the Hungarian housing market has been in the past year. In comparison and according to Colliers International Budapest home prices fell by around 10% - 30% in the first quarter of 2009 (Global Property Guide 2009). Since September 2008 the combination of enormous external debt, a significant budget deficit and a mortgage market infiltrated by foreign currency loans in particularly Swiss francs have made the Hungarian investors dump forint assets (Global Property Guide 2009). As *figure 18* indicated houses have been bought at too high levels throughout the last decade, the Hungarian forint has become weaker, the housing market has in the last year

plummeted and left the house owners of Hungary with CHF loans that have indebted them more than they ever imagined.

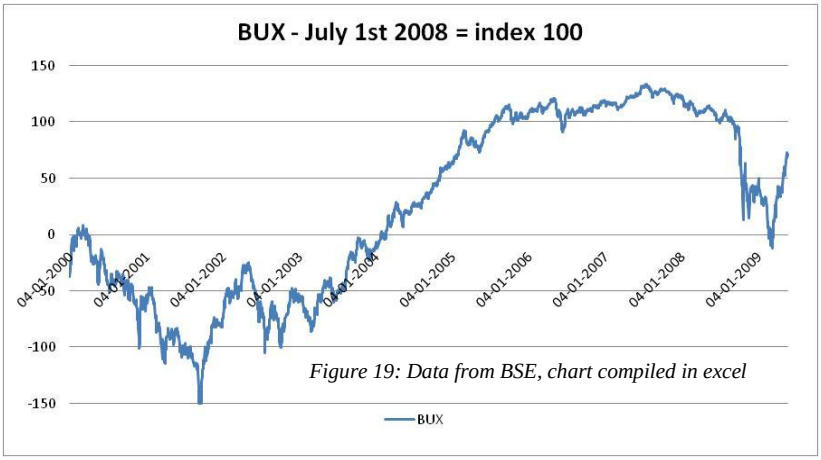


Figure 19: Data from BSE, chart compiled in excel

Dumping of forint assets is very clearly expressed and confirmed in *figure 19* of the Hungarian blue chip index, BUX6. This index saw a general positive trend throughout most of the decade, particularly from EU membership participation in 2004. The rapid shift took place from approximately July 2008 alongside house prices as mentioned in the above.

To summarize, generally the past decade has been a growth period with falling inflation, declining interest rates, strong HUF, positive yoy GDP growth rates, rising household borrowing and significant rising FDI figures. The decade leaves the picture of a true emerging market country, however the tendency seems to be changing towards the negative in later years. 2008 saw rising interest rates, falling GDP yoy figures, weaker HUF, falling house prices, generally more over-indebtedness and a drop in FDI real numbers. However these indications cannot be used to form a constant picture of the future of Hungary. The high FDI figures and surplus on balance of payments is still a sign of belief in the country and strives a bit against the rest of the figures. This section has presented the pre-crisis Hungary that was riding a wave of positive tendencies up until mid 2008. To be able to form a more realistic picture of the recent situation as well as the future of Hungary, an in-depth 12-month intensive analysis of Hungary has been conducted and will unfold in the subsequently section.

[6] Definition (http://www.bloomberg.com/apps/quote?ticker=BUX%3AIND): The Budapest Stock Exchange Index is a capitalization-weighted index adjusted for free float. The index tracks the daily price only performance of large, actively traded shares on the Budapest Stock Exchange. The shares account for 58% of the domestic equity market capitalization. The index has a base value of 1000 points as of January 2, 1991.

4.2 INTENSIVE CRISIS PERIOD

The following is an in-depth analysis on Hungary relative to the current crisis. The study is a follow up on the *lead up to crisis* analysis that has just been presented, it presents a thorough approach and the investigation leads to a subsequent chapter that analyses Hungary in a regional context. Furthermore, the following is focused on an essential time in Hungary during the financial crisis – this being the second half of 2008 as well as the first half of 2009. This was a period of many consequential economic and monetary events in Hungary. The analysis is considered in four key phases of the Hungarian crisis consisting of *1) "a turning point*" emphasizing an overall economic downturn in Hungary starting in July 2008; *2) "the support phase*" analyzing the domestic monetary support as well as external liquidity support needed in the worst months of late 2008, this represented by the IMF $25bn rescue package. Likewise the October 300bp rate hike will be emphasized. *3) "the post support phase"* analyzes the start of 2009 and the initial worsening figures before focusing on; *4) "continuous Hungarian recession"* highlighting an up-swing period from March 2009 while still focusing on the country's weak fundamentals and an expected continued recession due to fiscal tightening and tighter credit conditions depressing domestic demand.

4.2.1 A turning point

Around mid 2008 Hungary experienced a significant turning point in the overall economic sphere. The following puts emphasis on dramatic and sudden changes in e.g. the Hungarian forint, growth and inflation numbers and outlook, while also considering abrupt changes in global commodity prices. The reader of this material will realize the speed and long-lasting impact of the sudden July 2008 turn in the Hungarian economy.

4.2.1.1 Strong HUF in H1 keeps interest rate interference on hold

From around February 2008 the EURHUF declined consistently and continued until July, hence the HUF strengthened relative to the euro as shown in *figure 20*. A May 2008 inflation report (NBH 2008a) from the NBH showed that the National Bank at that time expected steady disinflation on the back of a rather low EURHUF of 253.8 and a base rate of 8.25% (both numbers from the month of April). Previous to July the EURHUF only went lower and other than a small rate change from 8.25% to the 8.5% in May, the rate was kept at the same level throughout the third quarter of 2008. The expectation of disinflation was likely to be the reason for not changing interest rates during the summer of 2008.

Figure 20. SaxoTrader EURHUF chart

Also in the beginning of the third quarter of 2008 it was discussed heavily whether the NBH would hike the interest rate 25bp or keep at as it was at 8.5%. At the monetary policy meeting on June 23rd, the rate was kept at the existing level and interest rates were still untouched since May 27th 2008 (NBH 2009b). The reason for not hiking interest at the time is assumed to be the prior significant HUF appreciation as depicted in a continuous declining EURHUF until July 2008, see *figure 20*.

4.2.1.2 From good times to bad outlooks

Again, the HUF appreciated significantly up until the month of July. Improved external and fiscal balances alongside the abandonment of the HUF fluctuation band in the spring of '08 sent the Hungarian Forint on a rally stream. As a strong currency is needed to beat high inflation this seemed like a positive tendency, with further rate hikes based on a strong HUF being the only risk at the time, as this would have had an impact on growth looking forward. Looking exclusively at the month of July and prior, things in Hungary were looking great. Despite rising energy, metal and food prices in recent years (*see figure 21*), in conjunction with the US subprime crisis starting in 2007, the Hungarian Forint was looking better than ever. Unemployment figures were lower than ever and inflation had managed to work its way down to respecta-

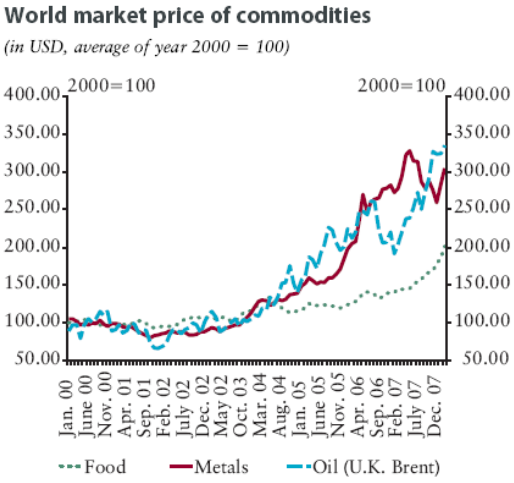


Figure 21: Chart from Goldman Sachs

ble levels, still being higher than the target[7] though. Furthermore the country had brought down its debts, reducing the deficit on the balance of payments and Hungary was generally riding a wave that nobody would have thought possible just a few years back.[8] What happened in the third quarter of 2008, however, was far from the predictions of world analysts and the month of July was the end to all positive tendencies.

In fact, August and September were complete contrasts' to the month of July. Oil prices started to decline after reaching an all time high of 146 dollars a barrel in July '08 and inflation numbers started falling as well. Unfortunately to Hungary the EURHUF suddenly exploded to the upside while the country's unemployment went up and GDP figures deteriorated significantly. As will be explained throughout the analysis, the main reason for the sudden change at the time was a general disbelief in the Hungarian forint alongside an extensive dropping demand in Europe.

4.2.1.3 Inflation forces at play

Main causes of past high inflation numbers as well as high interest rates were significant moves in global energy prices, regulated prices and high wage inflation. Effectively, energy prices were rising for a long period of time, primarily driven by the higher price of oil as displayed in *figure 22*.

Figure 22: SaxoTrader chart

Relative to wage increases, firstly, wage growth in both private and public sectors was stronger than expected in the first months of 2008. Secondly, there was a stronger than expected increase in the minimum wage for skilled workers. The minimum wage level had been increasing for the last three years, probably due to the fact that the country of Hungary had seen this growth and increase in income alongside with the global financial upswing - the wage level was effectively following the overall evolvement. However this last increase in minimum wages was significantly larger than expected and this caused a negative cost shock, which effectively forced the corporate sector to adjust to even higher pressure on costs, this being on a very cost troubled sector in the first place. Conse-

[7] NBH's inflation target of 3%
[8] See *lead up to crisis* for a flashback of Hungary's economy

quently and worryingly for the longer-term inflation outlook back then was the fact that wage growth had remained stubbornly high at around 9% in nominal terms (July 2008).

This all comes to the fact that inflation around 6-7% in the fall of 2008 was still too high compared to the target of 3%. Looking at the chart below in *figure 23* one can see that from early 2007 and throughout 2008 there was a decreasing tendency in the Hungarian inflation, getting closer to the overall European inflation. However there was still a gap, the Hungarian inflation continuously being higher than the European.

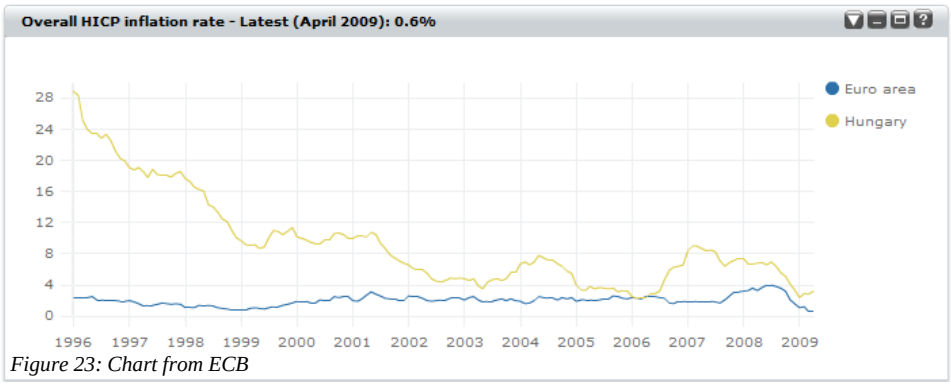


Figure 23: Chart from ECB

4.2.1.4 Introduction to Hungary's CDS market

According to the Hungarian National bank the five-year maturity CDS contracts are the most liquid and these figures will therefore be used throughout the thesis to compare the Hungarian CDS market to the rest of the world, as well as to help put Hungary's situation into a wider context. The Hungarian CDS market is dominated by global investment banks, hedge funds and other non-resident fund managers and in 2007 the total market amounted to around USD 10-20 billion (NBH 2009c) and is therefore of great significance and important to include into the subsequent analysis. In the late summer months of 2008 the Hungarian CDS spreads did not change significantly compared to the dramatic turning point in the above-analyzed numbers relative to e.g. HUF, commodity prices, GDP figures, and others. Nevertheless, the Hungarian five-year CDS spread saw a moderate increase from around the 120bp level in July/August to 150-160bp in September 2008 (see Bloomberg *figure 24* of the Hungarian five-year CDS spread in the subsequent crisis phase *the support phase*).

4.2.1.5 Reflecting on the 2008 turning point

The above analysis clearly point out that a major turn in Hungarian economic key figures took place from mid 2008. Whereas the global financial crisis started to play out, particularly in the United States but also in Central Europe, with the crash of the mortgage market bubble in late 2007, the

month of July 2008 was the point where an actual crisis looked like a reality in Hungary. The moderate up-tick in the Hungarian CDS spread from July to end of September was an indication of a rising general expectation of a possible default of the country. The later summer months (August-September) mark Hungary's initial crisis phase with dropping investor confidence as illustrated in the CDS spread, but particularly demonstrated through noteworthy and sudden changes in HUF as well as unemployment and GDP figures. The sections to come further develop the conclusions of the mid 2008 turning point by analyzing key phases of the crisis with in-depth emphasis on fundamental economic imbalances of the country.

4.2.2 Support phase

The following analysis has been conducted to firstly give the reader an idea of the extent of the dramatic second wave of the Hungarian crisis that took place in October 2008. The Hungarian five-year CDS spread change is a great indication of a continuous and further disbelief relative to this. To put the enormous October CDS spread change into context, the development in e.g. growth and inflation numbers as well as the state of Hungary's FX loan exposure is analyzed. In effect, the section seeks to explain which factors led to the need of both domestic monetary support as well as external liquidity support in the worst months of H22008. Finally to this section, the external and domestic support to Hungary is explained.

4.2.2.1 CDS spreads Hungary

Of major importance to the fourth quarter of 2008 was the 5-year CDS spread in Hungary that rose to above 500bp at the end of October, from around 170bp at the beginning of October, *figure 24*. Hence, the CDS market is pricing a fairly large probability of default. The fourth quarter mid CDS spread in Hungary (in the region of 400bp) on the 5-year Hungary protection equals a default probability of around 24% during the next five years. This is an indication of an enormous disbelief in the country.

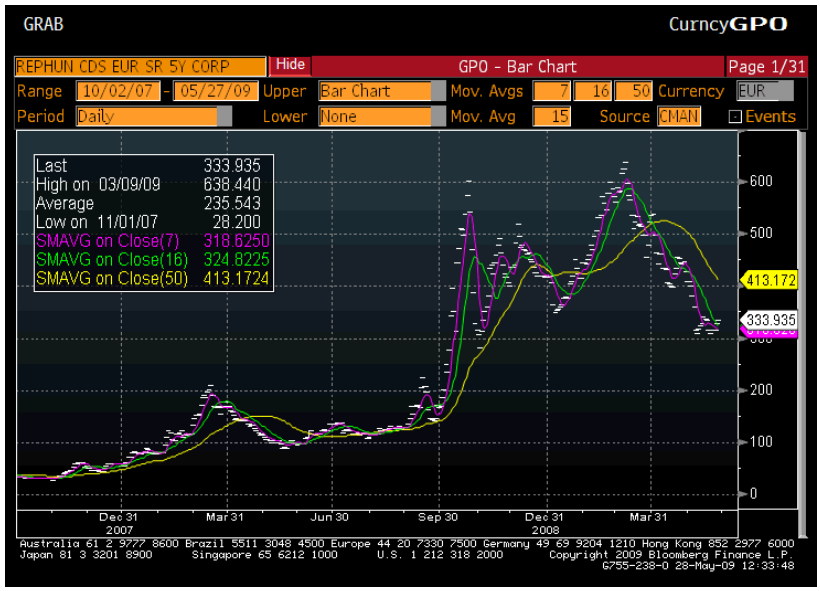


Figure 24: Bloomberg chart

It is our view that rating agencies may have exacerbated an already bad situation, particularly when Fitch Ratings and others instigated to downgrade Hungary (FX Street 2008). Also at that time it can be argued that the CDS spreads massively overestimated the probability of default. Nevertheless, the disapproving fleet to the upside was a reality in October and a smaller correction to the downside was seen from November to the end of December with CDS spreads still ranging far above the ground in a band between roughly 390bp and 470bp. Whether or not the distrust in Hungary at the time was aggravated is hard to finally judge, even so it is tremendously interesting to evaluate explanations behind the further worsened situation. This is what the following sections set sight on.

4.2.2.2 Capital outflow, growth and inflation

It is difficult to find data on what exactly was driving the large capital outflows in the second half of 2008. Factors related to currencies that are likely to have played a key role are long position liquidation and hedging by foreign investors (likely as part of the global de-leveraging process) and some speculative short positioning by investors. Naturally, this was all happening in a context of extreme risk aversion and cash hoarding that started in the summer of 2008. At this point there was no strong evidence of parent companies cutting off funds from their subsidiaries. This is important for the banking sector in Hungary – and CE3 countries in general – where Euroland based banks are dominant (see *Hungary in a regional context*).

In the beginning of October, Governor Simor (NBH) emphasized that wage inflation (at roughly 8.5%) was still above what the NBH saw as compatible with its wage inflation target in the region of 6%.[9] The high wage inflation combined with GDP figures that basically plummeted from the beginning of and throughout the fourth quarter in 2008 (see *figure 8* in *lead up to crisis*) was noticed by investors and certainty did not put a positive perspective on the growth outlook for 2009. What's more to consider was the Euroland driven weakness that added to the pessimism about the growth outlook in Hungary. This was a leading factor relative to the previously described increase in the risk premium on Hungarian assets, i.e. CDS spreads. On the positive side though, the disinflationary impact of the credit crunch and lower oil and food prices (exemplified by the sharp decline in inflation in September) had a counter-balancing effect to the weakening Hungarian Forint.

[9] NBH Minutes in October

4.2.2.3 FX loan exposure of households

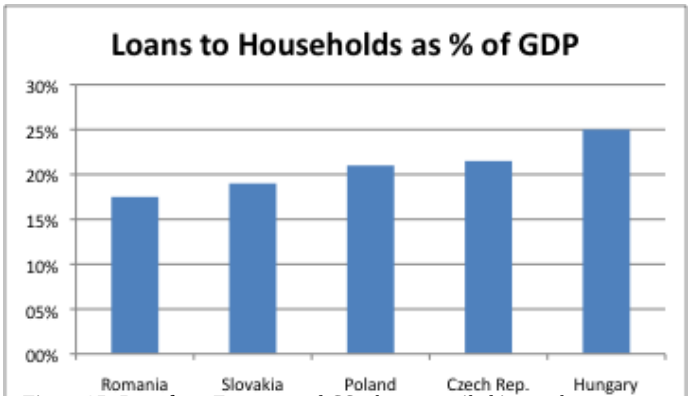


Figure 25: Data from Eurostat and GS, chart compiled in excel

The FX loan exposure of households in Hungary was a constant worry of the market. In the beginning of October it amounted to about 25% of GDP as seen in *figure 25*. Considering the FX loan exposure alongside the economic situation in Hungary at the time, one can reflect over what it would have taken to ignite a systemic concern regarding households? It is believed, that due to a slightly improved account balance in Q4 and considering the fact that Hungary was still experiencing relatively large FDI inflows (See *Figure 9*), only a significantly large (several tens of percent) exchange rate move at that point of time would have seriously endangered the households. Nevertheless, markets are and were extremely volatile and large temporary spikes in the currency are always a possibility.

Furthermore, benchmarking against other main Central European countries, the highest loan-to-deposit ratio in October was in Hungary with about 125% overall, and in the household sector it was 100%. Other countries in the region had overall loan-to-deposit ratios below 100% (See *Figure 34*), except for Poland and Romania.

In addition to the above considerations the market was, as mentioned, relaying concern about the FX exposure of both the households and the sovereign in Hungary. The perception was that further weakening of the currency would increase the debt burden, and result in private-sector bankruptcies and weaker growth, therefore adding further to the case of a weaker HUF. The view by the market in these types of situations seems to be that the mentioned factors are also likely to weaken the sovereign through weaker tax revenues and potential debt takeovers in a self-reinforcing cycle. Whether or not the FX exposure of households and the government was large enough to be a major risk in itself was hard to predict at that time. But as always there was a risk that the market's fixation on the issue could make it potentially dangerous.

In Hungary end October 2008, the government had EUR33bn in external liabilities, of which nearly EUR12bn was in the form of HUF-denominated bonds held by foreigners and about EUR21bn in FX debt. At this point in time, the FX reserves of the central bank amounted to nearly EUR17bn. Hence, the general government's net FX position was close to zero. As mentioned, Hungary's households held around EUR20bn in FX-linked loans, which amounted to about 20% of GDP (and about EUR5bn as FX deposits). Furthermore, as much as 165% of medium/long-term (MLT) pri-

vate foreign debt was rolled over and refinanced during the fourth quarter of 2008. Naturally, these figures may have put several households under pressure, but again in our view, at the time it would have required a significant further weakening of the HUF for this to be a major problem for the household sector as a whole.

Relative to the above and all the factors in play at that time, naturally a further large HUF move could never be ruled out but, given that Hungary is a small open economy, this would also have boosted the competiveness of the country, and thus eventually incomes (assuming that the central bank was able to control inflation). Also, in the final months of 2008 the government agreed with the banks that they would introduce measures to lengthening the maturity of FX loans if the currency was to move further. The corporate sector's net FX positions were a negative EUR10bn, of which some was probably hedged. Hence, the above tells us that many scenarios could play out at this stage.

4.2.2.4 Stabilization package

Hungary began its negotiations with The International Monetary Fund (IMF) on stabilization packages end October 2008, after experiencing large private capital outflows that put further pressure on the HUF (see EURHUF in close proximity to the 280-level in *figure 20*) and the financial system. The aim of the discussions between the IMF technical teams and Hungary was to identify the size and source of the financing gap, and then the necessary macroeconomic adjustments and financial package needed to make it credible and encourage a return of private-sector flows to help the adjustment process and to close the gap. Macroeconomic targets', including primary fiscal balance, was furthermore at the heart of the program. It is likely that the extent of the threatening market conditions at the time meant that private-sector inflows were much unlikely to resume quickly even with a reliable IMF program in place, hence a clear signal of the need for painful adjustments to growth and exchange rate in order to curb Hungary's demand for imports.

On October 28th 2008 the IMF released the news that Hungary was giving aid in the form of a $25bn rescue package as a result of collaboration between the IMF, the ECB and the World Bank. With $15.7bn coming from the IMF, $8.1bn from the EU and $1.3bn from the World Bank the total of $25bn was no less than ten times more than the Hungary IMF quota and was approved under the fund's fast-track Emergency Financing Mechanism procedures, making the funds instantly available for the country of Hungary (IMF 2008b). The 17-month stand-by arrangement had two main objectives, 1) to implement a substantial fiscal adjustment to ensure that the government's debt-financing needs would decline and 2) to maintain adequate liquidity and strong levels of capital in

the banking system (IMF 2008b). The IMF further stated that this amount would provide Hungary with the amount of reserves that would be needed to meet its external obligations, even in extreme market circumstances. With the support the IMF expected a reduction in the fiscal deficit, primarily caused by Hungary's large public debt, this complemented by a general rule-based fiscal framework for the longer run outlook. Furthermore a clear reduction in bonus of public employees was part of the agreement, primarily hitting pension payments.

The second part of the deal included the bank capital enhancement and was predominantly a case of ensuring a sufficient strength in the banking sector to weather the general economic downturn. To sum up, Hungary's *main objectives* under the deal is a follows (Forbes 2008): 1) Reduce the government's financing needs and improve long-term fiscal sustainability, 2) Maintain adequate capitalization of domestic banks and liquidity in domestic financial markets and 3) Underpin confidence and secure adequate external financing. As for the *quarterly performance criteria's* for 2009, these were; 1) go from $1.38bn deficit by end March on the government primary cash balance, to $0.27bn deficit by end June to a $1.26bn surplus by end September 2009, 2) no increase in external debt, 3) annual inflation rate with a tolerance of +/- 2pps of 4.8% by end March, 4.5%% by end June to 4.3% by end September 2009. In regards to the mitigation of the risk of foreign currency loans to households, the deal between the government and the commercial banks consists of three parts: 1) the extended duration of loans with fixed monthly installments at the request of the debtor, 2) the conversion of foreign currency loans into forint loans without extra charges, and 3) a temporary reduction of installments at the request of the debtor in case of repayment problems. These three bullets comes with a total funding of approximately $3bn to be divided evenly between eligible banks, to secure the refinancing and soundness of these institutions. The status on Hungary living up to the requirements will be summarized in the final chapter *where are we heading*.

4.2.2.5 Significant interest rate changes in Q4

The development in HUF from mid summer to October 2008 was a significantly weakening of the Hungarian currency on the back of the, at that time, rebounding USD and general weakening risk appetite. These factors were an important sign of hindrance of rate cuts in Hungary, despite lower ECB rate path[10]. Also, as Hungary was likely one of the most vulnerable countries in the region to any warning of risk appetite (see *Hungary in a regional context*), the NBH, in that environment, was likely to act in a cautious manner. Entering October Hungarian interest rates remained at 8.5%.

[10] ECB rate cuts Q4 2008: September (4.25), October (3.75), November (3.25), December (2.50)

Even so, growth slowed at high speed in October and with less growth in the EU (IMF 2008b) the effect was even lower growth in Hungary. Ultimately and due to continuous pressure on the HUF, the NBH extraordinarily increased the rate 300bp to sky high 11.5% in late October. (See *figure 6* of the Central Bank base rate history in *lead up to crisis*). The emergency hike to 11.5% from 8.5% sent the EURHUF down 6-8 big figures in no time and the forint quickly firmed to 272 against the Euro, after trading around 278-280 a few days prior (*figure 20).*

On the day of the rate hike (October 22nd 2008) several analysts argued the dramatic rate hike decision by the NBH was a measure to fend off further speculation against the forint. An analyst of Erste Bank argued that the weakening of the forint had likely exceeded the level that the NBH was willing to tolerate, and further added that the extraordinary hike was a surprising step, though based on the market volatility in the days prior the NBH was expected to consider whether it was more risky to act or not to act (Realdeal.hu 2008). Another spectator, CIB Bank analyst Mr. Jobbagy, further pointed to the fact that it was noteworthy that the NBH did not only raise the key-rate by 300bp, but had narrowed the interest-rate corridor between O/N central bank loan and deposit rates. Mr. Jobbagy emphasized that this would make it more expensive for foreign investors to initiate speculative positions against the forint (Realdeal.hu 2008). In essence this means that it was suddenly expensive to borrow HUF while favorable to deposit into HUF. Hence, foreign speculators with high disbelief in HUF and eager to buy e.g. EURHUF after seeing the instant fall of 6-8 large figures following the 300bp hike, they all of a sudden experienced unfavorable HUF borrowing rates for their positive EUR view.

