



Munich Personal RePEc Archive

# **Capital Flows, Credit Crunch and Deleveraging Dynamics: The Case of Slovenia, Croatia and Hungary in Comparison**

Vidakovic, Neven and Zbašnik, Dušan

Effectus University College for Finance and Law, Economics faculty  
University of Maribor

February 2014

Online at <https://mpra.ub.uni-muenchen.de/63958/>  
MPRA Paper No. 63958, posted 28 Apr 2015 13:52 UTC

# Capital Flows, Credit Crunch and Deleveraging Dynamics: The Case of Slovenia, Croatia and Hungary in Comparison

## Summary

This paper investigates the deleveraging process in three neighboring countries: Slovenia, Croatia and Hungary. Prior to the economic crisis of 2008 all three countries have experienced solid rates of economic growth, economic stability, but also fast rise of foreign debt. After 2008 all three countries are faced with a prolonged recession and without long term sustainable sources of growth. This paper looks at the effects of capital flow into three economies, determines the reasons for the increase in foreign debt and investigates the policy response. Paper finds that each of the three countries had different reason for the increase in foreign debt, but the economic effects are the same: prolonged macroeconomic instability and recession.

In order to cover both economic theory and real economic effects authors use a modified version of the RBC model with soft budget constraint and free capital flows. The model does to some extent explain the effects leveraging process has had on the three economies. In the end paper investigates what was the role of the central bank in controlling the increase in foreign debt and concludes the role of central bank has to be augmented for control of capital flows in order to avoid crisis like the one started in 2008.

Key words: deleveraging, monetary policy, real business cycle, capital flows

JEL: E58, F34, F44

Neven Vidaković

Effectus University College for Law and Finance

Trg J.F.Kennedy 2,

10000 Zagreb

Croatia

nvidakovic@vsfp.eu

Dušan Zbašnik

Faculty of Economics and Business University of Maribor

Razlagova 14

2000 Maribor

Slovenia

dusan.zbasnik@uni-mb.si

# 1. Introduction

The economic crisis which started in 2008 was not a standard business fluctuation. While large economies like USA have used standard economic tools to exit the recession for some countries the crisis has revealed much deeper problems which cannot be solved using standard economic tools. Initial measures like austerity have not worked at all in general or in particular cases. Also many standard economic remedies did not work at all. Some governments were forced to use pro-cyclical fiscal policies in order to try to balance the fiscal revenues and this has only exasperated the crisis.

What has made the crisis of 2008 even more dangerous is the fact that large economies like USA or Germany has managed to successfully exit the crisis, however many transition countries have been struggling for 6 years. However the crisis of 2008 did have one major advantage. It has forced us to reexamine foundations of economics as a science. The usual paradigms like: savings equals investments or that monetary variables should not have effects on the real economy in the long run have to be reexamined in the wake of crisis aftermath.

This paper has the objective to investigate how capital flows influenced three neighboring economies: Slovenia, Croatia and Hungary. In 1990 all countries have entered into a process which has been termed “economic transition”. The main objective of this process was to transform economies from socialism into capitalism.

The initial point of transition was different for all three economies. Slovenia and Croatia did not have a classical “planned economy”, but have instead had “workers self management” as described in Ribnikar (1993). There was also another important distinction between Slovenia, Croatian and Hungary. Hungary did not have any military operations. Slovenia had brief military campaign, but it was Croatia how had largest military operations out of the three countries.

The process of transition was also different for all three countries. Slovenia joined EU in 2004 and EMU in 2007. Hungary also joined the EU in 2004, but never joined EMU. Croatia only joined EU in 2013. When the economic crisis started in 2008 the three countries were also in different positions in terms of economy; Slovenia had 91% of the EU average GDP PPP, while Croatia was at 65% and Hungary was at 64%.

Prospect of joining the EU was exceptionally important for all three countries. EU was perceived as a sign of stability and prosperity. However six years into the crisis there are little benefits from EU. For example Croatia had six quarters of negative growth of GDP before joining EU and three negative quarters after it has joined in middle of 2013.