The next move was a surprise 50bp rate cut on November 24 from 11.5%% to a flat 11% base rate. This was well received by the FX market with a notable decline in EURHUF (*figure 20*), and the effect was seen in declining yields on government bonds (see Bloomberg chart in *figure 26*), pointing to lower risk premium. At this point in time, if favorable market conditions persisted, the NBH would likely be inclined to front-load the monetary easing. A sharp drop was seen in inflation in November and December, and EURHUF stability was the reason for another 50bp rate cut on December 9 leaving the rate at 10.5%, and the final 2008 rate change on December 23 leaving the Q4 base rate at a flat 10% (NBH 2009b). Effectively, the prior 4 weeks had seen rate cuts adding up to 150bp – so the emergency 300bp rate hike in October was by the end 2008 already halved.

In our view, the rate decisions by the monetary council at the time were not always fully cipherable and therefore displaying a rather uncertain policy stance. The decisions appeared to sometimes be too bold, sometimes overly cautious. Nevertheless this fit well to the economic market situation as well as to the evaluation of the risk profile of the Hungarian economy during those months in late 2008. Furthermore, the November and December cuts indicate that the NBH at this point in time was considering more and more aggressive easing due to slightly improved growth and inflation forecasts. Naturally though the risks to HUF stability were not history and the government bond market had improved only gradually at this stage – notice the development in the Hungarian GHGB10YR index from September to December 2008 (figure 26).

Figure 26: Bloomberg chart

4.2.3 Post support phase

As the writers of this report identify an additional stage of the Hungarian crisis based on the recent support and economic development in the final months of 2008, emphasis in the following post support phase is the beginning of 2009 and the section attempts to challenge the economic support initiatives of late 2008 by measuring whether or not they have shown results. To start the phase-analysis we touch upon early 2009 dramatic development in CDS spreads followed by an emphasis on the new challenges facing the Hungarian forint. Henceforward, deflation and inflation is discussed in relation to the NBH and monetary policy, aim is to shed light on the state on these forces in the first months of the year. To measure the growth conditions and outlook a focus will be put on the indicators of CPI and GDP. Finally, the section pays attention to the Hungarian stock market as well as the housing market to highlight post support phase development or lack of the same.

4.2.3.1 CDS spreads boosted Hungarian outlook-worries

Besides falling yoy GDP and a stock market that was lower than even before, the CDS spreads widened more than ever in the first months of 2009. After a fourth quarter of 2008 with extremely vo-

latile CDS spreads, starting at around 150bp early October and skyrocketing to around 600bp and then down again to a 300bp level, the first months in 2009 did not seem to improve much on this front. Starting the year with CDS spreads around 350bp the spreads widened to a record 650bp towards the end of March. The spreads were a sign that supported the disbelief in the Hungarian markets as lots of the money went from east back to west while money inflows were dropping rapidly (See Bloomberg *figure 24* of 5-year CDS spread in Hungary in the *support phase* section). In conjunction with CDS spreads also yields on government bonds exploded during the same period (See Bloomberg *figure 26* of the Hungarian GHGB10year index). Ultimately, the renewed volatility in the Hungarian 5-year CDS spread as well as the swings in government bond yields indicated obvious distrust in the economic support initiatives of October 2008 – at least in the short-term.

4.2.3.2 New year, new challenges

Global financial markets continued to be highly turbulent and the HUF-selloff in connection to this sent the first months in 2009 off to a rough start. The Hungarian central bank initiated monetary easing and the policy rate was lowered further 50bp from 10% in December to 9.5% on January 20th (NBH 2009b). At that time it seemed like a sensible thing to let rate cuts decrease only gradually, preferring smaller incremental changes, while leaving open the possibility of lowering rates between regular monthly meetings if the financial markets allowed it. The forint had gained some strength towards the end of 2008, but since early 2009 renewed weakness was spotted in the currency (*figure 20* - EURHUF chart) and this may have been the reason for the Hungarian central bank's cautious moves going forward. Also, the NBH was concerned that the HUF-selloff could hurt the already unstable and fragile financial system of the country.

Due to the outlook of reduction in growth most central banks around the world lowered their interest rates to try to boost their economies. In Hungary the story was somewhat different as the NBH still tried to bring down interest rates to respectable levels, after the 300bp increase on the back of the HUF weakening in October 2008. Although it could seem natural for the central bank of Hungary to bring down the rate even further, the weakening of the HUF in the last months of 2008 most likely put pressure on the NBH and kept them from further cuts in the beginning of 2009.

The $25bn rescue package of late 2008 (IMF 2008b) created some stability but did not calm down investors as they, understandably, kept focusing on the obvious weak fundamentals of the Hungarian economy. Again, it is our belief that the worsening credit conditions as well as the roll-out of fiscal tightening measures have kept consumer demand as well as growth at constant lows throughout 2009.

4.2.3.3 Deflation and inflation forces at play

Early 2009 there were a mix of deflation and inflation forces at play. On the deflation side the markets saw falling commodity prices, which drew inflation lower from 2008 highs. Inflation fell to 3.0% in February, however the Hungarian economy was still slow. A deep domestic recession and lower commodity prices meant that inflation could in fact have undershot the 3% target, although further depreciation of the HUF worked against these disinflationary forces and increased the inflationary pressure during the same period. Since the peak of the Hungarian forint in July 2008 the HUF depreciated roughly 19% up until this point (*EURHUF figure 20*). The significant depreciation naturally had an effect on the inflation, so despite a desire to run an expansionary monetary policy from the NBH, interest rates in Hungary were not lowered further apart from the before mentioned 50bp cut in the first quarter as a result of the weakening HUF. As earlier pointed out, the 300bp hike in October was still making it more difficult to ease monetary policy as Hungary was simply trying to reach a somewhat respectable level in rates, and a total of 200bp had now been cut since the October hike, from 11.5% to the 9.5%.

In summary, regardless of falling inflation as well as weaker growth in the beginning of 2009, the NBH in other words didn't ease the monetary policy further as one could expect. Main reason being a weak HUF that potentially could lead to upside inflation risk if lower interest rates became a fact, but also the FX exposure for domestic corporations as well as households (see *consumer spending and over-indebtedness figure 12* and *figure 15*) posing a major concern. This was, in our view, the main reason for the lack of noteworthy monetary easing in the first months of 2009.

4.2.3.4 Consumer price index & GDP development

The importance of the consumer price index (CPI) is of great significance. Looking at Hungarian CPI numbers from the summer of 2008, the months from July to September were quite steady with numbers around 6-6.5% yoy changes. On the other hand, throughout fourth quarter numbers fell at a high pace and ended with yoy CPI figures of 3.5%. In the first two-three months of 2009 numbers were approximately 3%. The primary reason for the fall in CPI numbers was the dropping oil and food prices, as depicted in *figure 27*.

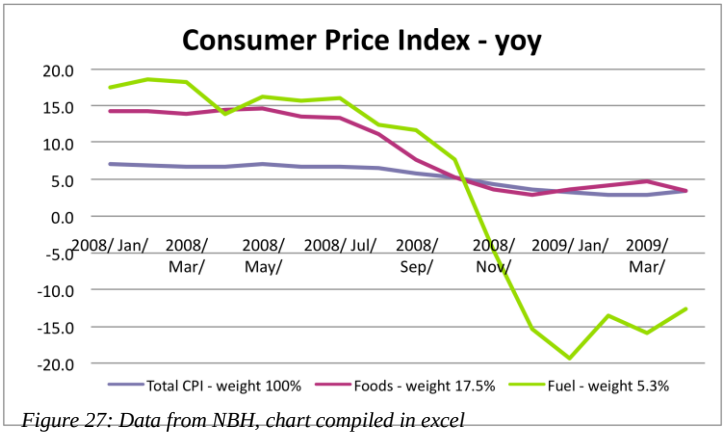


Figure 27: Data from NBH, chart compiled in excel

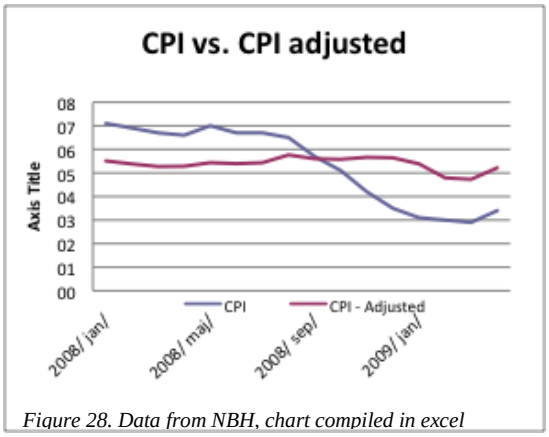


Figure 28. Data from NBH, chart compiled in excel

The consumer price index is constructed from prices of a basket of goods that include the following: market goods and services; alcohol and tobacco; and fuel and others. These are given a certain weight dependent on regular consumer spending on a yearly basis. From this basket food and energy prices are known to be the most varying and thereby influences the index considerably. Although fuel only carries the weight of 5.3% in the index, it is obvious that rapid changes, as seen from July to end of December 2008 with oil trading from $150 a barrel plummeting down to the forties, will have a significant effect on CPI numbers. A combination of plunging oil prices and falling food prices made the Hungarian index drop to a level of around 3.5% yoy. To give the reader an idea of just how much these two factors influence the index an adjusted CPI has been created in *figure 28*. Here the averages of food and oil prices in the same period were used, as an alternative to the changing numbers of the two. Hence, the adjusted CPI is considered a more realistic picture of total CPI as massive volatility and drop to the downside in oil price is not allowed such negative influence to the total adjusted CPI numbers. Furthermore, the adjusted CPI clearly shows that the influence of food and oil prices does have a very significant effect with index figures around 5% in comparison to the original CPI falling below 3% in early 2009. Naturally, when inflation falls CPI figures also drop, as they are basically two measures of the same thing.

As a further point to this part it is essential to emphasize the degree of negative growth in Hungary in early 2009. GDP numbers contracted by 6.4% yoy in the first quarter of 2009, compared with 0.8% yoy growth in third quarter of 2008, and a smaller contraction of 2.5% in the final quarter of 2008[11]. Generally the changes have been positive in the GDP yoy for more than a decade as seen in *figure 8* in *lead up to crisis*. The first months of 2009 were in other words a turning point in the Hungary's GDP history, towards the negative. Essentially, a combination of many of the prior mentioned weakening numbers in the quarterly analyses, e.g. falling exports, dropping productivity, the weak HUF, and other, have led to the noteworthy Hungarian GDP decline.

[11] Source: Bloomberg GDP data, see *lead up to crisis*

4.2.3.5 Stock market down to a new low in early 2009

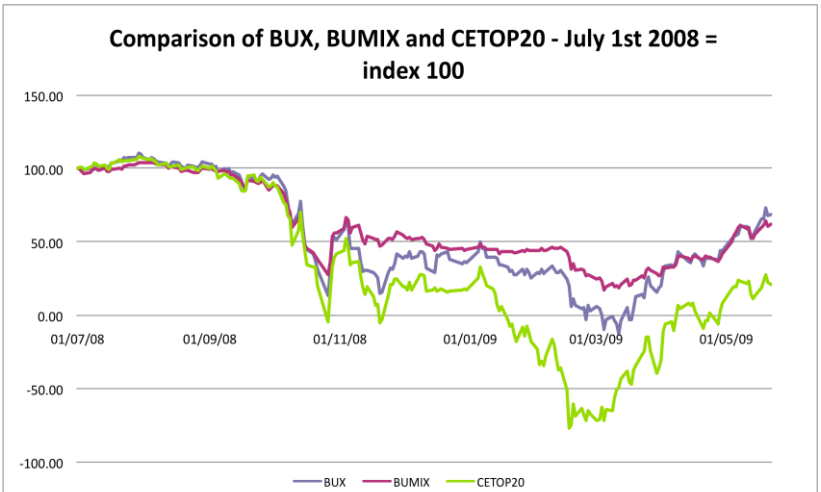


Figure 29: Data from BSE, chart compiled in excel

The stock markets in the CEE region were not looking good in early 2009 and Hungary in specific went down more than 80% towards the end of the first quarter compared to July 1st as evident in *figure 29*.

The chart compares the Hungarian BUX index, which is an index of the blue chip stocks traded on BSE, to the BUMIX and the CETOP20. The BUMIX index is small and medium cap companies traded on the BSE, whereas the CETOP20 stands for Central European Blue Chip Index. This index reflects the performance of the 20 companies with largest market value and turnover in the Central European region. Portfolio managers use the index as a benchmark for potential investment in the region (BSE 2009). The chart clearly shows that the three indices followed the same trends up until the 300bp rate change in late October 2008. First of all it caused all three indices to drop quite rapidly, and though some degree of recovery was seen shortly after, the tendency in March 2009 was downwards moving near the all time low of third quarter 2008. Both BUX and CETOP20 were below zero in late March, indicating that the value of the indices was less than half of the chart-value in early July 2008. The CETOP20 even plunged further than the other two indices and reached a low on February 17th for the one year period of 177% less than the 1st of July index 100. All three indices reached their lows in the end of the first quarter leaving the picture of a weak Hungary as well as CEE region moving on from here.

4.2.3.6 Loans and house prices

As touched upon in *lead up to crisis* the combination of excessive loan taking and falling house prices seemed to become a rather serious problem at this stage. According to Colliers International Budapest house prices fell 10% - 30% in the first quarter of 2009 (Global Property Guide 2009). One could argue that house prices were finding a level around the offer line, which was displayed in *figure 18* in *lead up to crisis*, in essences that is was house were actually worth. As 80% - 90% of new housing loans granted in 2007 and 2008 were given in Swiss francs (Global Property Guide 2009), combined with the fact that the CHFHUF had only increased since December 2008 and up

until March this now became a serious problem for the Hungarian house owners, see CHFHUF chart from end 2008 to mid 2009 in *appendix 2*. To put further emphasis on the challenges Hungary was facing, loan to deposit ratios were no less than 140% in March 2009[12], compared to October 2008 at 125%.

4.2.4 Continuous Hungarian recession

This final of four phases used to portray the recent Hungarian crisis will describe a spring period from around end March and up until June 2009. It is believed to be a very important phase relative to this report as this is the one that will assist to leave a detailed analytical picture of Hungary, hence where does the country look to be heading? Therefore, this phase will take in quite a few key figures while emphasizing fundamentals imbalances. Firstly a brief status on the ever so important CDS spreads will be in focus and hereafter monetary policy at the time will be summarized to give the reader an idea of under which government set perimeters the country is to continue its struggles to regain what was lost. After this in-depth element of the phase growth and inflation numbers will be taken into consideration as well as a section focused on the balance of payment situation. Lastly the still tighter credit conditions will be discussed, as they are very essential for the country's future growth and recovery potential. All in all this phase will describe a relative up-swing period from March 2009 while focusing on the country's weak fundamentals and an expected continued recession.

4.2.4.1 CDS spreads lower

As indicated in the previous section, Hungarian CDS spreads widened significantly in the early months of 2009 – from approximately 400bp in the beginning of January to more than 600bp at the end of February. From the end of February and throughout most of the second quarter CDS spreads narrowed to approximately 334bp on May 27 2009. This old support level was hit last time in the months of September/October 2008 (*figure 24*).

4.2.4.2 Monetary policy and FX conditions

From April 2008 the NBH's inflation target was set at 3% in the medium run, 18 months to 2 years (IMF 2007). Furthermore, rate-setting meetings were held every fourth Monday of the month, but the currency sell-off in January and February forced the NBH to stop the easing cycle at a level of 9.5%. At this time, the NBH was channeling EU funds through the market using FX swaps to provide EUR and CHF liquidity and to limit currency volatility. It is the view of the writers that further

[12] See more on this Loan to Deposit ratio in the section "Hungary in a regional context"

rate cuts later in the year would certainly require the government being able to implement a comprehensive austerity package – hereby a significant improvement in public finances could possibly create room for the NBH to lower rates.

The collapse of the minority government led by PM Gyurcsany (Gyurcsany resigned on March 22 (WSJ 2009a)) raised doubts whether further fiscal tightening would be implemented, which at this point in time was considered necessary to keep the 2009 budget deficit within 3% of GDP, as recession was predicted to deepen further. The interim government under new PM Bajnai presented a wide-ranging austerity package, designed to keep the deficit within the 3% limit imposed by the IMF/EU program. The austerity measures were likely to face resistance from within the Socialists and from the opposition, which could easily create political noise and increase the possibility of early elections later during the summer or fall.

At this point in time the HUF still looked like it would continue being under pressure due to large current account deficits, the FX exposure of the private sector, very week growth outlook and furthermore persistent concerns about the ability of the caretaker government to push through the necessary fiscal adjustment. At the same time increased support to emerging economies from multilateral institutions, while also some signs of stabilization in the Western European countries reduced the risk of new default rounds, hence lower CDS spreads. Essentially, the IMF reformed its arsenals of credit facilities in order to get more funds out faster and with fewer restrictions, at least to the countries with the right fundamentals. Also, relative to the IMF, the April G20 meeting came to the decision of boosting the IMF lending resources to USD750bn (FX Street 2009). The new lower standards for IMF support, combined with the increase of IMF funds would, with anticipation, mean a significant boost to emerging markets liquidity.

In Budapest, during the final hours of the trading day on April 14th the HUF fell back 1.7 percent to 297.21 Euro, leading the decline in Eastern European currencies, as the outlook for Hungary's economy worsened. The reason was Hungarian PM Gordon Bajnai statement of the economy potentially dropping 6 percent in 2009, remarkably deeper than an earlier government forecast, and he plans spending cuts of USD5.7bln in 2009 and 2010. *"It's very clear that the budget is going to have to be cut" and "this means the growth outlook is going to be worsening,"* said Simon Quijano-Evans, central and east Europe economist and strategist at Credit Agricole Cheuvreux in Vienna. *"With things going the way they are, Hungary is still the most vulnerable after Ukraine"* (Expats Hungary).

Furthermore, industrial production in Hungary was under enormous pressure compared to previous years, though some stabilization was seen at very low levels during the first quarter of 2009, figures from December 2008 showed a yoy contraction of 23,3% (Market Watch 2009a). In our view, the scope for a significant turnaround in the exchange rate was considered limited by poor fundamentals as highlighted throughout the analysis: e.g. falling exports, the biggest contraction in industrial output since communism, the above analyst statement, still a significantly high level in CDS spreads (although falling compared to earlier in 2009), significant lack of investments, falling FDI and capital flow figures, as well as the likelihood that a sustained appreciation was to be used by the NBH to cut rates (Bloomberg 2009a).

4.2.4.3 Growth and inflation

As previously mentioned, growth was hit by a drop in external demand, which led to a 6.4% yoy contraction in Q12009 GDP figures – this in comparison to 0.8% yoy growth in Q32008, and 1.2% contraction in Q42008 GDP figures. In addition and as indicated earlier, the continuous selloff in HUF was a huge concern and private consumption was caving on the back of this. The industrial production in the country further contributed to the drop in economic activity. Relative to this, the S&P lowered Hungary's long term foreign and local currency issuer credit rating at the end of Q1 (on March 30) from BBB to BBB-, this is just one step from junk status, see *appendix 10 Credit ratings on Hungary*. The S&P indicated concern about the worsening in economic and fiscal indicators (Market Watch 2009a). What's more is the fact that inflation fell to 3.0% in February and despite the deep recession inflation picked up to 3.4% in April due to the FX pass-through. The planned consumption tax increases (a 5pp VAT hike) expected over the summer was expected to push inflation sharply higher from July to the end of 2009 (Realdeal.hu 2009a). The NBH was expected to treat the spike in inflation as temporary, which combined with a continuous selloff in the forint, would effectively keep the door closed for further monetary easing in Hungary.

4.2.4.4 Balance of payments situation

Looking at the situation in the fall of 2008, it is assumed realistic that the current account deficit could have potentially decreased to lower digits in late 2009 and throughout 2010 – simply on potential improvement in the income and trade balances and covered by FDI- and EU-related inflows. The USD25bn IMF-led package in place was assumed to potentially be large enough to cover potential financing gaps, while increased funding for international organizations could also reduce risks of another severe capital outflow. Nevertheless, later in 2009 Hungary is still showing an overall sustained and deepening current account deficit as earlier seen in *figure 16* (balance of pay-

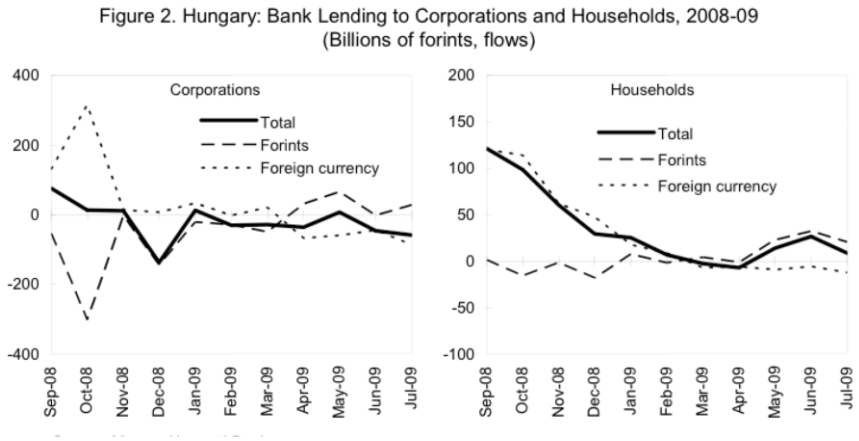


Figure 30: Chart from NBH

ments - net current accounts) in *lead up to crisis*. On the positive side, evidence of high rollover ratios implies that tight links with the EU, including the financial system, still benefit both Hungary.

4.2.4.5 Still tighter credit conditions

As highlighted earlier, there is no doubt that the global availability of credit and liquidity is a key determinant for future success, in particular for a country with large external imbalances and refinancing needs as Hungary. Credit conditions improved somewhat during the second quarter of 2009 but the general picture was still that credit conditions were to probably remain tight, and Hungary is expected to continue facing serious challenges in terms of refinancing debt. Furthermore, as highlighted by the NBH, a weak currency and deeper-than-expected recession are seen as main risks to the quality of the banks' loan portfolio and profitability, which in turn threaten to deepen the recession via the credit channel (NBH April Financial Stability report). Central banks in the CE3 region, including Hungary to a certain extent, responded to tighter external credit conditions – and the sharp fall in industrial production – by cutting policy rates. However, the transmission to lending rates in most cases has been weak, and in many countries lending rates have increased, more on this in the chapter *Hungary in a regional context*. Furthermore, as a major strategic part of the central banks tighter credit conditions the NBH has throughout 2009 attempted to bring down the loan taking in foreign currencies with the goal of changing the tendency to be forint denominated loans. The central bank have sought to do so by simply making the foreign currency loans less attractive by introducing stricter limits on ratios than for forint-denominated borrowing (Forbes 2009). Central bank governor Andras Simor contributed to this view of the central bank by stating: *"I consider foreign currency debt exposure as a bubble, as a threat to financial stability, as a systemic risk"* (Forbes 2009). Alongside a total decreasing total amount of loans, as seen in *lead up to crisis*, it seems that the government has succeeded in bringing down the foreign loan taking, see *figure 30*. As the a general tendency for both corporations and households, foreign currency loans has gone down and forint denominated up, despite a total amount of falling loan taking.

As a final note on the growth outlook at this point is the accelerated disbursement of the EU funds that is likely to help; the CE3 alone are scheduled to receive up to EUR 15.7bn this year (2.7%GDP), up from EUR 8.3bn in 2008 (IMF Direct 2009). It is our view that we will see lower outflows than last year in Hungary. Going forward, some of the deterioration in the external conditions is hopefully history, but looking at Q1 and Q2 economic indicators, it is likely that the recession will continue throughout 2009, as fiscal tightening and tighter credit conditions depress domestic demand.

4.2.5 Concluding the analysis

The Hungarian crisis has been divided into four phases in which each single phase represents a significant change, that has the purpose of laying out the crisis in a structured way for the reader. The first phase represented a turning point in the Hungarian economy as almost every single important financial figure started a trend towards the negative. The forint started a long-term negative development, unemployment went up, CDS spreads widened and GDP figures started to show negative signs for the first time in many years. From this turning point of events in the Hungarian economy, things became so fierce that actions were needed simply to keep the country running. In the second phase it was told how the CDS spreads widened to never before seen figures in the proximity of 600bp. This worrying figure was combined with the fact that household loans now took up as much as 25% of GDP. This household over-indebtedness had not even seen the worst yet as house prices started to decline going into 2009. With a $25bn rescue package Hungary received help as the first EU member during the sub-prime crisis, this being under a 17 month stand-by agreement including goals of bringing down the fiscal deficit and create stability in the banking sector. To be proactive the central bank of Hungary raised interest rates from 8.5% to sky high 11.5%, making it very unfavorable to bet against the forint. It seemed to help in the short term as HUF fell several big figures in no time while government bond yields also dropped. However the odds for 2009 looked tough and the third phases described to us the post support situation - had the enormous bailout package actually materialized into results as it was supposed to? The most obvious answer would be no. CDS spreads kept widening as never before and figures of close to 650bp were seen towards the end of March. Although inflation finally started to come down towards the target of 3% expressed in the CPI, GDP revealed a horrifying 6.4% contraction yoy. To augment further, assets were dropping as never seen before with the BUX index down to a new minimum and house prices falling between 10% and 30% in the Budapest area. These facts combined with a CHFHUF trading at over 200 the country of Hungary was, despite rescue package, in its worst economic point in time comparing to history. The final phase was therefore of great significance to uncover whether there was

any way out of this horrendous status of the country of Hungary. The fourth phase revealed a deeply troubled Hungary. Although the CDS spreads finally started to fall to a more respectable level, still being at rather high 300bp, and government bond yields fell as well. S&P lowered Hungary's long term foreign and local currency issuer credit rating from BBB to BBB-, one step from junk status, see *appendix 10 credit ratings on Hungary*. There was still a current account deficit that however seemed somewhat covered by EU and FDI inflows. The central bank strategy towards loan taking seems somewhat to be succeeding at this point as new loans taking is almost solely forint denominated, this primarily due to stricter conditions on foreign currency loans. All in all the Hungarian financial analysis leaves a picture of a country that has a long way to go. To find out how Hungary has been doing in a regional context, the writers find it of great relevance to compare Hungary to it's neighbor emerging market countries, which brings us to the subsequent chapter, *Hungary in a regional context*.

5 HUNGARY IN A REGIONAL CONTEXT

To accomplish an in-depth analysis on Hungary relative to a theoretical framework, it is firstly essential to compare Hungary to its neighbor emerging market countries in the Eastern European region. Eastern Europe is one of the only emerging market regions that effectively was loan taker during the last 5-8 years. This makes the region vulnerable and with the creditors being Western European banks that are under pressure due to the global financial crisis, this has also affected the Eastern European countries. In particular, the CE3/CE4 countries are similar in many ways and it is worthy of note to emphasize these similarities in relation to the financial crisis. The following therefore attempts to focus on both similar conditions as well as divergence. The section will be split into four phases that respectfully marks a new and important part of the crisis happening in Eastern Europe. The first phase is called *"an entire CEE economic turning point"* and explains how the month of July 2008 was an economic turning point, not only for Hungary but also for the whole CEE region. The phase talks about depreciating currencies and a peak in inflation as a major concern at this point in time. The next phase is named *"further CEE economic deterioration"* and emphasizes the fact of widening CDS spreads, a major dependence on a struggling Eurozone and how easy credit made the CEE boom possible. The third phase shows the continuous contraction in productivity and emphasizes the challenges of monetary easing in the region. Likewise the very important issue of Western European banks exposure to the CEE region will be emphasized, this phase is called *"2009 off to a rough start".* The final of the four phases in the Hungarian regional perspective is named *"signs of stabilization"* and explains the influence of the IMF support and the slightly improving credit conditions that are fatal to get the region back on track. Finally a combined conclusion and perspective called *"summarizing CEE status mid 2009"* primarily talks about the present, mid 2009, and future outlooks for CEE lending conditions as a very important note on future improvement. The lending and policy rate situation, combined with bond yield and CDS spread evolvement, will be the final note of this chapter.

5.1 AN ENTIRE CEE ECONOMIC TURNING POINT

During the second half of 2008 not only Hungary but also CEE countries such as Czech Republic, Romania and Slovenia can be said to have confirmed their reputation as inflation targeters by allowing their currencies to appreciate excessively against a rather strong EUR. On the back of this, as explained relative to Hungary, central bankers started to get worried from mid 2008. While the inflation had gone only higher the last couple of years, the Hungarian forint as well as the Polish zloty

and the Czech koruna kept rallying against a rather strong euro. *Figure 31* clearly indicate a consistent strengthening of HUF, PLN and CZK against EUR up until the month of July 2008.

Figure 31: SaxoTrader chart

Furthermore, looking at EURUSD in the above, the euro was more or less consistently strong against the dollar. Hence, not only did the forint, the zloty and the koruna appreciate during second half of 2008, they appreciated against a strong and solid euro. This is important, as the month of July 2008 was the turning point in the CE3 economies, as it was for Hungary itself, see *intensive crisis period*. Also, July was a month with inflation, not only in the CE3 countries but also in the rest of Europe, peaking alongside very strong currencies from Hungary, Poland, Czech Republic and Europe, the latter respectively being the weakest (Appendix 3 - Inflation rate Euro area). The CEE countries in general were seeing high inflations at this point in time and this caused the overall European average inflation to be at a high level as well. Countries such as Czech Republic, Hungary, Romania and Slovenia were the sinners, as shown in (Appendix 4 – Inflation rate CEE countries), Romania having an inflation rate of no less than 9.1% in the month of July 2008, the same month where the overall European inflation peaked at 4%. Poland on the other hand was only seeing inflation levels slightly higher than the average European. At the same time oil reached an all time high of no less than 146 dollars a barrel in early July (*figure 22*).

Concern from most CE3 central bankers at the time was possibly existing and most likely due to the impressive currency appreciations in times with high inflation. This combination, to these extremes at least, will typically cause rate hikes that might have a negative impact on growth. Unemployment was rising in Europe as well as in the CE3 countries - in specific from around Q1 2008 and

throughout the rest of 2008.[13] From the second half of 2008, the growth stream was looking like it was coming to an end. The two channels of contagion at the time were sharply lower import demand, which was visible among other places in dramatically lower commodity prices, and particularly since the Lehman bankruptcy in September 2008 – a sudden stop in cross-border capital flows and inter-bank lending.

Worldwide, the banking sectors were now put to the test. This on the back of Europe previously seeing a long period of bank profitability with the eight most important Western European countries[14] having an average post-tax return on equity (ROE) of 16.8% in 2006, up from 7.9% in 1994. For the three largest Central and Eastern European countries, Poland, Czech Republic and Hungary, the ROE of the banks jumped from 2.8% in 1994 to incredible 22.0% in 2006. This unbelievable increase was not even affected as much as one would think by the US subprime crisis, as the ROE of the CEE countries rose with 0.5 pp more in 2007, whereas Western Europe saw a decrease of 3 pp in the same year. This could be due to the fact that these countries generally do more business with the US and that they had more exposure in the country than the CEE countries during the subprime crisis (DB Research 2008).

5.2 FURTHER CEE ECONOMIC DETORIATION

Until approximately mid September of 2008 the CEE had shown remarkable resilience in the face of the global financial crisis. From the end of September to the end of October exchange rate volatility increased significantly, and Hungary and Poland's currencies weakened notably, despite rapid reversals (rallies) in the last days of October on the back of the large lender of last resort IMF package for Hungary, see *figure 31* of all currency developments. Given the openness of the Central European economies, the decrease in these currencies is more important than for most other EM economies, as it is more likely to increase inflation. In the end of October, the HUF and PLN were down by about 11% compared with August in trade-weighted terms.[15]

[13] EUROSTAT
[14] Germany, UK, France, Italy, Spain, the Netherlands, Sweden and Switzerland
[15] A weighted average of the currency, respectfully compared to other currencies.

Generally the second half of 2008 was dominated by global slowdown in the economy, but especially the Central and Eastern European countries were hit hard. On the bright side of things, inflation started slowing in the Emerging Markets and this created a loophole for monetary easing for a lot of the Emerging Markets. The writers of this thesis believe that inflation was falling for three different reasons. Firstly, global commodity prices declined considerably from mid ’08 to the end of ‘08. This made it cheaper for consumers to buy their groceries and pay their gas and electric bills. Secondly, on the back of the slowdown in growth, the markets saw reduction in wages and inflationary pressure. In other words, the drop in demand was having a significant deflationary effect. Thirdly, a strong base effect throughout the end of 2008 was dragging down year-on-year inflation, which again was helping to reduce inflation.

In contrast to the (initially) fixed exchange rate policies of the Asian countries in 1997, the CE3-countries follow inflation-targeting policies and the de-leveraging process reduces inflation pressure and allows central banks to hit their inflation targets even with weaker currencies (and weaker currencies help to mitigate the drag on growth). When the FX market becomes illiquid, central banks may intervene, but the main tool to prevent too large a depreciation will be higher rates, if needed. This is what happened in Hungary, where we saw a 300bp rate hike from 8.5% to 11.5% in October.

Throughout the fourth quarter of 2008 CDS spreads widened substantially in the region, *figure 32*. Also, sovereign CDS spreads widened considerably, particularly in those countries where they were higher to begin with. Throughout October the 5-year CDS spread in Hungary rose from 170bp to above 500bp, see *figure 24* - Bloomberg chart.

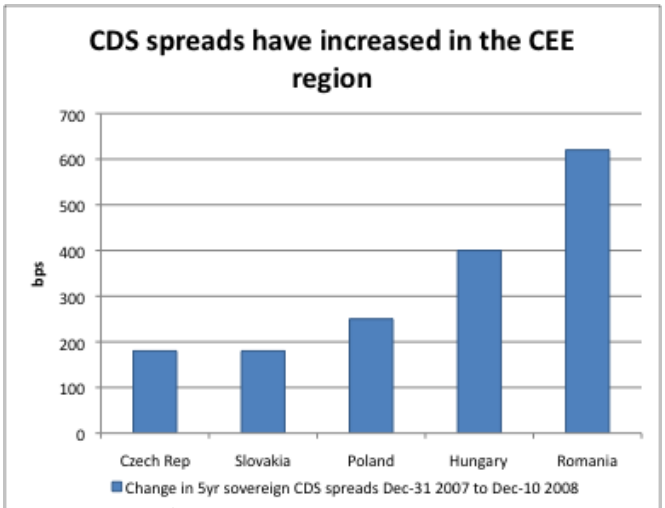


Figure 32. Data from GS, chart compiled in excel

It is likely that the CDS market may have been paying insufficient attention to the EU backstop for EU countries in the region during this quarter. Early in the process, the European Union provided a clear signal that it was prepared to backstop EU countries at the periphery that were temporarily frozen out of international capital markets despite sound policies. The assistance provided to NBH of Hungary via a EUR5bn swap facility was an early indication of this willingness (Reuters 2008a).

Another noteworthy thought, the deterioration in sentiment, reflected in the CDS spread widening, could negatively affect the financing capacity of governments, and may eventually become self-fulfilling, even if it did not reflect underlying conditions at the outset. Part of the bad sentiment in the end of 2008 may have been due to the fact that some market participants were expecting even worse sentiment in the future (and thus wider CDS spreads), and hereby expecting this in turn to affect fundamentals. Nevertheless, market sentiment in CEE around October November was very negative, and many participants started to discount a lengthy period of capital flight from the region, resulting in a deep recession and currency depreciations, similar to what occurred during the Asian crisis in 1997-98 (IMF 1999).

5.2.1 The dependence on the growth in Euroland

There is no doubt about the fact that Emerging Markets and in specific the CE3 countries were, and are, greatly dependent on the growth of Central Europe. As highlighted in *appendix 5: Central European and Euroland output gaps match almost perfectly*, the output of the CE3 countries matches the one of Euroland almost perfectly, after the year of 1999. This basically means that if the demand in Euroland drops, less import, the CE3 countries will export significantly less, causing the GDP to drop. This again means less production activity and less growth, which leads to higher unemployment and probably a weaker HUF.

Furthermore, if one examines *appendix 6: The dependence on export to Euroland*, it is clear that Poland, Hungary and Czech Republic are very dependent on the export to the EU as all three are in top four, joined by Romania as well. With more than 50% of all export going to the rest of Europe, it is clear that this is far from diversification and that a slow growing EU means a slow growing CE3 region. Looking more into the actual importance of this matter, one can find that not only does more than half of the CE3 countries export go to the EU; the income from this export is a great part of the total GDP as well.

As indicated in *appendix 7: Impact on Euroland demand*, Poland, Hungary and Czech Republic are the top three players when it comes down to export to Europe as a percentage of total GDP. Hungary and Czech Republic are close to 40% regarding this key figure, Czech being slightly higher than Hungary.

5.2.2 Easy credit fuelled the boom

One thing is the dependence on the Euroland zone while another thing is the fact that all CE3 countries borrowed a huge amount of foreign currency to finance the positive trend that the countries

had up until start of the third quarter of 2008. Loans were issued by Western European banks that already at this point in time were under great pressure from the US subprime crises, these banks might be facing even bigger losses from the loans made to Eastern Europe (Mises.org 2009). As highlighted in *appendix 8: High external debt in CEE*, the CE3 countries once again join in the top three, this time in a chart showing the external debt as % of total GDP. Hungary takes the lead with close a 100% of GDP foreign debt finance of the country.

As the public sector debt fell from 2002 to 2007, the private sector foreign currency debt rose to 126% of foreign-exchange reserves (WSJ 2009b). As previously highlighted in regards to Hungary, households of Emerging Europe took loans to finance the property boom, but not in high-interest local currencies. They took mortgages in low-cost foreign currencies, such as Swiss franc, euro or even yen. This meant that 50% of household debt was in foreign currency in the country of Hungary. Poland and Romania had 30-40% and the number was more than 70% in the Baltic States. Ultimately looking at the second half of 2008, with depreciating Eastern European currencies the debt was looking significantly tougher to pay back in time at this stage.

5.3 2009 OFF TO A ROUGH START

With the imbalances on the balance of payments in the Eastern European countries, enormous debts to other countries and the general falling interest in high-risk investments in the markets early 2009, this didn't put the region in a favorable position. Especially Hungary, Czech Republic and Romania seemed to enter a year with negative growth rates. As previously highlighted, during most of 2008 the industrial production plunged to historical low levels and didn't seem to rebound by much in early 2009, see *appendix 9 Industrial production Hungary and Czech*. Again, this was mainly due to decreasing export to Euroland, but also the domestic demand that dropped rapidly due to higher interest rates and tighter credit conditions. This again decreased the consumer spending as well as the activity in the financial markets. On top of this, many Eastern Europeans had loans in foreign currencies and were hit especially hard due to the decreasing domestic currencies.

The picture at this stage was rather negative. As the Western European countries started feeling the global economic slowdown gain on them, their home markets went under greater pressure and this affected the investor confidence towards the CEE region. Investors, both private and corporate, seemed to turn their attention towards the weak fundamentals of the region, primarily being the account deficits in many of the CEE countries at this stage. The high productivity in the region, primarily concentrated around the manufacturing industry, saw a plunge in demand for their products as the Euroland zone import dropped rapidly. The level of real activity was contracting as seen in Eastern European industrial production in December 2008, *figure 33*. With Eastern Europe being highly dependent on capital inflows, primarily coming from the Eurozone, the massive pulling out of capital from the region sent negative vibrations throughout the whole of Europe. The disbelief in the region's future created an economic contraction and outflows led to loan losses that led to further outflows. On the positive side of things, with the decrease in growth, import dropped as well bringing down the deficit on the balance of payments – as expressed in the Hungarian net current accounts in *figure 16*.

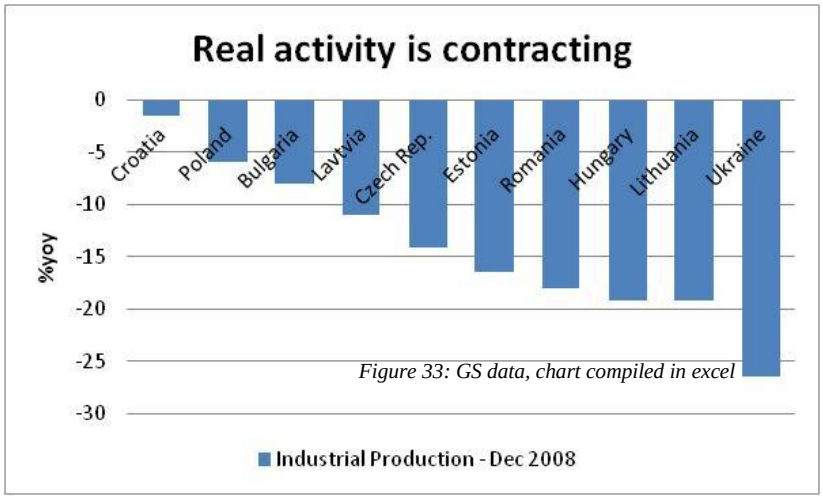


Figure 33: GS data, chart compiled in excel

5.3.1 Some deflation forces and some inflation counter forces

During start 2009 there was a mix of forces in regards to inflation. On the deflation side the markets saw falling commodity prices, which drew the inflation lower from the 2008 highs. Together with this, a weakening real activity drove the core inflation[16] even lower. Nevertheless, the further depreciating currencies of the region worked against these dis-inflationary forces and increased the inflationary pressure during the same period. Since the peak of the CE3 currencies in July 2008 the HUF depreciated 19%, the CZK 15% and the PLN no less than 25% up until early 2009, *figure 31*. These depreciations naturally had an effect on the inflation, so despite a desire to run an expansionary monetary policy from the NBH, interest rates in Hungary were not lowered further in start 2009 as a result of the weakening HUF. The 300bp hike in October was still making it more difficult to ease monetary policy as Hungary was simply trying to reach a somewhat respectable level in rates, and a total of 200bp was cut since the October hike, from 11.5% to the 9.5% at this point.

Despite a falling inflation in the CE3 in the beginning of 2009, as well as weaker growth, the NBH in other words didn't ease the monetary policy as one could expect. The main reason was the weak HUF that would leave chances to upside inflation risk if lower interest rates became a fact, but furthermore the FX exposure for domestic corporations as well as households was a major concern. This was, in our view, the main reason for the lack of monetary easing in the first quarter of 2009 in the country of Hungary. However this made Hungary the most inactive country out of the CE3 in Q1 judging on monetary policy easing. The central banks of Czech Republic and Poland took advantage of the weak growth outlook, alongside the dropping commodity prices, and lowered their interest rates 200bp in both countries, see *figure 35* in *summarizing CEE status mid 2009*.

5.3.2 European claim on Eastern European borrowers

Despite of the fact that this thesis does not evolve around the possibility of a banking crisis in Hungary, there is the question of impact on lenders in case of a total break down in the country of Hungary, hence what claims are present from West towards East? This is a question that cannot be neglected as it proves the interdependence of the European countries and at the same time will provide the reader with an overview of where the real problems might be laying in case of a worst-case scenario for Hungary. We have previously talked a lot about the foreign denominated loans, or non-local-currency denominated loans, this primarily being in Swiss francs. However this only answers the question of which currency to be looking out for in regards of FX markets swings, and thereby

[16] Core inflation is a measure of consumer price increases, taking out volatile components such as food and energy prices – this way the core inflation shows a more realistic picture of price increases as it is not that affected by price shocks to the same extent that "regular" inflation.

the effects that this might have on the Hungarian foreign loan market. The other question of true relevance is, wherefrom is the money coming? *Table 2* below seeks to answer this question.

Table 2: European claim on Eastern European borrowers

Feb 2009 figures	Austria	Germany	Italy	France	Belgium	Netherland	Sweden
Total claims							
Bn USD	277,60	219,90	219,60	155,10	136,70	122,20	106,50
% of GDP	74,80	6,60	10,40	6,00	30,10	15,70	23,40
Claims vis-a-vis Bn USD							
Romania	43,70	4,10	13,40	16,50	1,20	10,70	0,20
Hungary	**36,90**	**35,10**	**27,00**	**10,10**	**17,90**	**6,10**	**0,30**
Ukraine	14,30	4,80	4,90	10,10	0,80	3,70	5,70
Latvia	0,50	5,00	1,30	0,30	0,00	0,00	23,00
Lithuania	0,30	3,50	0,60	0,40	0,10	0,10	27,40
Estonia	0,30	1,00	0,40	0,10	0,10	0,00	29,90
Claims vis-a-vis % of GDP							
Romania	11,78	0,12	0,63	0,64	0,26	1,37	0,04
Hungary	**9,94**	**1,05**	**1,28**	**0,39**	**3,94**	**0,78**	**0,07**
Ukraine	3,85	0,14	0,23	0,39	0,18	0,48	1,25
Latvia	0,13	0,15	0,06	0,01	0,00	0,00	5,05
Lithuania	0,08	0,11	0,03	0,02	0,02	0,01	6,02
Estonia	0,08	0,03	0,02	0,00	0,02	0,00	6,57

Source: Data from BIS, chart compiled in Excel

There is no doubt that Austrian banks are the biggest lenders to clients in emerging Europe, with a total exposure of no less than $277.6bn or almost 75% of GDP according to the data from the Bank of International Settlements. Second comes Belgium with a 30% exposure of GDP and third Sweden with 23.4%. As for Hungary in specific Austria has been very generous and are exposed to 10% of the total GDP towards Hungary alone, making the future outcome of the Hungarian economy fatal for the country. The total amount of billion in the Hungarian outstanding debt is $133bn in the above countries combined in the month of February '09, with a 2008 GDP of approximately $106bn[17] this is no less than 125% of foreign debt to GDP.

5.4 SIGNS OF STABILIZATION

One of the biggest news in the beginning of the second quarter of 2009 was a sign of stabilization of the global industrial cycle. The IMF reformed its arsenals of credit facilities in order to get more funds out faster and with fewer restrictions, at least to the countries with the right fundamentals. Also, relative to the IMF, the April G20 meeting came to the decision of boosting the IMF lending resources to USD750bn (FX Street 2009).

In spite of the above, the industrial activity didn't show to the same extend in the CEE countries as it did in the rest of the Emerging Market countries of the world. There was no real advance in the

[17] Source: Data from OECD statistics

markets and the region still suffered from tight liquidity conditions. The new lower standards for IMF support, combined with the increase of IMF funds to the before mentioned USD750bn will probably, with anticipation, mean a significant boost to emerging markets liquidity. The process highlighted that the IMF was ready to help maintaining demand in emerging markets, whereas before the IMF was more securing structural adjustments in the economies applying for IMF funds. This renewed credit line was called Flexible Credit Line (FCL) and replaced the old Short-term Lending Facility (SLF), (FX Street 2009). The shift in credit line also signaled that the IMF was ready with more long term solutions that ideally should improve liquidity and prevent emergencies, and replace the old policy of more emergency orientated help.

Several Eastern European countries strengthened against EUR and USD from the middle of the first quarter and well into the second (IMF Direct 2009), but one should be careful looking at the stock market performance for instance. Although positive, these markets were coming from very low levels, therefore it's essential to be aware of percentage point's increase. However the global stock market continued the recent rally well into the third quarter 2009. It seems though, that lately (October/November) there have been signs that markets are reevaluating the recent bullish trends.

5.5 SUMMARIZING CEE STATUS MID 2009

The still increasing level of non-performing loans (NPL's) is a burden and with a peak in the figures still to come the outlooks look rather negative (EBRD 2009). The high level of NPLs means tighter credit supply as the banks naturally becomes more risk-adverse. The situation is further worsened due to tighter external financing conditions and high levels of initial leverage. With a loan to deposit ratio in October 2008 of 125% overall, *intensive crisis period*, Hungary also takes the lead in the newer figures from March '09 with a LTD of 140%, *figure 34*. However a general picture of the CEE region seems to be of very significant LTD ratios and rising cost of lending.

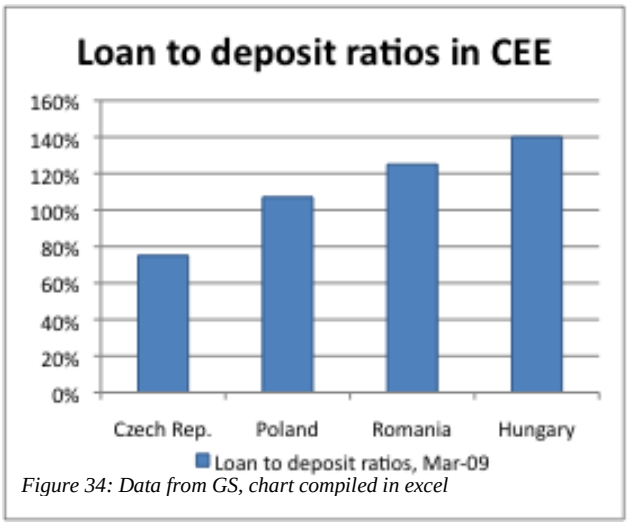


Figure 34: Data from GS, chart compiled in excel

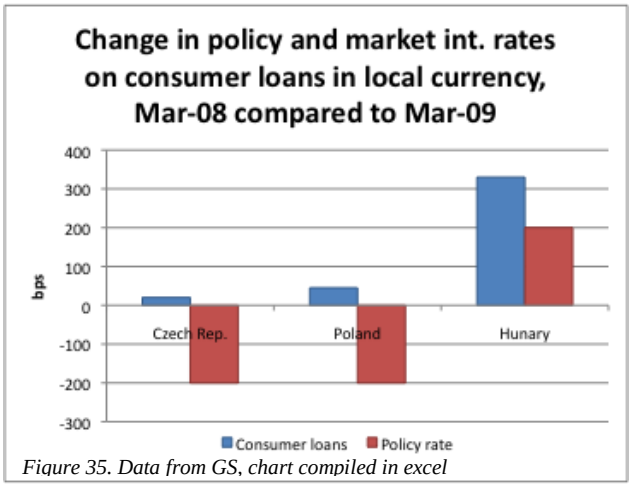


Figure 35. Data from GS, chart compiled in excel

The domestic credit conditions in CEE looks to be a stopper for quick economic recovery in the region, as the bottom of credit growth is not yet in sight at this point. First when the scenario turns around and credit growth turns positive will the credit conditions change and again begin to support economic growth. As we learned from the FDI figures in *lead up to crisis*, Hungary has benefited from the steady rising investments in the country that made it possible to finance rather sizable amounts of account deficits and rapidly rising credit growth figures.

As one would naturally conclude from the above facts, lending rates have increased during the time of the crisis. As *figure 35* above shows, Hungary in specific stood out compared to Czech Republic and Poland with significant increasing both policy and lending rates. In other words, despite falling inflation the lending rates continued to increase, which is obviously a serious barrier towards consumption and private sector investments. This also raises the questions of which rate debt can be refinanced; hence at what rate can the investors hope to be paying on their loans going forward.

It is inevitably hard to conclude whether it is the demand for, or the supply of, credit that is declining. What one would assume is that a falling demand should lead to lower lending rates as the lend-

ing institutions would need to compete for a smaller segment of clients, hence lowering the rates to attract the consumers. As it seems at this point that the rates have on the other hand been rising, this option seems unlikely. If both the supply and demand curves are moving lower the interest rate could either rise or fall depending on which of the two is the respectfully strongest. If the supply of credit falls more than the demand, despite the fact that demand is falling as well, the interest rate could rise. The point is that the CEE region, except for Hungary, seems to have heightened their lending rates despite the fact that policy rates have been falling, hence the situation of Czech Republic and Poland in the above *figure 35*. The writers of this thesis believe that this means a dropping supply in the region, more conservative acting from the banks side of things. This is important as Hungary shows different signs and the fact that Hungary is the country with the highest loan to deposit ratio as shown in *figure 34* above, of approximately 140%. Can the Hungarian investors have been even more aggressive in taking on credit than the rest of the region? So far, it seems to be the case.

Fiaure 36: Chart from NBH

Also the bond market proves Hungary to be in a volatile state compared to Czech and Poland, as bond yields are significantly higher. As *figure 36* shows, the 5y government bond yield saw local maximums of 13%-14% around the base rate hike in October and the peak of the crisis in March of ’09. As known, when yields go up, prices go down and vice versa. This is in line with the capital flow figures from *lead up to crisis*, where it was concluded that investors were leaving the bond market, making the price go down, and hereby forcing the yield up, as this chart shows. Likewise it has been concluded that the CDS spreads widened significantly during these two periods as well. Both rising bond yields and CDS spread widening are signs of disbelief, CDS spreads being the markets current perception of sovereign risk, hence an indicative figure, whereas bond yields are a mathematical calculated figure, equal to actual disbelief. As both these figures rose at the same period of time, intensified in late 2008 and March of ’09 this truly confirms the skepticism that ruled around the Hungarian financial markets at this stage.