Once the economic crisis started it became obvious the process of transition did not create a long lasting economic stability. Many of the economic changes in the three economies have been termed as “convergence” towards EU before the crisis. However after 2009 the variables which were perceived as converging and positive were rebranded into “structural imbalances”. The best example of this is foreign debt and household’s credit. Paper like Koroknai (2008) and Komáromi (2008) see increase in household debt and foreign debt as perfectly natural occurrences. The errors of this view have been paid by a 6 years of recession and economic instability. This paper investigates what has caused the economic instabilities and what can be done in the future to remedy them.

This paper is split into following sections. Part two looks at the basic economic data for the three countries. Part three uses a modified real business cycle model in order to combine the effects of the monetary and real economy. Parts four, five and six analyse the situation for each individual country.

Part seven addresses how the economic crisis of 2008 has affected the three economies. Parts eight and nine address what has to be learned from the crisis and what should be done in the future to prevent buildup of economic instabilities. Part nine specifically addresses the role of the central bank. Part ten concludes.

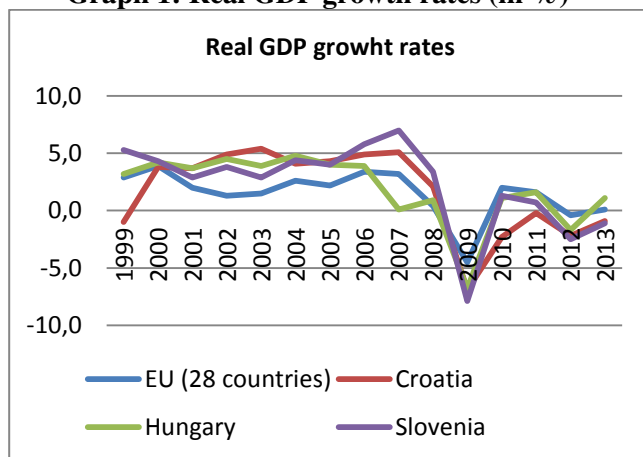
## 2. Basic economic data

Before we move to a formal model it is useful to look at some basic economic data for Hungary, Slovenia and Croatia in order to get some bearing regarding the state of the economies before and after the crisis. We are going to compare the three countries using basic economic variables: real economic growth, investments in fixed capital, domestic demand and foreign debt in time period from 1999 to 2013. As we can see from the graphs below all three countries have had almost exactly the same pattern in the data.

First there was strong economic growth, with rates around 5%. Initially Croatia had recession in 1999, but after the recession the economic growth stabilizes around 5% which is similar to other countries. Then in 2009 there is the full force of the recession and all three countries have sharp economic decline. After the initial decline there is some economic growth, but it is below two percent and as we can see in Croatia there is no economic growth after the recession.

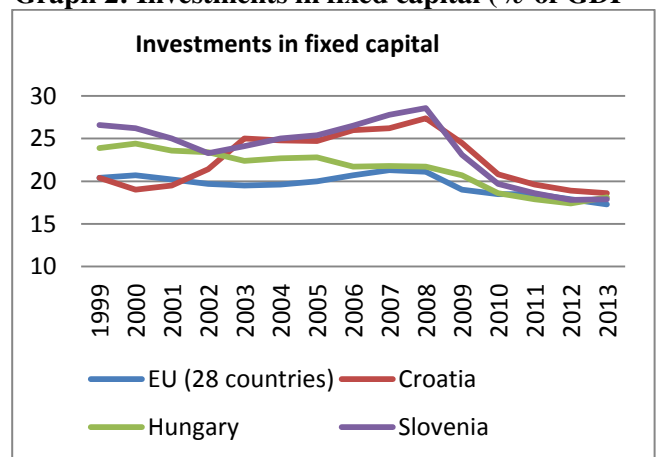
It is important to compare the growth rates of the three countries with the growth rates of the EU 28. As we can see in the period before the crisis the growth rates of the three countries have been significantly above the EU28, but after the recession the growth rates have been significantly below the EU28. This clearly indicated long term inability to recover from the recession and continue the process of convergence towards the EU average.