6 THEORETICAL APPLICATION TO HUNGARY

Remembering the supportive question for *theoretical application to Hungary* section of the thesis, it is very important throughout this section to constantly hold theory against facts to confirm to which extent Hungary has experienced a financial crisis. As the writers believe that there is a huge correlation between financial and currency crisis, *firstly* the results from the *Hungary analysis* chapter will be used according to the Minsky-Kindleberger framework, and *secondly* used against the theories on the three generation models of currency crisis. *Lastly*, the Kondratieff cycle will be used along with the most relevant elements of the before mentioned Minsky-Kindleberger framework and the currency crisis models. It is believed that only by combining several key fractions from different key theories will a new and optimal model be capable of explaining the ongoing crisis in Hungary as the end result.

6.1 MINSKY-KINDLEBERGER FINANCIAL CRISIS THEORY ON HUNGARY

This section has the purpose of putting together the theory of the Minsky-Kindleberger framework and the economic analysis of Hungary, expressed in l*ead up to crisis*, *intensive crisis period*, as well as *Hungary in a regional context*. This section will not go in depth with the reasons of why the economic tendencies are as they are, nor will it more than briefly explain the essential parts of the Minsky-Kindleberger framework in connection to the six stages of the framework, as these explanations have been presented in the earlier presentation of theory. This is solely an application of theory versus the actualities of the Hungarian crisis that will confirm whether there has been a financial crisis according to the Minsky-Kindleberger framework.

The six stages will be explained separately. *Displacement, euphoria* and *financial distress* will primarily be put together with the *lead up to crisis* section in the *Hungary analysis* chapter, as these three stages represent events that has occurred all the way back from start 2000 and up until approximately mid 2008. On the other hand, *panic, contagion* and *lender of last resort* will be explained using mainly the *intensive crisis period* section of the *Hungary analysis* and the events that led the Hungarian economy up until roughly mid 2009. As the border between *financial distress* and *panic* is somewhat blurry, these two stages will cross over one another and float in between the context of the *lead up to crisis* and the *intensive crisis period* sections. In regards to the stage of *panic* this event will be considered throughout the *contagion* and *lender of last resort* stages as well, as these two last stages cannot be parted from panic tendencies. Furthermore, as for the case of *panic* and *contagion*, the relationship between these stages of the cycle is also unable to be parted from one another. Although they will each have their own section in the below analysis, the shift

from one to the other will be buoyant and both stages will be present during the *lender of last resort* phase.

6.1.1 Displacement

According to the Kindleberger-Minsky's framework, events leading up to a crisis start with a *displacement*, some exogenous, outside shock to the macroeconomic system. The displacement varies from one speculative boom to another and it is only a few significant events that essentially classify, e.g. the outbreak or end of a war, unexpected regulatory changes, or significant and unexpected changes in oil prices. Whatever the source of the displacement, if it is massive, it can easily change the economic outlook by changing profit opportunities and displacement typically brings opportunities for profit in some new or existing businesses and closes out others (Kindleberger 2005, p. 47-48).

In the case of Hungary, the displacement factors were exogenous in more than one meaning. Due to the dependence on the rest of Europe, as discussed in the *intensive crisis period*, that again was dependent on the US economy, the Hungarian crisis was indirectly affected by displacements in the subprime crisis. The current credit crisis started in early 2007 with the collapse of the subprime mortgage market in the US. The low US interest rate in the early 2000s made it possible for Americans to borrow cheap money which was notably invested into property – the so-called ninja mortgages and subprime borrowers were main components. Complex leveraged financial products, e.g. CDOs and ABSs, were traded and investors as well as banks and institutions were making profits. Suddenly the positive tendencies changed. Through low interest rates, innovative loan types, high leverage, careless lending practices and securitization – all these were displacements – a horrifying growth took place in the US subprime housing market, and Europe followed.

This shock that the Minsky-Kindleberger framework refers to, whatever the nature of this shock is, can potentially lead to bubbles especially expressed in stock market appreciations. The writers of this thesis believe that the stock market participants are some of the first to use a displacement to their advantage. The investors form bright expectations for the future, based on certainties that the business environment has changed for the better. This is shown in *figure 19* of the BUX, see *intensive crisis period*. Up until start 2008 the Hungarian stock market rose more than 250% compared to 2002 - this was a reaction of displacement, but which? The widening to +/- 15% of the HUF fluctuation band after the introduction of the euro in May 2001 was a clear liberalization of the economic policy in the country of Hungary. The fact that the government allowed the forint to fluctuate more than the previous +/- 2.25% was a sign of belief in the currency, essentially to show the world

that the forint was strong enough to be given more space to move. The reaction was as expected and the USDHUF and especially the EURHUF dropped in value, hence the forint gained strength on the dollar and the euro. This sort of liberalization in the monetary policy has other effects than in the currency alone. On the back of this, alongside a rising consumer confidence, the stock market rose and after roughly a year with rising inflation and CPI figures, from mid 2000 to mid 2001, these key figures started a longer term downwards trend that lasted until start 2006, with only a minor rise in mid 2004. All combined these figures made the profit potentials look rather positive and seemed to confirm that Hungary was boarding the train of success that was a fact in the US experiencing rising capital markets, lower inflation and massive initiatives to investments based on significantly increasing borrowing levels in the U.S.

In Hungary, borrowing was happening in a different way compared to the U.S. Whereas Americans made their loans through various American institutions, the Hungarian investor was looking for other solutions. Due to high interest rates in Hungary, see *lead up to crisis*, the people of Hungary started the excessive loan taking in foreign denominated currencies. One could call this an indirect displacement. A displacement to typically start a positive rally in the economy is low level of interest rates. As previously pointed out Hungary however had rather high interest rates, but this didn't stop the upswing tendencies that were seen in the early 2000s. The world was seeing economic growth and banks and mortgages institutions were more than happy to lend out money, also to Hungarians. The willingness of European countries and the fact that this excessive and risky loan taking was even possible was without a doubt a significant displacement. Never had household investors of Hungary been welcome to this extent and loans were taken in Swiss francs, euros and even yen with the goal of financing the housing boom that was starting in Hungary. In short, high interest rates in Hungary made investors look for other possibilities to get onboard the train. This was given to them by Austria, Germany, Japan and Sweden, just to mention a few. In our view this was an indirect displacement.

Large degree of foreign borrowing combined with a high level of export going to this region, made Hungary and the rest of the Eurozone interconnected. The displacements of the Eurozone became displacements affecting Hungary, and the eastern European country was determined to join the ride, starting off the economy towards a new era, towards positive profit outlooks and enhanced belief in a country that was starting to feel positive emerging market tendencies.

6.1.2 Euphoria

This is the stage of the Minsky-Kindleberger framework that, on the back of the previously discussed displacements, set off the economy in a euphoric direction. This period is often associated with mania, (Kindleberger 2005, p. 33), a term that covers actions such as irrationality and general out of context and doubtful decision making. The displacements and the mania can lead the economy into overtrading, simply exaggeration such as over-borrowing, over-investment and over-consumption. Kindleberger (2005. p. 10-11) states that the euphoria stage is a *"time to get on the train before it leaves the station"* – Hungary did indeed board the train.

Looking at the years from the beginning of the 2000s to around mid 2008, the Hungarian economy surely went booming. As briefly mentioned in the *displacement* section above the Hungarian blue chip index BUX reached an all time high in end July 2007. At a point of time in that month (the 24th) the index was trading at no less than 30.132, compared to 6.000 in end September 2001. Besides of this very significant increase in the BUX, the rest of the world also started to believe in Hungary. Europe was doing well and Europe wanted a piece of the profit potentials and the emerging market tendencies that Hungary started to show in different key figures. FDI figures, both in country and abroad, started increasing significantly from especially 2004 to 2008. Seeing yoy increases of up to 45% in the first three quarters of 2005 for the inward FDI figures and more than 300% in the outgoing FDI yoy figures for two quarters of '05, though coming from very low levels. This proved that foreign investors also believed in the Hungarian boom and the writers believe this was primarily on the back of the acceptance into the EU in 2004. As inflation fell exports rose, as well as import, steadily during the last ten years coming from a level of around 8bn euro in start 2000 to 19b in second quarter 2008. GDP figures followed along and showed positive yoy figures throughout the booming period of around 3-5% up until start 2007. They did remain positive but fell to a level around 1-3% until mid 2008.

Together with the rest of the world the Hungarian housing market was seriously booming from start 2000 and up until start 2008, and the ordinary private investor wanted in. As discussed in *lead up to crisis*, loans to buy these houses were to a great extent taken in foreign currencies. The proof of the boom lies in the increasingly larger amount of loans that were given to the household sector. Hungarian household borrowing in foreign currencies went from basically zero in 2004 to close to 60bn HUF in mid 2008, again the EU acceptance no doubt had a large say in this situation. The EU member countries seemed determined that after the newly obtained membership into one of the strongest economic alliances in the world, Hungarian investors was entitled to get their share of the

cut and hereby board the fast going train of economic upswing riding throughout the world at the time.

To further conclude the investment boom in the country of Hungary we learned from *lead up to* that the deficit in the current account only has grown bigger and shown a clear tendency towards more over-indebtedness. What this tells an observer is essentially that during this boom the country of Hungary has invested more than has been saved and resources from other economies were used to meet the country's increasing investment requirements.

Finally a look at the Hungarian forint confirms the period of *euphoria* and strong belief in Hungary that took place from around 2002 and lasted into the year 2008. With truly mania tendencies showing in the period from 2006 to 2008, the Hungarian forint gained incredible strength against both euro and dollar throughout these 3 years reaching a high for the HUF of around 230 for both of the crosses in July '08. Especially the rapid growth from start 2008 to mid 2008 was remarkable, set off by the abandonment of the HUF trading band in February that same year.

From start 2004 to mid 2008 the characteristics of a Minsky-Kindleberger euphoric stage is truly present and kicked off by the EU membership acceptance on May 1st 2004. Figures such as rising FDI figures, significantly increases in household sector borrowing covering both mortgage loans and consumption spending, falling inflation that led to booming export, steady rising GDP figures, incredible rise in BUX, as well as HUF appreciation all confirm the presence of mania tendencies as well as an overall euphoric escalating Hungarian economy. The question leading on is whether this was sustainable? Could the HUF really keep its incredible strength against the euro and the dollar? Was continuously increasing borrowing in foreign currencies set to continue? Looking at these questions the *financial distress* stage of the Minsky-Kindleberger framework will now be discussed.

6.1.3 Financial distress

Minksy-Kindleberger describes this stage as a level of realization. Investors, corporations and banks start to realize that the boom, the mania, the excessive over-investment may have come to an end. Generally speaking assets are realized into cash and selloffs in capital market products are part of this, while a domino effect usually makes things happen even faster. This stage has the purpose of explaining the turning point of the recent boom - in essence to emphasize when the boom moves into distress. The actual mapping and ongoing explaining of the effects of the financial distress belongs to the panic stage and will therefore be explained in the subsequent phase description.

Before turning the focus towards Hungary, one must understand that mid 2008 was a turning point in the world economy, and especially with a fixed eye towards the state of the US economy. In the economic crisis with a focus on the U.S. it was clear that the speculative community started realizing that the market could not go any higher at this point. Investors became aware of the risk associated with the crisis and noticed that distress persisted throughout the United States. Homeowners, investors, banks, the market - started to lose confidence as clearly indicated with major hedge funds, businesses, and banks (e.g. Lehman Brothers) all of a sudden going bankrupt.

For the case of Hungary, the overall fact of the presence of financial distress cannot be neglected. Hungary followed the tendencies of the U.S. and investors started to realize and see through the mania – they started to think clearly! The International Monetary Fund stated on June 10th 2008: *"Government debt and net external liabilities (relative to GDP) in Hungary are by far the largest among new EU member states"* (IMF 2008a). In the same article the IMF stated that the actual gross external debt amounts to 100% of GDP at that point in time and that high external financing is needed to balance out this obvious vulnerability of the country. Furthermore the article states, *"A related vulnerability is the large foreign currency exposure of household"* (IMF 2008a).

Looking into the figures that shall put the financial distress stage into a context – these are many and very clear. The turning point in the Hungarian economy is the month of July 2008. Almost every important financial figures, covered in either *lead up to crisis* or the *intensive crisis period* confirms this month's changing of tendencies in the Hungarian economy – this was the burst of an overheated economy - of a bubble that could not hold air.

First of all, the selloff that was seen in the Hungarian forint was extreme one of the most significant increases seen in the currency for years. Going from a level of 230, both the EURHUF and the USDHUF shot to 275 within a few months. The BUX index, after a period of increasing rising figures from start 2004 to mid 2005, started seeing slowly but steady growth from mid 2005 to 2008. From start 2008 and until mid 2008 the index showed dropping numbers and the index continued lower but at a steady pace during spring season. But in July 2008 the stage of distress showed its true face and the BUX index rapidly plummeted. The index confirms the seriousness of the financial distress stage of the Minsky-Kindleberger framework and the underlining point of the fact that at this stage of the cycle investors obviously start to turn assets into cash. The BUX index development is an important indicator of this. The frustration usually makes its marks in consumer spending and general borrowing levels. As financial distress is a period of stopping up, realizing and considering a bit further than in the euphoria stage, household borrowing figures of *lead up to crisis*

shows how the borrowing plummeted in the fall of 2008. This change was not just a tendency, but also a serious stop of all mortgages and loans taken in that period and a clear sign that mania was switched out with distress and panic.

Led by the subprime crisis in the US economy, Europe followed the downward trend and due to the interconnectivity to the EU, Hungary also boarded this negative trend. The sudden over-indebtedness amongst both homeowners and financial institutions lead to a financial fragility in the financial system and homeowners suddenly felt a situation of financial distress when house prices started the negative trend, as indicated in *lead up to crisis*.

6.1.4 Panic

Kindleberger (2005, p. 94) defines 'panic' as: *"A sudden fright without cause that may occur in asset markets or involve a rush from less liquid securities to money or government securities – in the belief that governments do not go bankrupt because they can always print more money".* According to the Kindleberger-Minsky's framework, money is said to be unavailable at the pinnacle of a *panic stage*. Panics refer to the period after the mania has died down, and people are beginning to speculate in the opposite direction. As the mania was the upswing, the panic is the downswing. The fall in asset prices and doubt about the situation lead to fire sales to obtain cash. Furthermore, according to the theory by Kindleberger (2005) the panic feeds on itself, until one or more of three things happen: (1) prices fall so low that people are again tempted to move back into less liquid assets; (2) trade is called off by setting limits on possible price declines, or closing exchanges or trading completely; or (3) a lender of last resort succeeds in convincing the market that enough money will be made available to rescue the illiquid market situation.

As pointed out as well as argued on the back of the results of the *intensive crisis period*, the following depicts how a situation of panic occurred from mid 2008 and escalated throughout the year and has continued well into 2009.

Kindleberger argues that there are two causes to a crisis: *causa proxima and causa remota*. *Causa proxima* are closely related incidents that snap the confidence of the system, makes people consider the dangers of failure, and leads them to move from e.g. commodities, stocks, real estate, bills of exchange, and others, back into cash (Kindleberger; Manias, Panics & Crashes, p. 120). See for example 1) the price of oil suddenly dropping dramatically in July 2008 in *figure 22* in the *intensive crisis period*; 2) stocks starting to tumble down on the BUX from 1st of July 2008 in *lead up to crisis*, as touched upon during the *financial distress above*, and 3) house prices plummeted 10% - 30%

in the spring of 2009. Causa proxima can also be characterized as e.g. the large interest rate hikes as seen in Hungary from a base rate at 8,50% in May 2008 to a sudden hike to 11,50% in October 2008, i.e. 300bps. Also a strong indication of the ongoing distress was a clear drop in debt and equity securities liabilities in the capital flow towards the end of 2008. The global financial and credit crisis has been a significant factor in the escalation of the distress to the panic stage in the Hungarian turmoil. Hence, the derived effect of the reduced availability of credit on the global markets was an obvious fall in house prices, as discussed in *lead up to crisis*, that led to losses on loans, as well as a weaker HUF. As stated by Kindleberger (2005, p. 89-90) the confidence disappears from the credit market and there is a rush for liquidity. In Hungary CPI figures started dropping and expectations were quickly reversed. The movement suddenly picked up speed to the extent that speculators were much leveraged with borrowed money - the decline in prices led to further calls on them for margin or cash, and to further liquidation. Relative to this and as shown in the EURHUF daily chart *figure 20* in the Hungary analysis, the EURHUF starts to shoot up from July 2008. One reason for this steep decline in HUF was investors selling out due to a general and widespread loss of confidence in the currency. Although the real exchange rate started to decline during the distress period, indicating a increasing competitiveness, that did not help at this stage – investors wanted out of the Hungarian markets. At this stage, according to Kindleberger (2005, p. 120), the credit system itself appears shaky, and the race for liquidity is on. *Causa remota* of a crisis is speculation and extended credit – they are secondary causes and therefore indirect causes to a crisis. A situation of large loans by banks which lead to large interest rate hikes can be seen as a secondary or indirect cause of a crisis. Relative to Hungary, excessive credit and speculation was discussed in the displacement and euphoria stages.

As mentioned, according to the Minsky-Kindleberger framework, money is said to be unavailable at the pinnacle of a panic stage. The global credit crunch has naturally affected the economic and financial systems in Hungary and hereby 1) negatively influenced investor confidence in the banking system; and 2) led to lack of confidence between players within the banking sector.
The overall loss of confidence in the global financial markets has caused uncertainty. Furthermore, the exposure to risk in the banking sectors globally as well as in Hungary has constantly worsened the interbank lending market as well as the credit default swap (CDS) markets. Essentially, the lack of info and transparency, of investors not knowing the exposure of their counterparties, lead the price of insurance of default (CDS) to increase to high levels. A similar trend is seen in a volatile interbank market charging higher premium for loans ultimately, the two focuses measure willingness to lend as well as confidence and therefore clearly justify a panic stage relative to Hungary.

Relative to lack of confidence in the financial industry, a justifying indicator is the 5-year CDS spread in Hungary that rose from around 170bp to above 500bp throughout October 2008. As mentioned in the Hungary analysis the Q4 mid CDS spread in Hungary (in the region of 400bp) on the 5-year Hungary protection equalled a default probability of around 24% during the next five years. CDS spreads widened further in 2009 starting around 350bp and almost tapping a 650bp level towards the end of March. It can be argued that the spreads rather overestimated the probability of default – but again, the spread was a vital sign that supported disbelief in the Hungarian markets. Likewise the government bond yields rose in the same periods, late 2008 and March 2009, as the CDS spreads widened, confirming the decline in bond prices as investors left the capital markets. Hence, this clearly points towards a panic situation often characterized by the herd effect.

Throughout 2008 and into 2009 the situation of panic continued in Hungary. As mentioned in the analysis of Hungary the continuous pressure on HUF led the NBH to extraordinarily increase the base rate by 300bps to sky high 11.5% in October 2008. Global financial markets continued to be highly turbulent and the HUF sell-off in connection to this sent the first quarter of 2009 off to a rough start. In the beginning of March EURHUF, USDHUF, and CHFHUF were all at their highest levels. Furthermore, and not on the positive front, the Hungarian prime minister at the time, Gordon Bajnai, was out in April presenting a worsening outlook for the country's economy – his outlook was a 6 percent drop in the economy in 2009 as well as large spending cuts which typically leads to a worsening growth outlook. As presented in the *intensive crisis period* section this led to another boost in investor scepticism, thus another significant drop in HUF.

As noted in the *lead up to crisis*, the herding effect of investors selling out was also evident in the stock market. The BUX index plummeted since mid 2008 and actually went down more than 80% towards the end of first quarter of 2009 compared to the index level on 1 July 2008. Again, the situation of panicking continued, both on a global scale as well as in Hungary. Growth in Hungary was severely hit by a drop in external demand that led to a 6.4% yoy contraction in the first quarter of 2009 (in comparison with 0.8% yoy growth in Q3 2008, and 1.2% contraction in 2008Q4 GDP). In Hungary throughout second half of 2008 and well into 2009, private consumption was caving on the back of the continuous selloff in HUF which has also put enormous pressure on foreign loans in CHF, EUR, JPY.

At the end of the day and relative to the Minsky-Kindleberger framework stating that mania is the upswing, panic is the downswing, Hungary has indeed experienced a "crash" through enormous fall in asset prices, credit tightening, and fire sales by privates as well as companies to obtain cash. Fur-

ther factors such as the S&P lowering Hungary's foreign and local currency issuer rating from BBB to BBB- (just one step from junk status) at the end of Q1 2009, see *appendix 10* of *Credit ratings on Hungary*, as well as industrial production numbers at their all time low (-25.4% yoy) in February 2009. These are obvious indicators of a situation where panic feeds on itself until prices are so low that investors will buy again (Kindleberger, 2005). Whether or not the moment of a constant return of investor confidence has occurred in Hungary is uncertain, but there has been renewed investor confidence since Q2 2009. For instance, this has been evident in a stronger HUF, a rising BUX index, as well as lower inflation and interest rates.

6.1.5 Contagion

As already highlighted in the previous section on panic, the reaction to a crisis is that panic eventually will start to feed on itself and investors suddenly crowd to get out of the door before it slams (Kindleberger 2005, p. 28). Contagion or "infectivity" or "propagation" of other, related or unrelated, markets is a major risk at this stage as well as throughout most of the Minsky-Kindleberger cycle. The degree of contagion typically comes from financial linkages between e.g. markets, industries and/or interdependent countries. According to the World Bank[18]: *"Contagion is the cross-country transmission of shocks or the general cross-country spill over effects. Contagion can take place both during "good" times and "bad" times. Then, contagion does not need to be related to crises. However, contagion has been emphasized during crisis times."* The following seeks to introduce the contagion theme and attempt to explain that contagion has been a developing theme throughout the crisis and therefore not limited to a certain and predetermined phase in the Minsky-Kindleberger cycle. The subject of contagion will be further analyzed relative to Hungary in the section *containing* in the analysis of the third generation model of currency crises.

Juglar, Mitchell, and Morgenstern (Kindleberger 2005: Manias, Panics & Crashes) noted that financial crises tend to be international, and either affect several countries at the same time or alternatively spread from the centres where they originate to other countries. Therefore, propagation is widespread during financial crises and spread from several channels, i.e. economic and/or psychological channels. Examples of economic channels are: arbitrage, trade, capital flows, exchange rates, prices, interbank loans and connections, bank portfolios. On the other hand, psychological channels were formerly seen as investor euphoria or pessimism transfer across borders (October 1929, 1987).

[18] Contagion (broad definition):
http://www1.worldbank.org/economicpolicy/managing%20volatility/contagion/definitions.html

One explanation for crisis transmission from one country to another is based on the negative impact of an identical exogenous shock experienced in a number of countries. It is fair to state that the financial crisis, which took off with the collapse of the housing market bubble in the United States in 2007, has damaged economies on a global scale. Worldwide; housing markets, banking sectors, most financial industries, privates and corporates to mention a few, have all been notably affected by the collapse of the US mortgage market bubble - some countries have experienced a direct effect and others were hit indirectly, maybe even with a delayed effect as was the case in Hungary.[19] What started in the U.S. in 2007 affected Hungary in the beginning of third quarter 2008 with August and September showing an almost completely opposite picture compared to July. Oil prices suddenly started to fall after reaching an all time high of 146 dollars a barrel in July 2008 and inflation started going the right way as well. Unfortunately the EURHUF exploded, Hungarian unemployment went up and the GDP down. As previously mentioned, the main reason was disbelief in the forint alongside dropping demand in Europe. Contagion was also a reality due to Hungary's enormous dependence on the growth in Euroland. This basically means that if the demand in Euroland drops, less import, the CE3 countries will export significantly less, causing the GDP to drop. This again means less production activity, less growth that this leads to higher unemployment and a weaker HUF. Euroland-driven weakness added to the pessimism about the growth outlook in Hungary, which increased the risk premium on Hungarian assets.

As pointed out in the analysis on Hungary the 5-year CDS spread in Hungary rose to above 500bp at the end of October, from around 170bp at the beginning of October and bond yields touched the level of 14% in the same period. Whether or not this overestimated the probability of default is uncertain. On the other hand, what is very much likely is the fact that the increase was affected by the poor fundamentals of the Eastern European region as well as the above-mentioned dependence on Euroland. Therefore, contagion from other countries did again come into play.

Another example of a characteristic contagion effect is relative to the FX exposure of Hungary to foreign denominated loans. Whether or not the late 2008 FX exposure of households and the government was large enough to be a major risk in itself was hard to predict at that time. But the market's fixation on the issue could easily make it potentially dangerous. Contagion in this case lies in the markets fixation on the subject, the comparison to similar countries, and e.g. dependence to other hurting economies and currencies.

[19] This due to the interdependence of Hungary to other major European economies, e.g. Germany.

6.1.6 Lender of last resort

The final stage of the Minsky-Kindelberger framework is of great significance as it has shown its presence to a very large extent in the recent global financial crisis. Rescue packages, bailouts and government takeovers, also known as functions of lender of last resort, have been frequently used words in the global financial press in the recent year. In the case of Hungary the picture has been no different. As mentioned in the *intensive crisis period* the IMF, the EU and the World Bank came to the rescue with a $25bn package in end October 2008, respectfully contributing with $15.7 from the IMF, $8.1 from the EU and $1.3 from the World Bank. As mentioned in *Hungary analysis* the package amount of the $25bn (€20bn) is ten times more than the Hungary IMF quota and three times the quota for countries seeking to borrow (Reuters 2008b). Each IMF member is assigned a quota based on the country's size in the global economy. This quota then determines the country's commitment to the fund, the voting power within the fund and the general level of possible lending. At the time of the agreement in end October 2008 this was the biggest international rescue package for an emerging market economy since the start of the current global financial crisis and it was the first for a EU member country (Reuters 2008b). The primary goal of the IMF arrangement was to reduce the increasing stress that ruled in the Hungarian financial markets, while creating the necessary conditions for the Hungarian government to facilitate the appropriate reforms in its market intervention as well as in the banking sector (IMF 2008b). Looking at the short and medium term goals these were highly concentrated around a demand from the IMF to reduce the fiscal deficit, meet the inflation target and make sure that the country would maintain a certain level of foreign reserves as a backup in case of markets intervention necessities (Domain-b 2008). Furthermore the conditions around the agreement also included cutting in welfare spending and freezing bonuses in the public sector, aimed at reducing the budget deficit.

In terms of the effects of the IMF agreement, the package created some stability during first and second quarter in 2009 and allowed the Hungarian central bank to cut rates three times 50bps over two months since the emergency 300bp rate hike in October 2008. End June 2009 Hungary had accessed $17.5bn of the total $25bn, but whether the Hungarian economy was well on the right track "only" to have access to $7.5bn in addition is a question of great relevance, and which answer time will tell.

Another very important lender of last resort element that was used towards the rescue of Hungary and its financial markets, was a EUR 5bn swap facility, as briefly touched upon in the analysis section on Hungary, granted on 16 October 2008 by the ECB (Reuters 2008a). The swap deal made it

possible for the NBH to borrow up to 5bn euros to ease the concerns over its banking system after a severe market downturn in the days up till the agreement was made. The primary purpose of the deal was to boost the liquidity in the country's euro operations, simply swap HUF for EUR if needed to support the NBH involvement in euro denominated investments.

Both the $25bn rescue package and the €5bn swap deal are examples of lender of last resort activities toward the country of Hungary in connection with recent crisis events. These two types of aid prove the fact that the Minky-Kindelberger framework's sixth stage has been fulfilled and that the actions of the lender of last resort has indeed been present in the Hungarian crisis. The lender of last resort actions has the purpose of being put into use to avoid further contagion. In other words, the IMF has granted the Hungarian government this aid to prevent the problems coming from the Hungarian economy to spread further to other economies. As we learned from *Hungary in a regional context* a country such as Austria, which has no less than 10% of their total GDP exposed in Hungary is of course, one must assume, very interested in the survival of the economy. Furthermore we learned that Hungary had invested no less than 125% of GDP in foreign denominated loans. The dilemma in using the lender of last resort however, is to a large extent the possibility of moral hazard if lender assists is given at all cost. For that reason exactly it is very hard to predetermine whether a country or organization will be given aid. If aid is guaranteed, moral hazard will occur, if it is doubted upon other economies might distance themselves from the economy in mind to try to avoid contagion to happen between the two economies, hence business opportunities will be lost.

6.1.7 Criticism on the practical use of the Minsky-Kindleberger framework

Before concluding the use of the Minsky-Kindleberger framework towards the Hungarian economy, the writers of this report find it highly relevant to reflect on the simplicity of the framework as a concluding theory used to determine a country's financial crisis situation. The concern concentrates primarily around the broadness and lack of explicit detailing in the general framework setup. As an overall structure the framework works satisfying in terms of helping the interpreter put an outline on the crisis in focus, hence put in the phases of evolvement of the crisis into already predetermined and broadly defined stages. However the general undefined specifications of the stages create loopholes in terms of using the theory in practise. Although it is defined that *euphoria* is a stage that *enlarges the money supply and results in an increase in credit channels*[20] and that this can lead to overtrading, this does not necessarily need to be a bad thing. According to Keynesian economic theories, running a fiscal deficit and increasing government debt can stimulate economic activity

[20] From Theory secion on Minsky-Kindleberger

when a country's output (GDP) is below its potential output. It was concluded that Hungary had seen a great period of constant positive yoy GDP figures, whilst being in a constant current account deficit for instance. It seemed to go very well for the country of Hungary despite deficit on the current account, the point is that euphoria can be a great thing for an economy, the real essence lies within recognising the possible ambiguities. The Minksy-Kindleberger framework emphasizes *euphoria* as possible over-trading, over-investment and over-borrowing – but what defines these economic situations? The point is that it lies with the user of the framework to define good and bad, to estimate whether a bubble is significant enough to lead to financial distress. Everyone will be able to tell *after,* e.g. the IT-bubble of start 2000s, but according to Schwartz bubbles and loss of wealth is not synonymous with a financial crisis (Schwartz). This leads one to the questions of *panic*, what is panic exactly? We know from the theory that investors *run for the door* during this stage, but to what extent? On October 26th 2009 the DAX index fell from a price of 5.800 to 5.635 in less than half an hour (See DAX chart, *Appendix 11*), is that panic? Or is a 1.7pps drop in half an hour not panic but noise and what is the time horizon to determine a possible panic scenario? This once again leads on to another critic point of the framework, the role of *contagion*. The writers of thesis obviously find the role of this subject very important, however contagion can be said to be present in the markets every single day. It is always present due to the interconnectivity between these international financial markets of today. In the before mentioned DAX downturn example, as the DAX index dropped almost instantly, investors fled from equities and commodities all over the world as the price of the UK FTSE 100 and the French CAC 40 dropped alongside a falling price of crude, contracting a 2.7pps - hence a financial shock transmitted and caused other markets to contract as well. The overall idea here is to reflect about the unspecific details of the theory along with a careful use of the framework in practise. Going forward the Minsky-Kindleberger framework will be used for the sake of forming an overall known structure, but will be rebuild later in the analysis.

6.1.8 Conclusion Minsky-Kindleberger framework

Throughout the above sections, the six stages of the Minsky-Kindleberger framework has been combined with the economic analysis of Hungary to validate to which extent Hungary has seen a financial crisis. Furthermore criticism from the writers in terms of the actual practical use of the framework has been incorporated and concluded carefully in use. Relative to the use of the on Hungary, from the *displacement* stage we learned how the kickoff of the U.S. subprime mortgage crisis originally started with the facts of low interest rates, innovative loan types, high leverage, careless lending practices and securitization, these all being displacement in the US economy. These are interesting to observe as Europe got to suffer from these displacements and hereby Hungary due to

the major dependence on the Eurozone – an indirect displacement so to speak. In regards of direct displacements in the Hungarian economy, the widening of the HUF fluctuation band in 2001 was emphasized as the renewed strength of HUF used to invest in other markets. Another displacement was the very important possibility of being able to take foreign loans. Due to a strong HUF other countries were willing to do business with Hungarian investors and let them into favourable loan deals that later backfired, as we learned from the *Hungary analysis*. Data presented in the *euphoria* stage confirmed the rush of the Hungarian economy with a rising BUX index, impressive FDI figures, GDP yoy positive trends of 3-5%, excessive euphoric loan taking and a continuous strong HUF - all figures contributed to the euphoria stage evolvement of Hungary. The *financial distress* stage taught us how 2008 was a point in time of the Hungarian economy where investors started to realize that the euphoric tendencies could not go on. As the IMF officially declared the government debt and net external liabilities of Hungary the largest among new EU member states, this was a sign of the seriousness of the situation. HUF lost significant strength against both euro and dollar, the BUX started its downturn, borrowing saw an almost instant stop and house prices started to fall. The distress element was truly present. In the fourth stage of the Minsky-Kindleberger framework, *panic*, things got even worse. In the spring of 2009 the BUX index was trading at a price not seen since start 2004, house prices fell 10% - 30% and as a manoeuvre to make things change, and change fast, the Hungarian central bank increased the interest rate with no less than 300bp in late fall 2008. After the hike, investor fled from the debt and equity markets as seen in the capital flows, the CDS spreads were at tapping at horrifying 650bps, bond yields went close to 14% and the HUF was at its weakest point in a long time against euro, dollar and Swiss francs towards the end of March 2009. Panic showed its true face and Hungary seemed like a country in serious troubles. The *contagion* stage mentioned the U.S. subprime crisis as on the biggest sinners relative to spreading contagion throughout the world. Primarily when looking at Hungary, the crisis in Europe (that again primarily was causes by the U.S. subprime crisis) had a major contagion effect towards Hungary due to the dependence on the Eurozone. Further, the foreign denominated loans cannot be neglected in threatening a country such as Austria with a 10% of GDP exposure in Hungary, and thereby the country of Hungary in itself became a sinner of contagion due to the correlation with Austria among others. Lastly the *lender of last resort* stage helped us put into context the massive economic help that Hungary has received during the recent financial turmoil in the shape of a $25bn rescue package and a €5bn swap facility. From the six stages of the Minsky-Kindleberger framework it is believed that Hungary has suffered a recent financial crisis, evolving from primarily the month of July 2008 and up until summer 2009. However the harsh criticism in regards of the soundness of the framework concluded that the six stages of the framework is easily filled out, as no restrictions,

limitations or general criteria's has to be fulfilled to prove the framework satisfied. This will be brought up again in the *EM Crisis Model* at the end of this chapter. Moving forward it is vital for further analysis to figure out whether Hungary fulfils the criteria of known currency crisis theory and whether the pertinent models are better in mapping the recent Hungarian turmoil to hereby conclude whether or not Hungary has experienced a currency crisis.

6.2 CURRENCY CRISIS THEORY ON HUNGARY

We have just concluded that according to the Minsky-Kindleberger framework, Hungary has seen a financial crisis within recent time. As we believe a financial crisis is the main explanation of what have happened in Hungary, we also believe that beneath the header of a financial crisis lies the possibility of a currency crisis. The speculations in regards to this subject have arisen throughout the conclusions made during the *lead up to crisis* and the *intensive crisis period* sections. Several times the fact of significantly rising foreign borrowing and the importance of this matter have showed its presence, making it impossible not to consider whether the combination of excessive foreign borrowing, depreciating HUF, general over-indebtedness and plummeting house prices could theoretically be concluded to be an actual currency crisis. Already in February of 2008, with the scrapping of the HUF fluctuation band, one would be sceptic in regards to the fact that Hungary was still a rather new and upcoming economy. Initially the market proved the sceptics wrong as the EURHUF went from around 265 in that February month to below 230 towards mid 2008 - but then it happened. As the central bank had stated that intervention would not be conducted and the markets of Hungary turned around in July 2008, the HUF plummeted to historical low levels and reached an all time low of more than 310 to the EUR in March of 2009, the real exchange rate being at a local minimum not seen equal since mid 2006. As house prices shot down in the spring of 2009 the foreign denominated loans in especially Swiss francs now seemed almost impossible to pay back.

In this section the theories of the three generational models of currency crisis will be put together with the facts of the economical research from the *lead up to crisis* and the *intensive crisis period* sections. This is to make clear whether Hungary, according to known theory, has experienced a currency crisis while also a financial crisis as already concluded.

6.2.1 First generation models on Hungary

If there has been a currency crisis according to Krugman, Hungary should have had a budget deficit caused by a credit expansion. An important point when using the first generation models in practice

is that the depletion of reserves happens suddenly and not gradually. This is important to understand as market participants liquidate their domestic currency while the central banks foreign holdings are still relatively high. The essence of this model is the speculative attacks, the buying of the entire stock of foreign reserves that the central bank is willing to sell due to the effort to maintain the fixed exchange rate regime. As foreign reserves run out the central bank is forced to go from fixed to floating exchange rate regime. According to Krugman the foreign reserves should have depleted towards the time of the abandonment of the fluctuation band in February 2008. As showed in *lead up to crisis* the reserves stayed at a very stable level from start 2006 and up until the time of the 300bp rate jump on 22nd of October 2008. In the subsequent month of November 2008 the foreign reserves rose from approximately 17bn euro in October to 22.5bn in that November month. Looking at the budget deficit *figure 17* from the *lead up to crisis,* there have been changing but constantly negative fiscal figures in Hungary throughout the last decade. 2008 showed the lowest deficit since the year 2000, but nevertheless still a deficit that is in line with the model of Krugman.

All in all one can conclude that Hungary has seen a fiscal deficit, but not depletion in the foreign reserves. Furthermore the first generation models are built on speculators betting on a significant weaker domestic currency, this is the essence of the speculative attacks. However, the HUF gained significant strength on both euro and dollar in several months after the abandonment. The abandonment of the fixed exchange rate regime and the possibility of a currency crisis therefore do not seem to have been fulfilled according to Krugman's first generation model.

6.2.2 Second generation models on Hungary

In the first generation models the market participants base their attacks on the assumption that the effects of these do not intervene with the fiscal imbalance and domestic credit policies situations. On the contrary, second generation models are built on the relationship between expectations and actual outcome, simply the direct influence on market expectations on macroeconomic policy decisions. This relationship or interaction between investors' expectations and the actual policy outcomes is what leads to the self-fulfilling currency crisis discussed in the currency crisis theory section. The self-fulfilling crisis is a chain of events, where decisions made and actions taken leads to crisis.

Obstfeld (1994) looks at the relationship between interest rates and currency depreciation. He states that investors' expectations of a depreciating currency will rise with higher interest rates and vice versa. The equilibrium of high interest rates and high depreciation seem to have been the one closest to the situation in Hungary in the fall of 2008. As discussed so many times before the 300bp rate

hike in October 2008 did not change the HUF weakening that started off in July that same year, HUF kept on decreasing. It did make some 'noise' around the time when it happened, but the HUF kept its downward trend in the months after the hike. The point here is that Hungary was in a situation with high interest rates and high depreciation. However, a very important fact is that the equilibrium situation is, according to Obstfeld, something that happens before the fixed exchange rate regime abandonment, whereas this situation was present after. The floating regime was a fact in end February 2008. However one could argue that a situation equivalent to the one in end 2008 with 11.5% interest rate and a rapid weakening HUF happened before the fixed regime abandonment, however, on a smaller scale. Point being that interest rates where high before the February abandonment as well, being 7.5%, and the HUF had been losing strength against euro and dollar from mid 2007 and up until the point of the abandonment. All of this as mentioned, on a significant smaller scale than after the 300bp rate hike in end 2008. Whether this is enough to confirm Obstfelds model of 1994 to be efficient in describing what happened in Hungary in regards to a possible currency crisis is uncertain. We know from the preceding theory description that the actual currency crisis will happen after the fixed rate abandonment. The writers of this thesis believe that there may be enough consistency in the actual situation that happened before the introduction of the floating exchange rate regime, to state the Obstfeld model of 1994 as somewhat *plausible* in describing the turmoil in the Hungarian currency market.

Obstfeld looks at one more important thing that will be able to further conclude whether his model is of relevance to use towards the Hungarian currency situation, this is the growth of wages. From the *intensive crisis period* analysis we know that growth of wages has been rising significantly during the last couple of years, but in the month of February 2008 there was a yoy increase of no less than 13.1% (Bloomberg 2009b). Following this wages increased less as the global financial crisis engulfed Eastern Europe. However the point is that up until the time of the fixed rate abandonment, the country saw all time highest wage increases. This is exactly what Obstfeld points out to be one of the leading factors in the fixed rate scrapping. As domestic currency depreciates trade unions will ask for higher wages, this leads to a decrease in output growth that again leads to increased unemployment – all of this leading to a higher cost of maintaining a fixed exchange rate regime.

Whether a 7.5% interest rate can be considered high enough, and whether the HUF weakening in the months before the abandonment was significant enough to be considered a "high equilibrium" is a question with an uncertain answer. With the point of wage growth indeed being present and combined with the equilibrium being at the least medium high it can be concluded that the Obstfeld model of 1994 has several *plausible* elements relative to the crisis in Hungary.

The ***Obstfeld model of 1996*** takes in the factors of the 1994 model and combines these with traditional economic game theory. Generally one can characterize this as a domino effect, if A attacks, B attacks etc. However, as concluded above, as the 1994 model only seems plausible and not completely possible, the elements of the 1996 model do not seem to come into play in the way that the model intends. The depreciation of the HUF has not been very significant before the fixed rate abandonment and the game theory part relative to the 1996 model cannot truly be said to be present. Furthermore the situation of an investor doing the same as another investor is very much illustrated in the *herd effect* to be described in the third generation models further down. Still the 1994 model seems to be the one of most significance at this stage, in comparison to the Obstfeld model of 1996.

The ***Sachs, Tornell and Velasco model of 1996*** seems to be of interest, but according to the writers of this thesis, not in the way that the three writers intended it. The model places focus on the nominal exchange rate and on the back of this, a possible lending boom. As we learned from the *lead up to crisis*, loans made in HUF have been depreciating from mid 2003, whereas loans in foreign currencies has been rising equivalent with a rising total amount of loans. Point being that Hungary did see a lending boom, just not made in the domestic banking sector. However, *table 2* highlighted that Hungary, in February of 2009, had no less than 125% of GDP in foreign denominated loans, primarily being mortgages from Austrian subsidiary banks. This is a very important point, as the foreign loans play a significant role in the Hungarian financial situation.

From the model of Sachs, Tornell and Velasco it is stated that low exchange rate and high lending boom will lead to a greater degree of exchange rate devaluation. There have been very favourable lending conditions, but not in the Hungarian forint, hence the lending boom has been a foreign currency-lending boom, one again a detour from the original intentionally uses of the model. A major point to be focusing on in this model as well is the net capital outflows and the level of these. This key figure tells something about the chances of withholding the fixed exchange rate regime.

In the case of Hungary, the net capital outflows have indeed been higher than the foreign reserves, as indicated in charts from *lead up to crisis* (FDI and Foreign reserves), which make devaluation a possibility according to Sachs, Tornell and Velasco. This indicates that the fixed exchange rate regime will be hard to defend as the relationship between these two figures is so far from each other and the possibility of fixed rate abandonment is present.

As with the case of the Obsfeld models of 1994 and 1996 there is once again not a perfect alignment between the model and practice, however there are similarities. Hungary has seen a lending boom, as we concluded that the total amount of loans has gone up within the last decade. The model

states that favourable lending conditions are essential for this boom to happen. This has been the case for other countries, which has meant that the Hungarian investors have made their loans in foreign currencies and also, to a certain extent, directly with other countries, e.g. Austria. This is quite an important point as these supposedly favourable domestic loan conditions should, according to Sachs, Tornell and Velasco, lead to a greater degree of devaluation. As this has not been the case for the Hungarian banking sector this part of the model does not seem to be fulfilled according to intentions.

The second very important point of the Sachs, Tornell and Velasco model is the level of net capital outflows and whether these exceed the foreign reserves. This has been a fact in Hungary, which makes the level of possible devaluation rise, as the government will have a hard time defending the exchange rate regime, which in worst-case scenario can be abandoned. One major point against and one major point agreeing leaves the Sachs, Tornell and Velasco model *plausible*, but not satisfactory in explaining the Hungarian currency situation. With this in mind the third generation of currency crisis models will now be discussed.

6.2.3 Third generation models on Hungary

As described in the preliminary theory section of the report, the currency crises in the countries of Southeast Asia (1997-1998) justified a new set of models as they were related not only to economic policy but also to market imperfections or distortions in the financial system. The phenomenon of a twin crisis is related to third generation models of currency crises as currency and banking crisis may happen simultaneously, as briefly touched upon in the theory section. The reason for this type of crisis is the inflow of a large amount of short-term foreign capital while risk management of financial institutions is fragile. The following aims to interpret and structure the happenings in Hungary in a conceptual way relative to the third generation theory, which includes three groups of models.

The ***first group of models*** stresses problems in the banking system (a syndrome of over indebtedness abroad, moral hazard and asymmetric information in an environment of implicit guarantees from government and international institutions, and inadequate supervision of the banking sector) as the most prominent factors relative to a currency crisis. Corsetti (1998) suggests that moral hazard is the cause of a banking crisis. While the government is giving implicit guarantees to domestic bank debt it is likely that moral hazard may occur in the process of banks' providing loans – this will lead to an increase in the number of bad loans. The main danger to the Hungarian banking sector has derived from the dramatic downturn of the economy (as the country is highly vulnerable to

market sentiment), the large share of foreign currency lending by privates and corporates, tight liquidity and the significant volume of foreign currency obligations (Realdeal.hu 2009b).

The downturn of the global economy did not initially have a large impact on Hungary's economy. This soon changed due to Hungary's enormous dependence on growth in Euroland, as seen in *appendix 6*, which - with many of the larger countries such as Germany - was highly affected by the international financial and credit crisis led by the collapse of the US housing market. Currently, with the Hungarian economy in recession and experiencing deflation, the likelihood of corporate defaults is rising and this will lead to an increase in losses in banks' corporate loan portfolios. On top of this, the worsening situation on the job market[21] as well as HUF volatility and the decline in house prices of 10%-30%, see *lead up to crisis*, is also likely to have a further negative impact on the losses in the banks' retail portfolios. This situation relative to Hungarian banks has been progressing since July 2008 and Moody's recently (August 2009) stated that it expects this combination to further weaken the profitability and positioning of most Hungarian banks over the next two years. Moody's has two times downgraded the Hungarian government bond rating, in November 2008 and March 2009, to its current level of Baa1 with negative outlook (Realdeal.hu 2009b).

Relative to the above and highlighted in the analyses of Hungary there has been a significant weakening of the HUF since July 2008. This reveals the risks associated with the fast growth in lending that has been driven mainly by foreign currency loans in recent years. March 2009 saw a HUF weakening by over 20pct against the euro; this has put pressure on both retail clients and smaller companies experiencing difficulties servicing their debts. Furthermore, credit tightening has made it more expensive and difficult for Hungarian banks to hedge the open foreign currency positions on their balance sheets as well as to raise funding. A Q1 2009 survey on Hungarian bank lending practices conducted by the NBH emphasized a continued decline in credit availability and households' demand for credit. The number of banks reporting further tightening in credit terms, however, was lower compared with the previous survey. On the other hand, banks' willingness to lend to the corporate sector, and large and medium-sized companies in particular, as well as to the commercial real estate sector declined further throughout first quarter 2009. The lower willingness to lend did not affect lending to small and micro-sized enterprises as much as lending to other non-financial corporations.[22]

[21] The unemployment rate was between 7.5% and 7.8% for much of 2008, but started to rise sharply in the fourth quarter to reach a peak of 9.9% in February-April 2009 as a result of the financial and economic crisis. (Budapest Business Journal 2009a)

[22] See report: NBH bank lending practices Q1 2009

With an emphasis on the banking system in the above, the first group of models in the third generation theory has been underlined relative to the crisis in Hungary. As pointed out, the global downturn in the economy had a delayed effect in Hungary but once it struck Hungary's banking system suddenly felt the global credit crunch and reacted with domestic credit tightening in chorus with banks worldwide. The writers of this thesis has no doubt that banks' corporate and retail loan portfolios will be hit as companies and private consumers will default on their loans in foreign currency, hereby confirming the point by the first group of models of a syndrome of over indebtedness abroad. Already an increasing amount of NPL's has been seen and will to the best of judgement continue to rise (EBRD 2009). Loans in foreign currencies, mainly Swiss franc, have been given excessively to privates and corporates in Hungary for several years with continuation in the initial phase of the financial crisis - even with HUF depreciating strongly making HUF denominated loans much more expensive to repay. Another clear indication of a potential crisis in the country is Moody's expectation of a further weakening of the profitability and positioning of most Hungarian banks and it's rating of Hungarian government bonds at Baa1 with further negative outlook. According to Krugman (1998) and Corsetti, Pesenti, and Rubini (1998), moral-hazard-driven lending is an evidence of the mechanism of crises emergence. The theories claim that a guaranteed bailing-out of struggling financial institutions was in some situations anticipated by executives of financial institutions and representatives of government. With international institutions (IMF/EU) providing LLR support to the country, hence the $25bn rescue package and the €5bn swap deal, it is likely that moral hazard has occurred in the process of banks' providing loans. Yet, this is not confirmed. Nevertheless, if one compares the situation to what has played out relative to banks in the global financial crisis, it is indeed a possibility that a situation of moral hazard and inadequate supervision of the banking sector has occurred in Hungary.

Essentially, the first group of models in third generation theory claim that troubles in the banking system lead to a currency crisis, when combining excessive loan taking and moral hazard tendencies.

The ***second group of models*** consider the main cause of a currency crisis to be the herd effect. Chang and Velasco (2001) describe the herd as *"information cascade where individual currency market participants tend to make their choices based on previous actions by other participants of the same or strongly correlated market"* (Chang, R. & Velasco, Andres 2001). Certain distortions result in mass panic and the recognition of actions undertaken by other investors who seek refuge in a foreign currency.

Chang and Velasco consider the three period's model (mentioned in the theory section) an assumption in their model of third generation currency crises. In essence, the focal point is demand deposits, which is contracts between banks and citizens on investments in long-term technology using borrowed foreign money. Relative to the crisis in Hungary, the three period's model[23] has no relevance and will have no emphasis. Focus in the following part will be put exclusively on Chang and Velasco's key notion on the herd effect comparative to individual currency market participants and debt to foreign countries. This is highlighted, as the writers believe that this is the core relevance of this theory in regards to the happenings in the Hungarian economy. Chang & Velasco (Chang & Velasco, 1998, p. 3) present illiquid banks as well as liquidity squeeze to be causes of a crisis.

One way to consider the herd effect is in comparison to fluctuations in a given exchange rate, e.g. HUF. Market forces of supply and demand relative to trading and imports/exports mostly regulate the rates of floating currencies while central banks can influence the rates using monetary policies. Mid 2008 was the time when HUF depreciated dramatically against e.g. EUR and USD and it is fair to deduce that speculators and investors of all kinds suddenly decided to sell out of the their long HUF positions while others decided to speculate in further HUF depreciation. Obviously at the time there was not much confidence in the Hungarian Forint, which indicates a situation of an apparent information cascade where individual currency market participants make their choices based on actions by other participants. This clearly shows how the herd effect in this case results in mass panic and recognition of actions undertaken by other investors who seek refuge in another currency. Domestic investors presumably searched refuge in a foreign currency, e.g. EUR or USD while foreign investors promptly liquidated their HUF positions.

Chang & Velasco (1998) mention that panic can be caused by both domestic depositors/investors and/or by panic of foreign investors. They focus on banking systems and point to the fact that the volume of short-term debt to foreign countries highly increases a country's exposure to banking crisis. Naturally, the high volume of foreign short-term debt, as seen in Hungary, also increases exposures to failures of firms and private individuals. Furthermore, Chang & Velasco (1998) state that fragility of a financial system and the occurrence of a crisis can be intensified by financial liberalization and the combination of bad policies and unfavourable shocks. Comparative to the financial crisis that started off with the collapse of the mortgage market in the United States in 2007, financial liberalization and bad policies were indeed main causes. Factors such as monetary policy, financial innovation, and lax lending standards/low financial literacy started the Minsky-

[23] Explained in the theory section, 3. Generation models

Kindleberger cycle and acted as the displacement phase[24]. In the United States, securitization spread the exposure of the subprime market via financial products such as asset-backed securities (ABS) and collateralized debt obligations (CDOs). On top of this, securitization enabled banks to shed assets, which made the expansion of credit easier.

As previously highlighted, Hungary was not directly affected by the collapse of the US subprime crisis and the delayed effect came through Hungary's interdependence to larger European economies, especially expressed in the high percentage of export figures going to the Eurozone. Nevertheless, the bad policies, financial innovation, and lax lending practices all acted as an unfavourable shock to the world's economies. Furthermore, financial liberalization has been a reality in Hungary as well with e.g. bank lending practices and enormous volumes in foreign denominated debt. Linked to the key point by Chang & Velasco (1998), this has likely helped to intensify the fragility of the financial system in Hungary. To summarize, the herd effect with investors crowding out has been evident in many spheres throughout the Hungarian crisis.

The ***third group of models*** draw most attention to topics such as contagion, transfer, and balance sheet problems. According to Krugman's model (1999) a currency crisis may be reality in a situation with soon expected depreciation due to e.g. real exchange rate overvaluation. Domestic companies with a large proportion of foreign debt will be hurt by capital outflow and their ability to invest will be limited. Hungary experienced a dramatic and unexpected downturn that kicked off in the third quarter of 2008. The HUF started to depreciate significantly against e.g. EUR and USD in July/August after a steady period of highs for the currency. This happened alongside a sudden hike in unemployment and fall in GDP figures. The main reason was disbelief in the HUF in conjunction with a dropping demand in Europe. As analyzed throughout the analysis of Hungary, firms, private citizens and banks have had enormous exposures to foreign denominated debt, particularly Swiss francs. As the real exchange rate reached an all time high in mid 2008 of 120, lack of competitiveness and true overvaluation of the currency must be said to have been present. This is in line with the Krugman's model of 1999 of stating that expected depreciation, due to real exchange rate overvaluation is the primary factor leading to a currency crisis as mentioned above. Subsequently, with the real exchange rate depreciating to the extent experienced since mid 2008, loans in Swiss francs have been significantly harder to pay back. This is still the case in Hungary for firms, privates and banks with high exposure to foreign denominated debt. In accordance with Krugman's model (1999) considerable exchange rate depreciation, as seen in Hungary, makes foreign debt soar as

[24] In relation to the analysis on Hungary using the Minsky-Kindleberger framework

well as reduces output due to limited ability to invest. Furthermore the model states; when foreign debt becomes unbearable for over-exposed companies, many will go bankrupt and self-fulfilling expectations are realized. This is highly connected to the models focus on balance sheet problems. The basic idea is that banks and firms in emerging market countries have explicit currency mismatches on their balance sheets because they borrow in foreign currency and lend in local currency. Banks and firms face credit risk because their income is related to the production of non-traded goods whose price, evaluated in foreign currency, falls after devaluations or depreciations. Banks and firms are also exposed to liquidity shocks because they finance long-term projects with short-term borrowing. This leads the thoughts back to the problems in Hungary of long lasting, and still rising, current account deficits on the balance of payments (*figure 16)*, alongside the ever so essential foreign denominated loans, interconnected with a country such as Austria and their 10% of GDP exposure in Hungary.

Essentially, the third group of models considers that a currency crisis is caused by the contagion effect. First of all, there are various explanations of crisis transmission from one country to another. One of the explanations is based on the negative impact of an identical exogenous shock experienced in a number of countries, this obviously bringing the thoughts towards the collapse of the housing market bubble in the United States in 2007, that has damaged economies on a global scale. Also, financial interdependence can contribute to the expansion of a crisis when the inability of a country to repay its external debt forces its foreign creditors to recall loans to other countries. The Hungarian Forints depreciation, the foreign loans certainly makes it likely that the global credit crisis combined with e.g. Hungarian investors faulting on their foreign debt has affected foreign creditors' willingness to continue loans to other foreign countries, hence the transfer effect. Relative to this, the contagion theory further describes that a currency crisis in a particular country can contribute to a deteriorated perception of economic systems in other countries with similar system characteristics. On the contrary, the currency crises in the 90s; European Monetary System (1992-1993), Latin America (1994-1995), and East Asia (1997-1998) illustrate how dissimilar countries can experience the similar turmoil caused by contagion.

To summarize on the above, it is evident that Krugman's model (1999) on contagion, transfer, and balance sheet problems to some extent fits the situation in Hungary, although being quite superficial. In essence, an identical exogenous shock, the influence of trade channels and the existence of joint creditors may be grouped as factors of crisis caused by economic fundamentals, while the role of capital market information is consistent with the self-fulfilling characteristics of a currency crisis.

The concepts of moral hazard, herding and contagion are all, despite all being rather overall analysis subjects, important elements in third generation models of currency crises.

6.2.4 Conclusion currency crisis theory on Hungary

From Krugman's model of the first generation we learned that Hungary had seen a fiscal deficit but not depletion in the foreign reserves around the abandonment of the exchange rate regime in February 2008. Furthermore it was concluded that if there had been any speculative attacks against the Hungarian forint, these were not significantly large enough to make the HUF weaken before the fixed exchange rate abandonment. On the contrary the currency appreciated in the months after the fixed exchange rate regime was scrapped. The Krugman model was not fulfilled and no currency crisis had seemed to be present. From the second generation of models the first out of three models was the Obstfeld model of '94. From this model it was concluded that the 7.5% interest rate and the slight HUF weakening prior to the abandonment was at a medium high equilibrium. The growth of wages was more than significant enough to be satisfactory in confirming the Obstfeld model of 1994 and this combined with the before mentioned medium high equilibrium made the model *plausible* in confirming a feasible currency crisis. The lack of significant HUF weakening prior to the exchange rate abandonment excluded the Obstfeld model of 1996 in being truly interesting, and this model was turned down in regards of being interesting in explaining the Hungarian economic situation. More interesting was the 1996 model of Sachs, Tornell and Velasco. The alignment between model and practice was not perfect but shared important similarities. The lending boom had been present, but being in foreign currencies rather than in the domestic. This important fact made the possibility of devaluation, due to favourable lending conditions, lack its presence proven in the fact of appreciating HUF. However the net capital outflows was almost 5 times higher than the foreign reserves around abandonment and this part seems more than satisfactory fulfilled. All in all the Sachs, Tornell and Velasco model of 1996 is likewise made *plausible.* As for the final generation of currency crisis models, the third is made up of three groups. In regards to the first group of models, the banking section is the main interpreted factor when laying out the frame of a potential currency crisis, hence the previously discussed interconnectivity between banking and currency crisis. It was concluded that the Hungarian banking sector has seen a delayed effect of the US subprime crisis, and that an excessive amount of foreign denominated private and corporate loans are bound to default, due to a weak HUF and still tighter credit conditions from domestic banks. Further more we learned that Moody's has downgraded Hungarian government bonds, as there exists a clear expectation of a continuous weakening of the profitability and positioning of the Hungarian banks. Due to inadequate supervision of the Hungarian banking sector, moral hazard was very likely to have been

present. As for the second group of models in the third generation of currency crisis models, the herd effect was emphasized as having caught up on Hungary. With bad policies, financial liberalization and lax lending practices being concluded to have had a very unfortunate influence on the world's economies and also specifically on the country of Hungary. Enormous volumes of foreign denominated debt has definitely intensified the fragility of the financial system in Hungary, hence the herd effect of excessive loan taking is a proven fact of the presence of this important economic mechanism. As for the last group in the third generation is was concluded that contagion, transfer and balance sheet problems has been a part of the Hungarian economy as well. The contagion effect from the US as being the primary starter to the problem, transferred to Europe that was interconnected to Hungary and therefore ended up having the same problems as the rest o the world. Balance sheet problems were vividly confirmed in the current account deficits as a main problem within this area, combined with the obvious over valuated real exchange rate that saw an all time high of 120 in mid 2008. All in all the third generation of models, being the newest, seems to be the ones closest to explaining the recent Hungarian turmoil as both moral hazard, herding and contagion has all been present in the Hungarian economy. To a large extent due to the broadness of these financial principles it seems that the third generation can conclude that there has in fact been a currency crisis in the country of Hungary. However, similar to the case of the use of the Minsky-Kindleberger framework, the three generations of currency crisis models cannot be confirmed satisfying in explaining the Hungarian turmoil to the fullest, due to unspecific outlines of the use of these models. The writers of this thesis believe that the confirmed elements of the generation combined forms a much more qualified estimate of a possible currency crisis in Hungary. It is therefore found highly relevant to put together the best elements of the three generation models and decide on an overall use of the Minsky-Kindleberger framework going forward - this next section will seek to accomplish this.

6.3 ADJUSTED CRISIS THEORY ON HUNGARY

From analyzing the major points of the three generation models in context with the actual happenings in the Hungarian economy, it has been concluded that some elements of the different models are usable, as well as others are disconfirmed. The writers of this thesis believe that there is a very simple reason for this. The crisis we are facing today is of a significance that cannot be compared to previous crises. The crisis has been compared to the crisis of the late 1920's, but there are elements in today's crisis that reach beyond the crisis of the 1920's, as we are seeing innovative new finan-

cial products and extraordinary markets conditions. To mention a few, products such as ABS', CDO's, CDS' and loan types such as subprime loans are all highly risky and plays a very important role in the global crisis of today. Furthermore the exceedingly smaller world, hence the interaction between countries, the connection of the world through the Internet and the possibility of accessing all kinds of financial products from your computer is a very important factor in the new era of crisis. The herding and the contagion effect that the above-mentioned factors create are of great significance when interpreting today's crisis. On the back of this it might be possible that the three generation models will in all eternity be unable to interpret the crises of the future and that a new generation of models will be needed to meet the ever so changing elements of the financial world we are living in today. As the Minsky-Kindleberger framework is believed to be more of a general over viewing model, simply a way to put the different happenings during a crisis into a context, this easily forms the fundamentals of a potential new model. With these statements in mind the next section of the thesis will try to put together the still usable elements of the three generation models and combine these with the principles of the Minsky-Kindleberger framework, along side a new set fundamentals that are needed to explain the crisis situation of today. This is all effectively forming a new and optimized model that perfectly will be able to explain the recent Hungarian crisis and foresee potential future emerging market crises.

6.3.1 First generation models essentials

Looking at the ***first generation of models*** and the elements relevant to today's crisis from this particular set of models, the writers of this thesis believes that attacks on a currency is a very central indicator of a potential crisis. In saying that, one will have to include the level of foreign reserves as Krugman mentions in his model of 1979. This is important as the reserves are used to maintain the fixed exchange rate regime. If the level of these reserves drops significantly, this is indeed a sign of a potential crisis; hence what will happen if they run out? If credit expansion is not possible, the fixed exchange rate regime cannot be defended anymore and will be abandoned – therefore the foreign reserves level are important and should be kept under tight supervision at all times. Speaking of credit expansion, the Krugman model of 1979 solemnly states that the credit expansion is caused by a budget deficit, hence the country' use of money exceeds the actual income; therefore extra credit is needed to cover this difference in spending versus income. The model states that the credit expansion is made on the back of a budget deficit, to cover an already existing hole in the economy, but why not the other way around? In times where cheap credit and endless possibilities of achieving this has been a fact, subprime and foreign denominated loans etc, the credit expansion would easily be thought to be a strategic move for the country's future, simply investments to make the

country grow, hence the budget deficit could happen on the back of this instead of the other way around. Point being, that a budget deficit should not be a part of the model creating a necessity to expand credit, but as a consequence of a country's investment in the future. The credit expansion is what makes the attacks happen, not the budget deficit, in here lies the essence of the removal of the budget deficit as a part of this adjusted and newer model.

6.3.2 Second generation models essentials

From the second ***generation of models***, in the Obsfeld model of 1994, going forward large emphasis will be put on the level of the nominal interest rate. This is probably one of the elements that truly cannot be left out of a future currency crisis model as this factor is interconnected with the public debt. Rising interest rate makes debt more expensive and ultimately can lead to currency depreciation as this is used to balance out the disturbances in public debt. Hence, higher interest rates will lead to expectations of depreciation that obviously is of great significance in terms of predicting a potential currency crisis.

In terms of wage growth and the general wage level, it is partially believed that this is of great enough significance to be included into the newer model of crisis. Partially because, to the belief of the writers, that the effect of high growth wages on the cost of the exchange rate regime is basically part of a further overall contagion effect. The point here is that a lot of economic figures and fundamentals lead to a higher cost of the exchange rate regime, not only the growth of wages. Going into the future, emphasis should be put on the general contagion effect and everything this could include. Instead of solely focusing on the growth of wages, more economic factors should be listed to go through when foreseeing a potential crisis. Due to the interconnectivity of today's financial markets, this list could include a large extend of the situation of the involved countries economic situation; interest rate levels of other countries, import/export relationship, the balance of payment situation etc. All factors that one way or the other will cause a credit expansion, a deficit or another determining factor that will increase the cost of maintaining the regime. The list could be long, but the point here is that we are facing crises far more complex than the ones of the three generational models. Because of the long list of factors that are to influence the cost of maintaining the fixed exchange rate regime, the emphasis should be put on the contagion effect in itself and the underlying factors that implicit are now made part of this element. Move the focus away from the growth of wages as a main factor and push it on as an underlying factor. More on the importance of contagion effects further down in *third generation models essentials*.

Obsfeld's model of 1996 grants the effect of traditional game theory a large say in terms of a more psychological approach in currency crisis predictions. There is no doubt about the fact that market participants actions influence each other and this to so large extend that it will have an influence on a potential crisis. With that said, the writers of this thesis believes that a more modern definition should be used going forward, simply the consequences of the herding effect. Technically the principles behind the two definitions are both based on the actions of what other people do. However it is hereby analyzed that the herding effect connects theory on financial crisis with currency crisis, a synergy that is believed to be so great that it makes sense to use this slightly different term of herding over game theory. As the third generation of models brings in the herding effect as a major point in predetermining a currency crisis, it seems to make sense to scrap game theory and emphasize the conditions of the herding effect. More on the effects of herding in *third generation models essentials.*

Lastly in the second generation of models, the three authors Sachs, Tornell and Velasco emphasize the importance of the banking sector and how this through a lending boom is an extremely important element in a potential currency crisis. To this statement, the writers of this thesis certainly agree to the fact that the banking system has vital significance relative to modern crises. The subprime crisis truly underlines this fact as being one of the single most important factors that can lead to a crisis. Looking further beyond this, it is highly important to bring up the example of the foreign loan tendencies of Hungary. In Hungary the lending boom has been interconnected with the problematic situation of other currencies, hence the banking sector emphasis of the Sachs, Tornell and Velasco model can be said to be highly relevant. Combined, naturally, with the focus on the banking sector are nominal interest rate levels.

6.3.3 Third generation models essentials

Looking at the ***third generation of models***, it has been rather clear since the conclusion in *theoretical application to Hungary*, that moral hazard, contagion and the herding effect are all three very important and relevant elements, although broad, relative to describing today's crisis. Going forward it is believed that these three will continue to play an important role in predicting future crises. In comparison with elements from the first and the second generation models including such as nominal interest rate and level of foreign reserves, moral hazard, contagion and herding are factors that are more floating and generally harder to quantify. Point being that an interest rate level is just a figure, foreign reserves are just a figure and they are both quite easily read and interpreted. Moral hazard, the contagion and the herding effects however are neither easily read nor easy to interpret.

Sure the three elements include figures such as balance sheet mismatches to map possibly currency exposure problems. Furthermore, as discussed above, this does not mean that the interest rate and the level of foreign reserves are not important, because they are indeed, it simply means that in this newer era of crisis, these elements are more complex and harder to foresee than in previous crises. Due to the ever so changing financial markets, the newer more complex products, the easy access to these and the increasing wealth of the world has led to the fact that these more psychological elements play a very important role in explaining present and future crises.

6.3.4 Minsky-Kindleberger framework essentials

In the history of currency crisis theory, it has been a general actuality that the theories of currency crisis have been separated from the theory of financial crisis. As has been a continuing chosen path throughout this thesis, the interconnectivity of financial and currency crisis is of such large an importance that future models of currency crisis should be combined with elements of financial crisis. In regards to this the Minsky-Kindleberger framework is quite suggestive in that it provides a systematic interpretation of the recent Hungarian crisis. The stages of the model can be traced in the previous described six stages: displacement, euphoria, financial distress, panic, contagion and lender of last resort. Kindleberger himself best describes the relevance of Kindleberger-Minsky model to explain a currency crash. He explains (1996: p. 18), *"One place where the model surely applies is foreign exchange markets, in which prices rise and fall in wide swings, despite sizeable intervention in the market by the monetary authorities, and in which exchange speculation has brought large losses to some banks. Financial crisis has been avoided, but in the opinion on some observers, not by much"*

As discussed in the third generation models, financial liberalization policies in Hungary such as banking lending practices and debt in foreign denominated currencies has been a major *displacement* factor making a currency crisis possible according to the Minsky-Kindleberger framework. The *euphoria* stage can be characterized as over-consumption, over-indebtedness and general over-trading in regards to a currency crisis. These three actualities respectfully represented in houses bought too expensive with loans that where way to large, herein the over-indebtedness and the possible over-trading seen in the rise of the BUX index as discussed in *lead up to crisis*. The *financial distress* characteristics became real as investors started realizing that if the overprized housing market started to drop in value, the loans made in foreign currencies would be severely hard to pay back, combined with a weak HUF. Investors on both sides of the deal, banks versus the private and corporate investors started looking for possibilities to come out on the other side without severe

losses. Before too many could realize these thoughts, the *panic* stage was an actuality and house prizes plummeted, capital flows of debt and equity securities declined, debtors went bankrupt and creditors looked to be going down the same path if somebody didn't intervene. The *contagion* stage of the Hungarian currency crisis would be said to be the huge dependence on Euroland that again was hugely affected by the US subprime crisis. The snowball started to roll and before one knew better the *lender of last resort* stage was in the happening, with IMF, ECB and World Bank rescue packages and bailouts. The point here being that the Minky-Kindleberger framework is of relevance in terms of foreseeing and explaining the actual currency crisis in Hungary, as well as it explains financial crisis, as Kindleberger mentions himself in the above quote. However, it is not believed to be sufficient enough using the Minsky-Kindleberger framework to explain the recent Hungarian turmoil. The phases of the framework are significantly broad enough to make excellent overall interpretations, but only to be used by further analysis using previously known traditional currency crisis elements going forward. To get a truly in-depth analysis of the Hungarian crisis that through one single model will be able to locate, foresee and maybe even predict both a financial and currency crisis, a sharper and optimized model will be needed. It has been concluded that the Minsky-Kindleberger framework satisfactory can locate a financial crisis on a broad stage, likewise has it been concluded that the idea of the framework can be used against a currency crisis as well. We have previously sorted out the usable and non-usable elements of the third generation of currency crisis models and concluded that the first and second generation models were plausible in explaining the Hungarian, only with a few compatible essentials. As for the third model of currency crisis, moral hazard, herding and the contagion effect were critical in explaining the Hungarian crisis. Generally none on the three third generation models of currency crisis were efficient enough in explaining the Hungarian crisis situation.

6.3.5 Emerging Market Crisis Model

All of the above criticism and conclusions come down to an adjusted model that combines elements from the three generations of currency crisis models with the progressive interpretive phases of the Minsky-Kindelberger framework. For a further level of depth to the model, the writers of this thesis find it highly relevant to incorporate the Kondratieff cycle. The Kondratieff cycle will add the very important question of inflation/deflation together with eight further truly relevant economic elements that run alongside the line of the model, as discussed in the theory section. Together, the model will be able to analyze the market for potential financial and currency crisis using the six stages of the Minsky-Kindleberger framework as main headers that below will include several subtitles from the three generations of currency crisis models for the more in depth analysis of the mar-

ket, this all put into perspective using the Kondratieff cycle. All theories will be re-built in a more efficient and suitable way, applicable to the recent crisis in the country of Hungary. The model will be present and suit emerging markets of today, similar to the fact that previous crisis models was present and actual within their time and generation. Below is the authors' compiled future emerging market model of financial and currency crisis.

EMERGING MARKET CRISIS MODEL

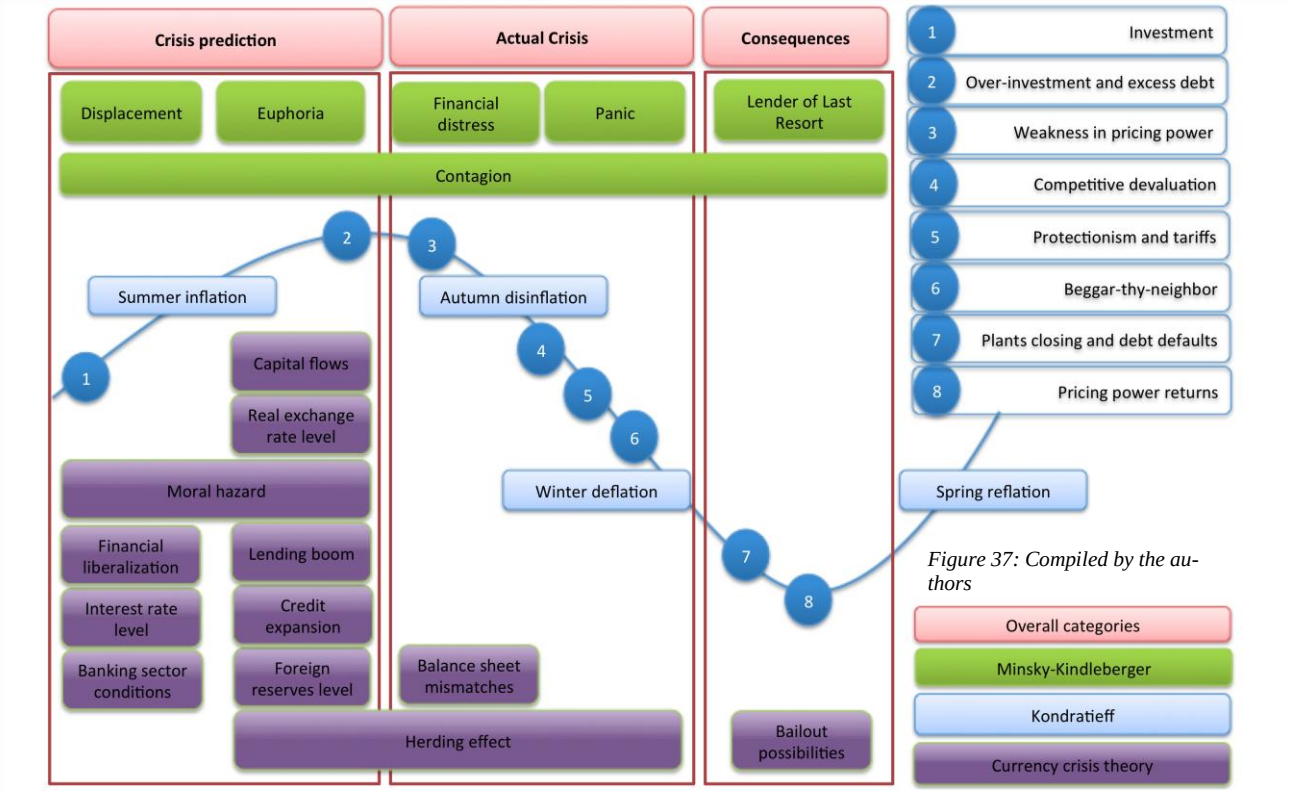


Figure 37: Compiled by the authors

As for the fundamental use of the model it is very simple. The model should be seen as a vertical model, meaning that if one draws a straight line down through model, every box that lies on this line belongs to this specific stage. As a simplistic example, if a straight line is drawn down through *displacement* and *contagion,* that run alongside all five other stages of the Minsky-Kindleberger framework represented by the green boxes, one will firstly find that displacement is a part of the *crisis prediction* category, the pink boxes. It is placed in the *summer inflation* part of the Kondratieff cycle, the blue boxes, indicating that the fundamentals of a potential upswing is present if one of the displacement factors of the *currency crisis theory,* the purple boxes, set off the upswing towards the *euphoria* stage, which will be the next vertical line that could be drawn. During *euphoria* stage other blue and purple boxes will outline what happens during this stage and what to be looking for during this specific part of the model, with the purpose of not ending up in the next

stage and category, *actual crisis.* Generally it is believed that the model explains itself, using the best parts of all theory concluded so far, optimized to explain the Hungarian crisis. As a further note on the EM Crisis Model use it is believed to repeat, hence when the *spring reflation* phase has been fulfilled it overlaps *summer inflation* as investments start to pick up and new displacements might set off a new crisis into the euphoric stage. The time between the end of one EM Crisis Model and the beginning of a new might take several years, but the point would be to constantly show awareness to market characteristics that might reveal the beginning of the model.

As for the EM Crisis Models' use on the country of Hungary in specific, the model in itself is a vivid picture of all conclusions made about the Hungarian financial and currency crisis throughout the entire section of *theoretical application to Hungary*. Simply by using only what has been relevant towards the Hungarian crisis situation in the EM Crisis Model, this succeeds in concluding what has been discussed as being the main elements in mapping the recent turmoil, presented in this very model. It is implicit that the model is optimal for the use on Hungary, but relative to the use towards other emerging market countries, some might only be fulfilling some of the characteristics. Hungary's position mid 2009 in the EM Crisis Model context is in the final stage of *lender of last resort.* We have seen the $25bn rescue package and the €5bn swap deal, and are now facing the consequences of the recent crisis. To be more specific it is believed that Hungary lies on the Kondratieff cycle at point number 7 (as of summer 2009), *plants closing and debt defaults.* The country is primary placed here due to Swiss franc debt and general bankruptcies and due to the high level of deflation that has been seen, hence yoy contracting in inflation. Furthermore it is believed that investors are still running for the door at this stage, hence point number 8 in the Kondratieff cycle is not yet present. According to Head of Emerging Market Strategy at Danske Bank Lars Christensen in February 2009, *"The markets have decided the central and eastern European region is the subprime area of Europe"* (Bloomberg 2009c). Furthermore senior analyst at Moody's in Frankfurt Dietmar Hornung at the same time stated, *"Hungary is the one that we are monitoring very closely"* (Bloomberg 2009c). Hungary bonds lost around 12% in 2008 and investors can expect the 2009 decline to be even steeper said Lars Christensen to Bloomberg. On the back of this investors at this stage demand 20 basis points more yield to own Hungarian bonds than similar-maturity Brazilian debt, which is rated four levels lower by Moody's (Bloomberg 2009c).

It is hereby confirmed that the country of Hungary has seen both a financial and currency crisis according to the EM crisis model. The primary reasons for this statement are as follows revised in bullets as these have all been mentioned before, however in different parts of the thesis: I) financial liberalization spread to Hungary through contagion, the NBH contributed domestically by scrapping

the HUF fluctuation band that in the long run was a bad decision, II) through tight domestic credit conditions and very favourable foreign loan circumstances, combined with no restrictions on the area, excessive foreign denominated loan taking occurred from primarily 2006 and into start 2009, coming to a total of 125% of Hungary GDP, III) immense HUF depreciation, coming from a level of 230 to the euro in mid 2008 to close to 320 in March 2009, a depreciation of nearly 40% in 8 months, IV) falling house prices of 10%-30% in the spring of '09. These primary causes of the crisis can be sustained by several reactions in the Hungarian economy; 1) an all time high of the real exchange rate should have brought attention to the outlook of possible devaluation. Instead, through the concept of moral hazard, the loan taking continued, 2) a general picture of dropping capital flows in the areas of debt and equity securities further confirm the crisis situation, 3) in connection to point number two, increasing government bond yields and widening CDS spread contribute to the already existing arguments, 4) the foreign reserves levels where five times lower than the capital outflow for the period, making devaluation even more likely, 5) the fact of contagion has been present to a large extent throughout the entire intensive crisis period of mid 2008 and well into the spring of 2009, emphasized in low interest rates in other countries and the interdependence on Euroland.

As mentioned multiple times, the above EM Crisis Model and the conclusions using the model are focused on financial and currency crisis solely. It is of the writers clear opinion that for the model to have included the possibility of analyzing a banking crisis as well, other very important key elements should have been included. To mention a few, these would be focused more on micro economic elements obviously still combined with interference elements of the government, but could sound as follows, 1) significantly more credibility on lending practices, 2) individual focus on domestic bank exposure and the distribution of bad loans to these institutions, NPL's, 3) risk profiles of financial institutions, hence the use of moral hazard 4) interbank lending, and several other. The point is when adding banks to the model it is believed that additional micro economic principles are to be included. Essentially, this is due to the fact that elements triggering a banking crisis are considered to also require a much deeper analysis on a micro economic level. Hence, could the prediction of the Northern Rock and Lehman Brothers collapses have created more stability in the respective economies and postponed the crisis, hence making it possible to prepare for the downturn? Maybe! The point is that the model would need to be reconstructed if it was to include banking crisis elements and thereby, according to the opinion of the writers, the model would end up being too broad and thereby inheriting the problems of the to some extent unspecific Minsky-Kindleberger framework, as earlier discussed.

It is obvious that the self-constructed model of the writers is not flawless. As one point it is worth mentioning that the Kondratieff cycle might not always fit the inflation and deflation situation of the country on which the model is used, as it did on Hungary. As another point is the fact the model does not include specifics in terms of certain levels of debt to be looking out for, how high does the real exchange rate have to be, to be considered a serious threat towards devaluation etc. However it is believed that the total combined elements of the model will form significant boundaries for the user and thereby as a model is specific enough towards crisis interpretation.

As a final note on this chapter it is generally believed that Hungary is yet far from being out of the crisis and that severe changes in fatal economic fundamentals have to turn towards more positive tendencies before the country will be able to rebuild what has been lost. More on this matter in the next chapter of *where are we heading.*

7 WHERE ARE WE HEADING

The following chapter aims at *firstly* introducing the general views of the writers of this master thesis towards the current global financial crisis at the time of writing in fall 2009. *Secondly*, based on the conclusions in the preceding chapters and based on the writer's general view on the global financial crisis, this final chapter presents four possible outlook scenarios for the future of Hungary. The following can further be considered an in-depth chapter of perspective.

7.1 AN INDEPTED FUTURE ON A GLOBAL SCALE

As active observers of the present global financial crisis naturally the writers of this master thesis have personal opinions towards the current state of the crisis as well as own predictions for the future. Looking at the financial markets on a global scale since March 2009, there is growing evidence that record fiscal and monetary stimulus has mitigated an extremely negative outcome in the global financial system and economy (UN 2009). As also seen relative to Hungary in past chapters, this has helped to boost investor confidence throughout most of 2009 and hereby created a state of euphoria manifested in e.g. increasing stock markets and significant decreases in CDS-spreads and bond yields (CNN 2009). Effectively, most indicators of economic activity are stabilizing on a global scale, e.g. housing market and sales, but at very depressed levels. Nevertheless, prices are in many cases drifting lower with the general price level suffering from a high degree of lay-offs, uncertainty and deleveraging. We believe that consumer deleveraging will continue for years while demand will stay subdued. Looking at recent tendencies relative to government and central banks' actions globally, the high degree of monetary stimulus is considered likely to continue. Hence, due to the effect of fiscal stimulus we might see even higher price/earnings and lower yields on both corporate bonds and treasuries in the near future, similar to the case of Hungary around summer 2009. At this point we saw a contraction in the CDS spreads and bond yields where down to a more respectable level, this as a result of the IMF rescue package effects on the markets. Furthermore, we expect government budget deficits worldwide will likely continue to result in substantial issuance of treasuries (Bloomberg 2009d), while we are of the impression that increased savings and deflationary pressures will for now stand in the way of higher rates on a wide scale.

Relative to the above predictions we do maintain an overall critical stance towards many of the recent positive numbers, particularly those associated with reported earnings of several banks and larger corporations. Generally an optimistic picture has formed in the press around the regained

earnings of the banks worldwide as positive financial reports have been made public. However, a lot of these financial reports are only seeing improving figures in the earnings due to downsizing and cost cutting, point being the rising earnings have come from falling revenues. Therefore we maintain a critical stance towards results in the recent earnings season of the summer and autumn of 2009, and while we are skeptical about the current market rally in risky assets and believe that the hungry growth that is currently priced-in will disappoint, we realize that it is possibly too easy to simply be pessimistic as we are. Essentially, so many things – and especially the enormous debt burden in western economies – are fundamentally negative. It is probably in times like these that we have to remind ourselves that growth is a natural state in the economy, times change and so does theory and models previously used. Accordingly, a great example is the EM Crisis Model created in the previous chapter due to lack of pertinent theory to analyze the specific crisis situation playing out in Hungary.

Furthermore and to give the reader an idea of our view on the global financial crisis, we have tried to identify *two key global themes* that are essential in our ongoing discussions. These are themes that the market is bound to focus on, according to the writers, as we head into 2010. We consider the themes to be 'clashes', or conflicts of interest, that could also easily impinge on the near future of the country of Hungary, and these thoughts have therefore been included in the final chapter of the report. The inspiration of these two themes is a matter of stumbling across them often during research examination of articles, as often discussed subject on TV stations such as CNBC, CNN and as a topic of discussion with colleagues and acquaintances in the financial industry.

Central banks' exit strategies relative to market expectations

While the market has priced in tightening for most of the larger central banks in 2010, Australia on 6 October became the first G-20 country to raise interest rates since the start of the financial crisis, hereby breaking the ice for other relatively healthy economies to follow suit. The rate hike was a surprise to the market as it came earlier than expected and it can be seen as a reversal to the great global monetary loosening cycle, which theoretically could pave the way for tightening by other central banks (WSJ 2009c). Besides the Australian RBA, Norges Bank is also one of the more aggressive ones that have been expected to start tightening before the end of 2009 – this happened on 28 October with a 25bp increase. A point worth to mention is that we recognize there to be an ongoing "clash" globally between the markets' expectation of fiscal tightening, hence interest rate hikes are priced into market expectations, and on the other hand the pragmatic attitude of most national banks. An example of this recently noticed in mid October was the Bank of Canada (BOC) surpris-

ing the market by officially committing to keeping rates unchanged until June 2010. The surprise of the market was evident in an instant depreciation of the Canadian dollar relative to several currencies. A chief economist at CIBC World Markets, Avery Shenfeld, commented on this, *"If the markets start to take the bank at its word, it might actually ease a little bit of pressure on the Canadian dollar to appreciate, because some of that was based on expectations that the Bank of Canada would follow the Bank of Australia in being the first to raise rates"* (Financial Post 2009).

The above is an interesting topic because it clearly indicates how market expectations, i.e. euphoria, are not always in line with the view of pragmatics working closely with the actual problem. At the time of writing, the Fed is not expected to start tightening until the spring of 2010 or even later (Reuters 2009). The interesting question is, will the markets' predictions prove accurate or is exit strategy talk premature for the larger economies? Will we soon see a tightening regime laying a foundation for unwinding of some of the moves we have seen since March 2009? No matter what happens, as the stimulus fades, all eyes will be focused on whether a real recovery can gain altitude of its own record. We recognize that it is too premature for a full reversal globally as the major economies, i.e. US and Europe, are still faced with significant problems not allowing central banks to start increasing rates.

Crude oil at $80 dollars

By making a quick observation of the global commodity markets it is our view that the sector as a whole has been driven by the return of risk willingness towards the end of 2009 shown in the strength of the stock markets and the weakness of the US dollar. One year on from the Lehman collapse the market seems full of the liquidity it lacked a year ago. Crude oil (CL) is trading in a USD78 to USD81.50 range at the time of writing. Having read several recent articles on the topic of oil price development, we recognize there to be an evident clash in sentiment between *1)* the wishes of OPEC and *2)* rising oil prices. Naturally, due to the nature of growth in oil producing countries OPEC is typically a supporter of higher oil price levels. Nevertheless, there exist equilibrium relative to prices and OPEC has recently indicated concern that continuous rising oil prices will hit consumers and hereby also the world's economies (New York Times 2009). Crude oil going above USD80 has historically been negative, and above USD100 a key concern. The price of oil should for the sake of the world economy be around $70-$80 a barrel, Bhushan Bahree analyst at Cambridge Energy Research Associates sated on September 9th; *"For the moment they are in the sweet spot in term of prices…Both the producers and the consumers are content. Nobody is complaining"* (New York Times 2009). Energy minister for Qatar further confirmed this statement; *"At $70-$80 a*

barrel, this is the right price for all consumers and producers…I believe this price will help strengthen the world economy. It will help" (New York Times 2009). As for the consequences of a changing oil price, highly respected Danish analyst, former CIO of Saxo Bank A/S, Steen Jakobsen said recently in his well read chronicle: *"For every 10 $ price increase in Crude - GDP loss is 0.4% in OECD - going from 40 $ to 80 $ means loss of 1.6% growth...Ceteris Paribus..."* (Jakobsen, Steen 2009a). Also, relative to consumers, if rising gas prices do in fact hurt the consumer more than normally, then the fragile economic recovery may be about to be derailed.

The above is also an interesting point of discussion and considered something that the market is bound to put emphasis on in the short term. We see the discussion as a "clash" between interests. Hence, a negative effect on consumers in the U.S. and other major economies that can lead to renewed disbelief in the economy would likely also have an effect on the near future of Hungary.

7.2 HUNGARY – THE FUTURE

The above considerations relative to the global financial crisis are considered vital to give the reader of this report an insight into the state of mind of the two authors of the thesis at the time of writing (late fall 2009) and to place Hungary in global context in regards of the future of the country. As earlier implied, the intensive analysis on Hungary presented an in-depth focus on four phases of the crisis during a period ranging predominantly from mid 2008 to mid 2009. In accordance with the conclusions in the Hungary analysis while also pointing to recent significant happenings relative to the Hungarian economy up until end 2009. Ultimately, this is to present our predictions on Hungary's near term future.

With respect to the EM Crisis Model, as argued in the previous chapter Hungary was considered to lie on the Kondratieff cycle at point number 7, *plants closing and debt default*, on June 1st 2009. Naturally as the above explains, the global economy has experienced a ride of euphoria since spring 2009 and also Hungary has experienced some development from spring to the time of writing (late fall 2009). Therefore it can be discussed whether or not some degree of pricing power has returned in Hungary and we currently believe that Hungary lies somewhere between point number 7 and 8 (*pricing power returns*) in the Kondratieff cycle of the EM Crisis Model. A counter argument against this statement could be the fact that July's hike in VAT (Danske Bank 2009) has pushed up inflation and will inevitably slow down the recovery of private consumption and therefore the general economic growth, this could hurt the country well into 2010. Furthermore PM Gordon Bajnaj

recently pointed out that 80% of Hungary's economy is counted for in export income (New European Economy 2009). This makes the country highly dependent on the near-term future of the economies of France, Germany, UK, Italy and beyond. Signs of beginning recovery in the Eurozone will therefore have a positive impact on exports and production and therefore on the entire Hungarian economy, at least in the short-run. However, due to improved stock and bond markets compared to the 2009 lows of March we believe that Hungary has moved somewhat down the line of the Kondratieff cycle in the EM Crisis Model, and seek to embark on entering point number 8 of pricing power returning within the near-term future. Contributing to this statement is the effects on the IMF package and the fact that Hungary has received an extension on the stand-by agreement, from the original date of March 2010 to start October that same year (Budapest Business Journal 2009b). Furthermore the Finance Ministry of Hungary stated in connection to the press release that they did not intend to use the full scope of the agreement's funds available due to rather high foreign reserve levels, as also seen in the *lead up to crisis* section.

7.2.1 Four macro scenarios for Hungary

In order to carry out future predictions we have considered a series of factors and events that will be key in shaping this: global risk environment, HUF development, Hungary's compliance with the IMF program, GDP growth, and future track of fiscal policy. These factors are brought into play with a main emphasis on the mid 2009 status - while also considering key events from mid 2009 to the time of writing in late fall 2009 – and through combinations for the factors we have considered four possible macro scenarios for the final report chapter.

It is our suggestion that one of the most significant factors is Hungary's compliance with the IMF program in place. The financial aid provided by the IMF has helped to reduce the potential pressure on the currency and serves as a source of financing for the government deficit and supplies funds for the banks' recapitalization if needed. Since the introduction of the aid in end 2008 it has bought Hungary valuable time to carry out necessary economic reforms and the assistance generally reduces the risk with respect to the private sector foreign exchange mismatches and banking system stability. In our view it is very unlikely that Hungary decides to not comply with the IMF criteria and consequently give up on the external financial support. However, were it to happen it would likely unleash a series of events possibly to put Hungary in a scenario in which a possible foreign exchange crisis would devastate both the private sector and the banking system, and the government would have a significantly hard time avoiding a major credit event – if even possible. Hungary's short-term liquidity problems would probably feel support from the IMF. Nevertheless, it is consi-

dered that the government's ability to contain budget deficit (remembering a constant budget deficit throughout the last decade, *lead up to crisis* section) and to progress even further with structural forms will be vital to secure long-term debt sustainability.

We have labeled our four scenarios: *positive case, base case, negative case* and the *shock scenario*. In the first three cases Hungary is assumed to remain eligible for the IMF support. In the shock scenario Hungary abandons the IMF program. Further, the first three scenarios differ in terms of growth outlook, external factors, interest rate at which debt can be refinanced and naturally the exchange rate.

Shock scenario: Our shock scenario is consistent with a very negative global outlook and massive collapse in GDP in the final quarters of 2009 and 2010, which in the end results in Hungary not complying with the IMF program and consequently the IMF help stops. What would activate the non-compliance is likely to be on the fiscal criteria, essentially with Hungary not willing to do the necessary control relative to the budget deficit in the face of a much more explicit slowdown. Assuming that the IMF walks away, as a result we could se instant pressure on the exchange rate. Further assuming no proper international backing Hungary could try to counterbalance the HUF weakness by raising interest rates and make an effort to intervene in the exchange rate level. Despite a rather high level of foreign reserves, see *lead up to crisis*, the country is unlikely to be successful in the long run due to lack of the IMF support, which would in all probability start a significant HUF depreciation towards 300-400 against the EUR or even lower. The highest EURHUF level during the crisis was reached in March 2009 at approximately 315 (see *Hungary analysis* chapter) and it is our view that the shock scenario will lead to even further HUF depreciation against e.g. the euro. Consequently, a massive currency weakness on this scale is likely to disrupt economic activity and the stability in the banking system due to the still high level of foreign loans, mainly Swiss francs, and this could worsen the slowdown in Hungary. Naturally, this will lead to a cancellation of all near term plans relative to membership in ERM II/EMU. Simultaneously selling pressure should increase on the government's fixed assets and the marginal rates at which Hungary could issue debt would soar significantly. We would expect this to be worse than what Hungary experienced with respect to the debt securities decrease of capital flows in end 2008 (see *real economy* part in *lead up to crisis* section). In this scenario we believe that the Hungarian government would quickly drift to verge of sovereign default.

In the case of a total breakdown in Hungary many western countries with high exposures to the Hungarian banking sector, hence claims from west to east, will radically feel the Hungarian default.

As mentioned in *Hungary in a regional context* countries such as Sweden and Belgium are largely exposed to Eastern European countries, and worst relative to Hungary is Austria with a total exposure amounting to roughly 10% of GDP. Furthermore it would through contagion mean a big hit to the CE3 region in regards of investor and consumer confidence, dragging down especially Poland and Czech Republic, but probably other CEE countries as well. Needless to say, a bankruptcy of Hungary will potentially lead to Austria also drifting on the verge of sovereign default, particularly considering Austria's total foreign debt exposure of nearly 75% of GDP. Relative to the above contagion effect of Hungary, Austria's exposure in specially Romania with nearly 12% of GDP and Ukraine with 4% would be a major concern for the country.

Our macro assumptions for the shock scenario hitting Hungary are a negative primary balance in the years to come and sizeable negative GDP growth of roughly -10 to -15 in 2010 or 2011. As mentioned in the above the scenario could potentially drive the EURHUF level to above 350 and maybe even near 400. Also, rates would likely fall to very low levels. Keeping the EM Crisis Model in mind and considering the position of Hungary in the Kondratieff cycle on June 1st around level 7 and positioned somewhere between level 7 and 8 in the fall of 2009, the shock scenario would in our view restart the cycles of the EM Crisis Model. In other words, instead of a v-shaped crisis correction as currently envisioned by many analysts, the shock scenario would lead to an extended crisis in Hungary characterized more or less as a w-shaped crisis formation - possibly with an even steeper downside.

Base case: This scenario is based on the assumption of the global economy continuing to recover in 2010 while the markets will experience continuous short term dips to the downside due to still weak fundamentals and some skepticism playing a considerable role in the global economy. As mentioned relative to the chapter introduction, our view on the global crisis we are pessimists that naturally respect the recent market correction due to government and bank actions as well as a high degree of investor euphoria. In Hungary the base case scenario will lead to a continuing gradual recovery in 2010, which should be consistent with relatively constant risk appetite, although downside dips will continue to occur. With respect to domestic policymaking we expect the present government to continue the IMF deficit-cutting plan, which means that the primary budget balance is adjusted to accommodate overruns in interest spending and/or revenue losses. Uninterrupted cooperation with the IMF and potential loan renewal in late 2010 cannot be excluded if needed and in terms of structural reforms there may be more political room in 2010. The HUF in this scenario is unlikely to blow-up and could strengthen marginally in the medium term. Even in this scenario rela-

tive to fixed income, we would expect risk premium/real rates to rise in 2010 and 2011. Relative to the banking system this scenario might be consistent with higher NPLs, but no systemic stress.

Our macro assumptions for the base case are a slightly positive primary balance in the coming years and negative GDP growth of roughly -6 in 2009 and –0,5 to -1 in 2010 before positive GDP growth starts from 2011. As mentioned we do not expect the EURHUF to explode to the upside but rather to stay relatively close to the current level (late fall 2009) of 275ish for a while before marginally strengthening in 2010 and 2011, furthermost to a level in the region of 260ish. Again, for the base case scenario we would expect risk premium/real rates to rise gradually in the coming years. Considering the EM Crisis Model in the event that the base case setting plays out, it is our expectation that pricing power will return to Hungarian consumers in the near term (stage 8), though with somewhat delayed effect due to only gradual global recovery first affecting Western Europe. Furthermore this scenario considers potential entrance into the ERM II in late 2011 or start 2012, with possible introduction of the euro in late 2013, start 2014.

Negative case: This is essentially a negative growth scenario in which we expect a weaker global economy compared to the base case (but not as bad as in the shock case), which should hinder Hungary's near term growth recovery. In this setting growth would likely still be close to zero in 2011 and positive growth could potentially occur in the following year. As recently experienced to a high degree in October 2008 and March 2009, the negative case scenario is in harmony with stronger risk aversion that is likely to be manifested in higher real rates, large scale widening CDS spreads and pressure on the HUF. Further, in this environment it is likely that Hungary would try to renegotiate the IMF budget deficit targets to more accommodating levels and keep them by adjusting the primary surplus. It is also to be expected that Hungary would need the IMF program beyond the October 2010 date and hence a furtherance of the existing financial package is much likely.

In this scenario we expect Hungarian policymakers to keep the HUF below levels where it could severely hurt the banking system, using available tools such as intervention (as seen intensively by the SNB in Switzerland the recent months (Nasdaq.com 2009)), by using the still rather high level of foreign reserves to buy into the domestic currency, rate hikes and requesting additional IMF/EU support is also very likely. Reform progress may be sluggish in this scenario due to the government's inability of maneuvering relative to policy making as conditions are tightening if further economic injections from external sources are needed. In this scenario we foresee that particularly weak levels in the HUF against EUR will result in additional tension for households, corporations and banks. It is likely though that a systemic meltdown could still be avoided. Referring to the NBH

financial stability report, even if GDP were to fall by 10% and the EURHUF at 330 the banking system is likely to have excess capital, although individual banks might need additional capital injection to meet the regulatory capital requirement (NBH 2009a). Assuming that Hungary in the negative case scenario is unable to comply with the adjustment criteria relative to the IMF assistance then we could imagine a relatively prompt swift towards the shock scenario.

Our macro assumptions for the negative case are slightly positive primary balance numbers in the years to come and negative GDP growth in 2009 at roughly 7-8% while still negative GDP growth of 2-3% in 2010. The EURHUF could easily lie between the 320 and 330 levels in the coming years, while real rates for fixed income could easily rise to somewhere around 12%-14% as seen in the recent Hungarian crisis, section *intensive crisis period*. Again, considering the EM Crisis Model relative to the above a negative base scenario would similar to the shock scenario lead to a w-shaped crisis formation. The coverage and length of an extended crisis period (the extra v in the w-formation) depend on whether or not Hungary is able to comply with the IMF criteria. On top of this, we also find the continuation of a relation to the IMF essential to ensure an eventual ERM II/EMU membership, while the IMF help also decides to what degree highly exposed western banks such as Austria are to get affected by the crisis in Hungary. ERM II in 2013 and possible EMU entrance would not be considered realistic before 2015/2016, this being in line with a recent Reuter's poll stating 2015 to be realistic (New European Economy 2009).

Positive case: Referring to the writer's introductory chapter view on the global crisis and the recent market euphoria, this scenario is consistent with a faster and sustainable recovery in the global economy. The faster global recovery will affect Hungary positively through the interdependence to Western Europe experiencing quicker growth, and Hungary will be progressing more rapidly on the structural reform front supporting a sustainable reduction in the budget deficit, as needed in regards to the IMF stand-by agreement restrictions. A reduced budget deficit would ultimately allow the government debt ratio to decline and hereby support the bond and domestic currency market.

Our macro assumptions for the positive case ignore our fundamental pessimism towards the global financial crisis and recent market euphoria (as explained early in this chapter). Relative to Hungary this case predicts positive numbers on the primary balance in 2009 and the years to come while GDP growth in 2009 could be expected to end at a -4% to -5%, while turning slightly positive in 2010 and the following years. In this scenario the HUF is expected to appreciate gradually and may average a level against the EUR of 280 and 260-270 respectively for the years 2009 and 2010. Further, emphasizing the EM Crisis Model and considering Hungary in accordance to the above scena-

rio and assumptions, the pricing power of consumers (level 8 in the Kondratieff cycle) is likely to return in end 2009 or early 2010 while reflation could be seen in early 2010. Relative to ERM II membership this could be possible in 2010 or 2011, while possible EMU entrance could be considered realistic in 2012/2013.

7.3 SUMMARIZING THE FUTURE

Our view on the global crisis emphasized two primary subjects to be of interest going into 2010, respectively being the clashes between firstly central bank actions and market expectations, and secondly the price of crude oil. As for the first of the two, it is the clear view of the writers that we will see more of these 'misunderstandings', or 'wrong interpretations', from the investors towards the actions of the centrals banks of the world. The statement was verified using the case of the Bank of Canada, which statement of no-interference of the Canadian rate shocked the markets and made CAD depreciate rapidly. As for the second of the two clashes, the equilibrium price of crude oil was discussed and concluded to be at an optimal level for both producers and consumers at $70-$80 a barrel, crude at the time of writing trading in the upper level of this interval. The fear is at this stage is the possibility of higher prices going in to 2010 that inevitably will put a stopper to a fast recovery of the world economy.

As for our four outlook scenarios of Hungary, we believe that the shock scenario is the one least likely to become an actuality despite our general negative view on the future of the world economy. In the short run the tendencies of the Hungarian economy will probably be towards the base and positive cases, however it is the clear opinion of the writers that Hungary in the long run will move towards the actualities of the negative case. We primary substantiate this due to our overall global view emphasizing the fact that borrowed stimulus runs the World economy, as well as Hungary, and that this is not believed sustainable in the long run. To once again quote Danish analyst Steen Jakobsen, his view on the public spending is as follows: *"Then the different governments decided to spend 5%-6% of GDP to 'safe the world from breaking down' but all they really did was to circle the wagons on their croonie friends in Wall Street - that's not a political statement, merely a matter of fact"* (Jakobsen, Steen 2009b). The point here is that none of this public spending created any actual value, but only recreates a short-term investor confidence. These kinds of actions that have been carried out in governments in many countries of the World economy, strive against every economic principle of supply and demand, and free market power – this is not a sustainable long-term solution! As for the current positive financial reports that have been published this is, in the view of

the writers, primarily an actuality due to cuts in cost and general lowered predictions. Likewise should the positive announced yoy GDP figures in many countries be embraced with a careful attitude, as Steen states in regards of the newly announced GDP figures for the US economy: *"The GDP yday was excellent – but makes Q4 more doubtful and even the bullish crowds realize that most of Q3 came from…public spending…"* (Jakobsen, Steen 2009c). This is important as many of these positive bank statements and countries with positive yoy GDP figures are the once interconnected to the Hungarian economy, this being either through debt or as export markets. If these economies do not recover in the short run, neither will Hungary, despite IMF support. On the other hand the negative outlook of Hungary will have severe consequences for a country such as Austria due to 10% of GDP exposure in the fragile Hungarian economy. Combined with a 12% exposure in Romania and a general overall foreign debt exposure of no less than 75% of GDP, this will be a major stopper for a quick economic recovery for the country of Austria. The negative scenario in Hungary is likely to restart the cycles of the EM Crisis Model (from v-formation to possible w-formation) and naturally in this case it would be interesting to evaluate how the Hungarian government and National Bank of Hungary would be able to foresee the model's crisis indicators and warning signals. As a final note we believe that a pro argument against a long-term continuous downturn in Hungary is that fact of rather substantial foreign reserve levels, however these are not believed significant enough to save the country from an ongoing crisis stage.

8 MASTER THESIS CONCLUSION

From the *Hungary analysis* we learned in *lead up to crisis* that a general picture of an emerging market country was in the making. As the 2004 EU acceptance kicked off the economic upswing, the Hungarian economy was characterized by falling inflation, dropping interest rates (however coming from very high levels), positive yoy GDP figures, solid foreign reserve levels, rising import and export, increasing FDI both in country and abroad, and a constantly strengthening HUF. However it is still worth emphasizing the two most important facts learned from the *lead up to crisis* section: 1) the abandonment of the fixed exchange rate regime in February of 2008 that should turn out to be a decision that during the following crisis stage of Hungary backfired as the HUF plummeted due to non government intervention, and 2) with an increase in total loan taking during the past decade in Hungary, forint denominated loans fell as loans in foreign denominated loans dramatically increased, primarily being in Swiss francs. This exposed Hungarian investors to an immense level of foreign exchange risk and point 1) and 2) combined should turn out to be the primary concern of the Hungarian economy as the global financial crisis engulfed Europe. From a more long-term period the next section of the thesis concentrated around the *intensive crisis period* of Hungary, to overcome the essential financial figures that had the purpose of investigating where in the Hungarian economy things had gone truly wrong. It was concluded that the month of July 2008 was a turning point in the economy of Hungary as markets turned around; HUF decreased in value against all major currencies, GDP figures of Q1 2009 revealed a horrifying yoy contraction of -6.4% and furthermore the NBH increased the Hungarian interest rate to sky high 11.5% in October of 2008, an intervention that did not help the continuous downfall of the forint. Also capital markets showed a struggling Hungary as CDS spreads widened to never before seen levels of 650bp, and the stock market saw a major contraction as the Hungarian blue chip index, BUX, traded at levels not seen since 2004. However the key factors of the *intensive crisis period* was expressed in the combination of a still weakening HUF combined with a decline in house prices of 10%-30% in the spring of 2009. Furthermore with a foreign denominated debt level of 125% of GDP Hungarian investors started to default on their loans, primarily in Swiss francs, expressed in the rising figure of NPL, loans that had purchased houses, which were suddenly declining in price as well. Despite a $25bn rescue package from the IMF, the EU and the ECB, received in October 2008, the effects of the package did not start to embark on the Hungarian markets before early summer 2009. This was, together with the above facts, concluded in the fact that S&P decided to downgrade Hungarian long-term credit rating from BBB to BBB-, one step from junk status. *Hungary in a regional context* further concluded already known facts, as it was obvious that Hungary stood out compared to its

emerging market neighbors. Comparing Hungary primarily to Poland and Czech Republic, together CE3 region, Hungary exceeded the figures of the other two in both wider CDS spreads and higher levels of bond yields in the crisis period of mid 2008 to mid 2009. As Hungary touched the level of 14% in government bond yields in the months of October 2008 and March of 2009, Poland was just above 7% and Czech Republic around 5% in the same period. Also the real activity contraction of Hungary exceeded Poland and Czech Republic with a December 2008 figure of 19% over 6% and 14% respectively. The two major topics that this chapter expressed was the major interdependence to Euroland and the fact that Hungary took the lead of the entire CEE region with a loan-to-deposit ratio of 140%. This is in line with the excessive loan taking that was concluded during both the *lead up to crisis* and *intensive crisis period* sections. From the six stages of the Minsky-Kindleberger framework, this being the first theory used against the Hungarian crisis in *theoretical approach to Hungary*, it was concluded that Hungary has suffered a recent financial crisis, evolving from primarily the month of July 2008 and up until summer 2009. However the harsh criticism in regards of the soundness of the framework concluded that the six stages of the framework was easily filled out, as no restrictions, limitations or general criteria's have to be fulfilled to prove the framework satisfied. As for the use of the three generation of currency crisis models in *theoretical approach to Hungary*, the third generation of models, being the newest, seemed to be the ones closest to explaining the recent Hungarian turmoil as both moral hazard, herding and contagion has all been present in the Hungarian economy. Due to the broadness of these financial principles, it seems that the third generation can conclude that there has in fact been a currency crisis in the country of Hungary. However, similar to the case of the use of the Minsky-Kindleberger framework relative to financial crisis, the three generations of currency crisis models cannot be confirmed satisfying in explaining the Hungarian turmoil to the fullest, mainly due to unspecific outlines of the use of these models. For this reason exactly the section of *adjusted crisis theory on Hungary* sought to put together to best elements of the three generations of currency crisis models with the interpretive stages of the Minsky-Kindleberger framework. This was all put into the context of the Kondratieff cycle and resulted in the EM Crisis Model. Besides the six stages of the Minsky-Kindleberger framework and the four seasons of the Kondratieff cycle, the model includes such currency crisis elements as real exchange rate level, capital flows and foreign reserve levels. However it leaves out other elements such as budget deficit, which was exchanged with a focus towards credit expansion, and game theory from the second generation of currency crisis models, was substituted with the more modern term of contagion. This new combination of rebuild known theories, the EM Crisis Model, however not flawless, succeeded in concluding that Hungary has recently experienced both a financial and currency crisis, for the primary reason of; excessive foreign denominated loan taking, depreciating

local currency and falling house prices. The statement was sustained by reactions in the Hungarian market space resulting in; an all time high real exchange rate, falling capital flows, widening CDS spreads, increasing bond yields and falling stock market. On the back of the concluded financial and currency crisis of Hungary, the last chapter of the thesis introduced the view of the writers on the prospect of the global financial crisis and the future of the Hungarian economy. The view was based on conclusions made throughout the thesis as well as inspiration from articles, TV and colleagues and acquaintances in the financial industry. The global view emphasized the clashes of central bank actions versus investor expectations as well as the price of crude oil. Both views highlighted this conflict of interest that we believe will be seen to a large extent going into 2010, also the fear of higher than equilibrium price of oil was pointed out as a major concern of a fast world economy recovery. As for the four different outlook scenarios that were presented, the Hungarian economy was concluded least likely to experience the shock scenario, representing abandonment of IMF support, HUF levels around 350-400 to the euro combined with substantial yoy GDP contractions of -10% to -15%. In the short run, recovery was said to be likely, due to IMF support and a slowly recovering Eurozone, represented in the base and positive case scenarios, generally continuing the recent vaguely recovery of Hungary. However highest emphasis was given the negative scenario in the long run, substantiated in the authors overall global view, accentuated in the fact that borrowed stimulus is currently running the world economy and that this is not believed sustainable in the long run. Firstly it is a clear violation of all economic principles of free market power, supply and demand; secondly the short-term availability of rescue packages and bailouts, reinvested by the consumer into long term government treasuries and bonds, simply cannot be sustainable in the long run. It is a business model that essentially represents governments printing more money, to bestow the investor, that again thrusts the money right back into newly issued treasuries, that the government had to issue to be able to provide this money in the first place. As a final note on this, the last chapter emphasized how the writers fundamentally distance themselves from recent market euphoria due to the above statements and conclusion.

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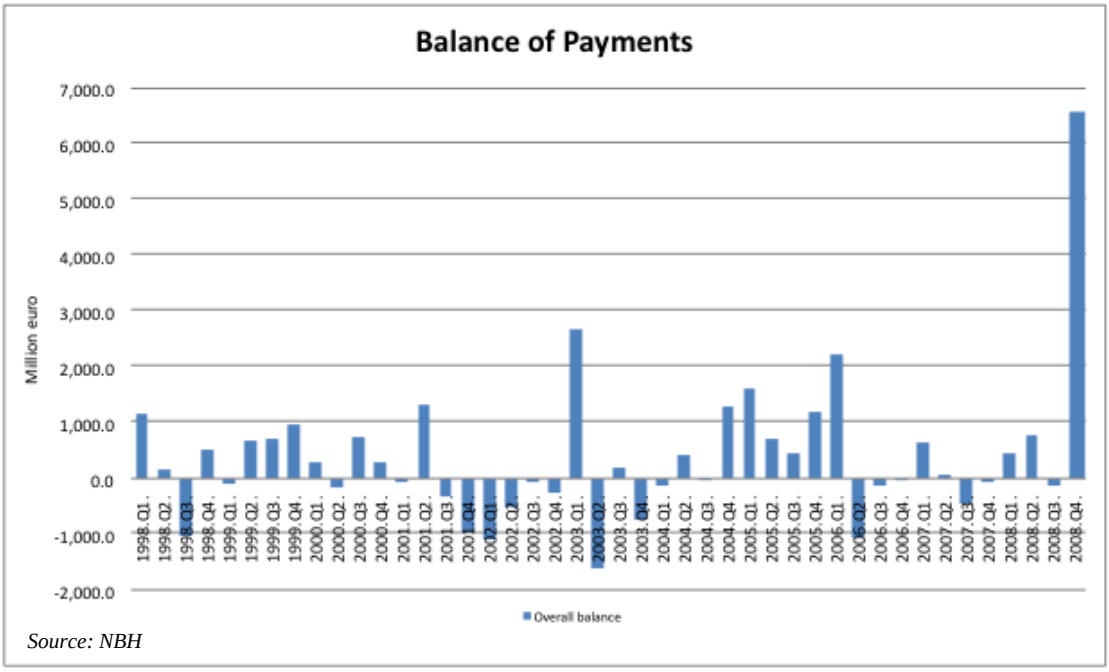
APPENDICES

Appendix 1: Total balance of payments

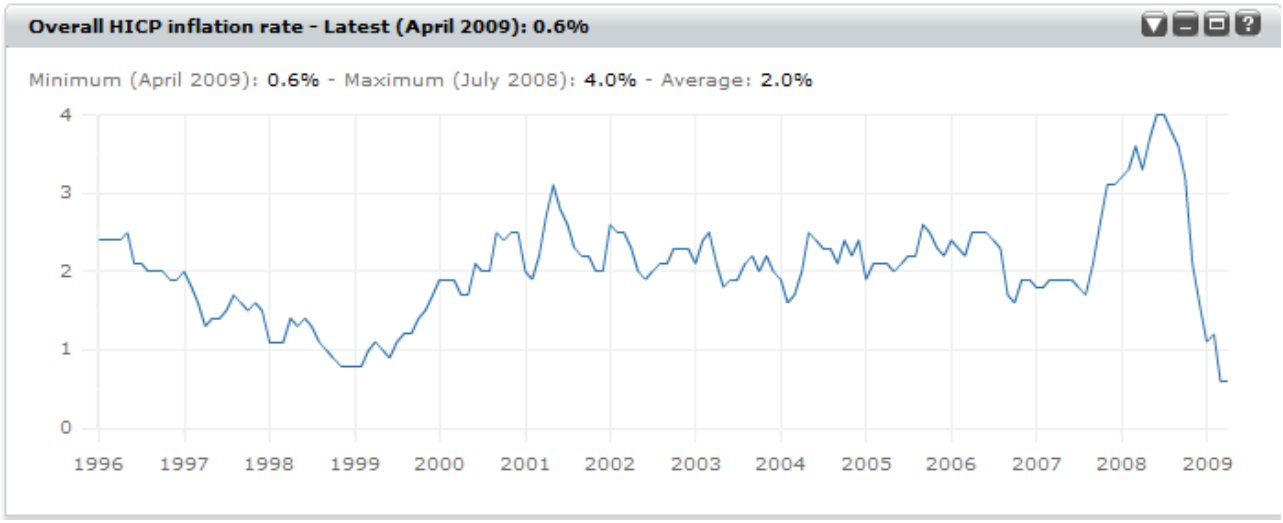


Source: NBH

Appendix 2: CHFHUF chart (end 2008 to October 2009)

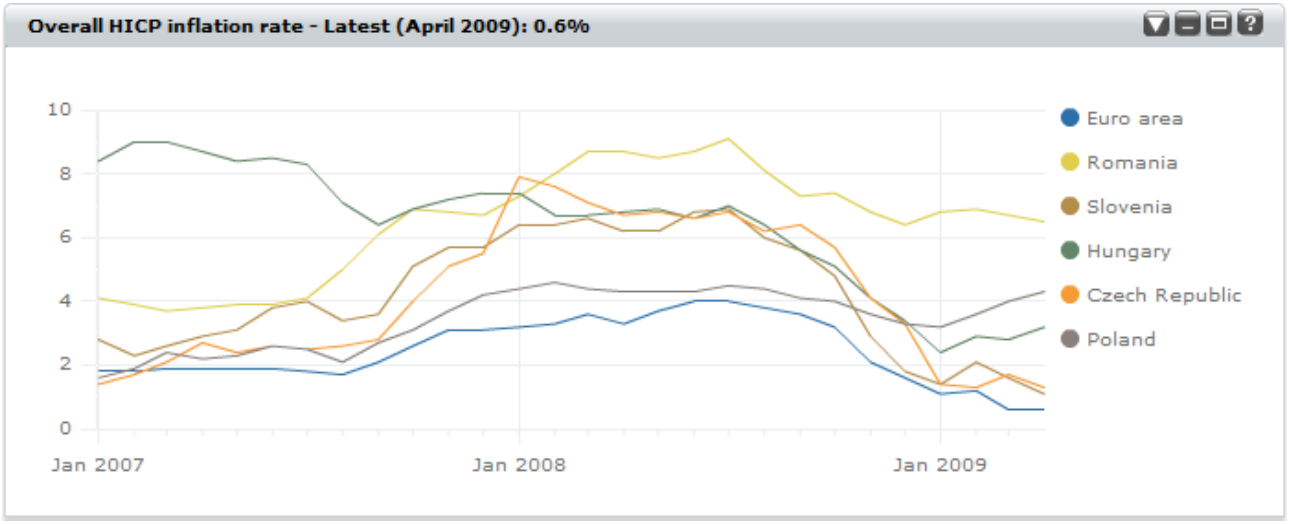
Source: SaxoTrader chart

Appendix 3: Inflation rate Euro area - overall HICP (1996 to 2009)



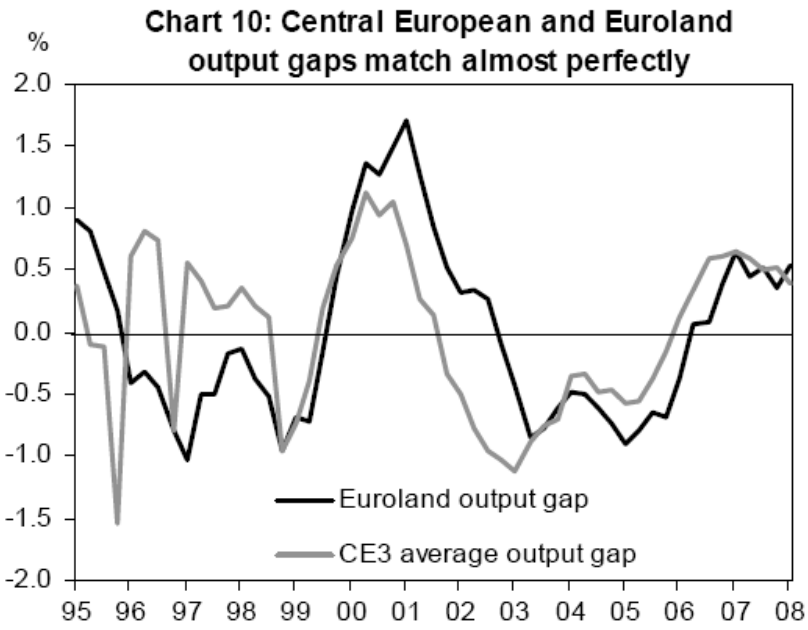
Source: ECB

Appendix 4: Inflation rate CEE countries (2007 to early 2009)



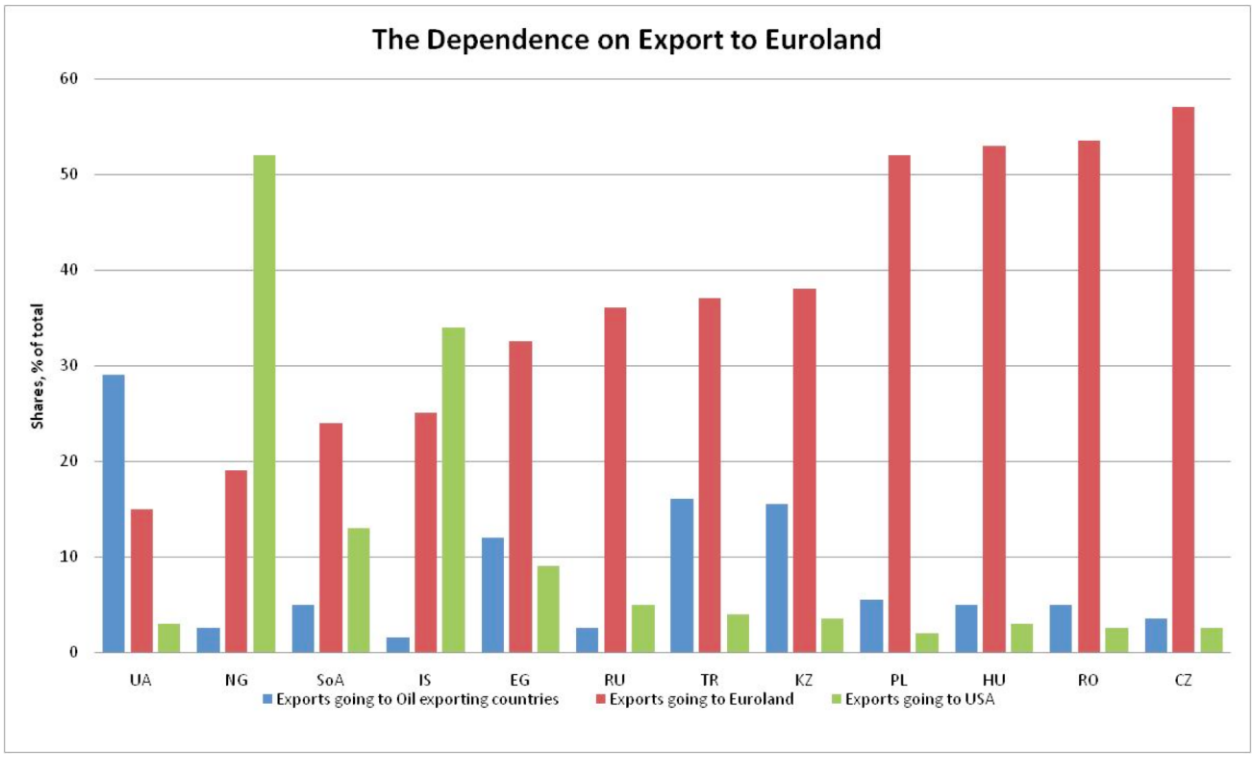
Source: ECB

Appendix 5: Central European and Euroland output gaps match almost perfectly



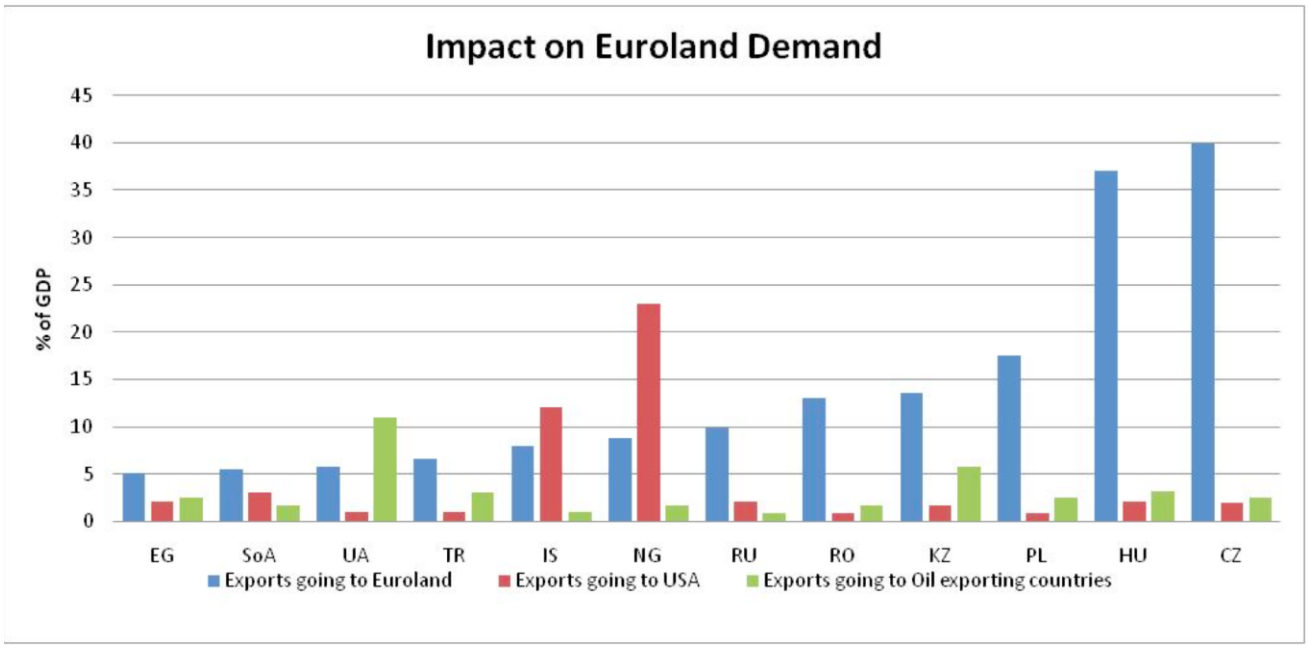
Source: Goldman Sachs chart

Appendix 6: The dependence on export to Euroland



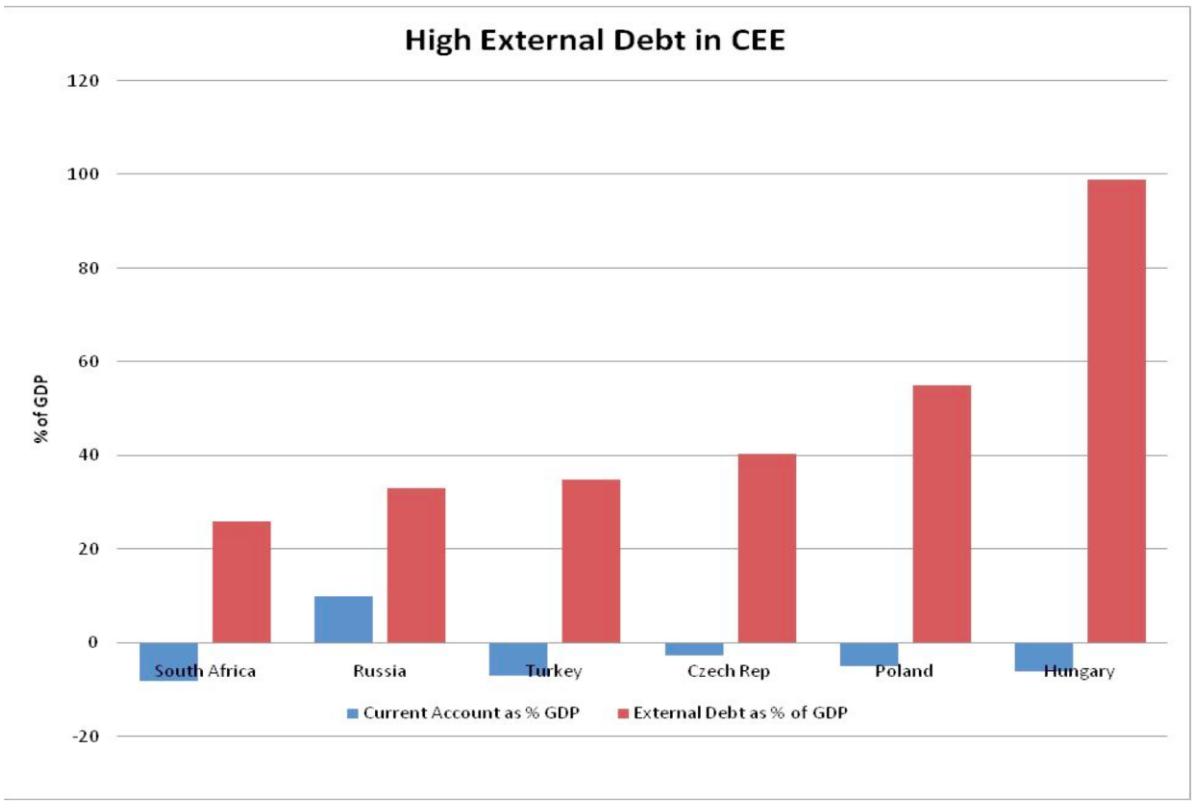
Data from IMF and GS, chart compiled in Excel

Appendix 7: Impact on Euroland demand



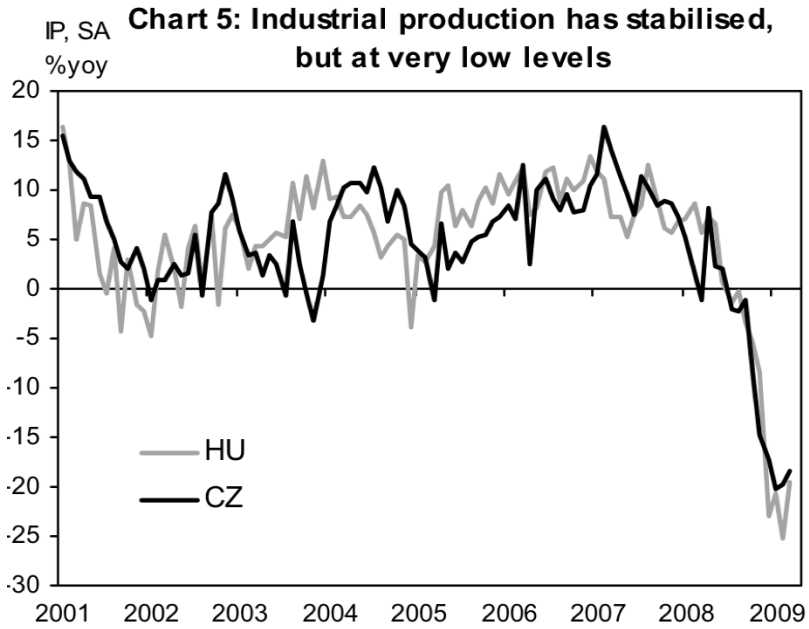
Data from IMF and GS, chart compiled in Excel

Appendix 8: High external debt in CEE



Data from IMF and GS, chart compiled in Excel

Appendix 9: Industrial production Hungary and Czech (2001 to 2009)



Source: Goldman Sachs chart

Appendix 10: Credit ratings on Hungary

Moody's	
Foreign Currency LT Debt	Baa1
Outlook*	Negative

Standard & Poor's	
Foreign Currency LT Debt	BBB-
Outlook	Stable

Fitch Ratings	
Foreign Currency LT Debt	BBB
Outlook	Negative

Japan Credit Rating Agency	
Foreign Currency LT Debt	BBB+
Outlook	Negative

Rating and Investment	
Foreign Currency LT Debt	BBB
Outlook	Stable

Source: NBH

Appendix 11: DAX 5-day chart

Yahoo Finance Chart