**Graph 1: Real GDP growth rates (in %)**



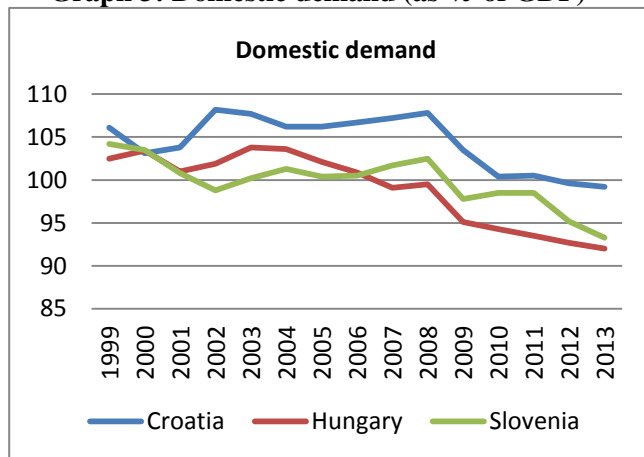
Source: Eurostat

**Graph 2: Investments in fixed capital (% of GDP)**



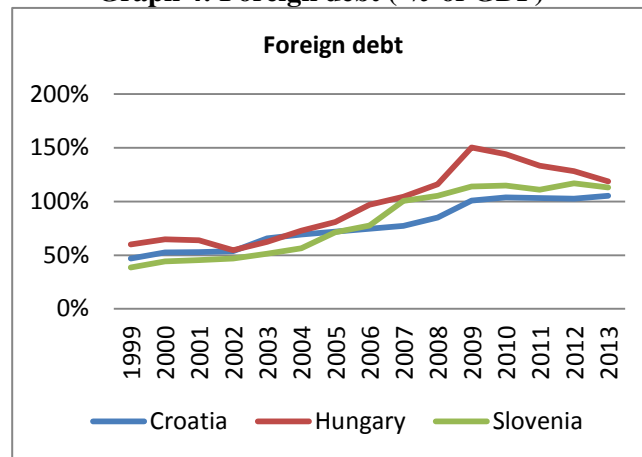
Source: Eurostat

**Graph 3: Domestic demand (as % of GDP)**



Source: Eurostat

**Graph 4: Foreign debt ( % of GDP)**



Source: Eurostat

The main source of economic growth should be investments in fixed capital. Basic economic theory states that increase in investments will lead to the increase in fixed capital. In order to keep the capital to labor ratio constant; increase in fixed capital should lead to increase in labor demand. However our three countries did not have a significant investment boom before the crisis. The investments in fixed capital, as percentage of GDP are only several percentage points higher than the rates in EU28. So we do not see in the data that economic growth from graph 1 was led by investment boom. After the recession the investment rates fell and in the time period from 2009 are almost exactly the same in the three countries as they are in the EU28.

However graph 3 shows us the domestic demand and as we can see in the period before the recession there is a strong domestic demand in Croatia and Hungary, while in Slovenia domestic demand is close to the gross domestic product. After the start of the crisis all three countries have domestic demand lower than the gross domestic product. This is part of the deleveraging process the three countries are undergoing.

So the first three graphs are giving us the following set up before the crisis: there is economic growth, but it is not driven by investments and there is a strong domestic demand. Graph four gives us the explanation of how this was achieved: foreign debt. All three countries in the time period 1999 – 2009 have accumulated significant amounts of foreign debt. This is the reason for strong domestic demand and demand driven economic growth, not investment driven economic growth. After the start of the crisis we can see foreign debt is decreasing and stabilizing in relation to the GDP, but domestic demand and investments have also decreased.

The data we have presented here is rudimentary, but it does provide us with the overall picture of the three economies. In the period before the crisis, economies have lived above their means and have accumulated debt. Once the crisis came the debts have to be repaid, but because of the structural change in the economy there is a lack of sustainable long term growth.

### 3. Simple model

In order to gain better understanding of the economic problem the three countries are facing, we are going to create a simple model. The main object of this model is to differentiate what is difference between our simple model and the standard economic models. We shall model our economy based on a real business cycle model (RBC) which can be found in King and Rebello (2000).

RBC model is a model where investments and technological innovation are the main drivers of economic growth. We shall keep this component, but we are also going to add monetary components to this model: debt and investments in equity. The reason for this is simple and it comes directly from the data. Graphs 1, 2, and 3 all show disturbances in the real economic variables, on the other hand graph 3 shows a monetary variables: foreign debt. The main objective of our model is to incorporate monetary variables into real business cycle. This is the line of economic research suggested by Mankiw (1989)

We shall start with households. The households try to solve the following maximization problem:

$$\max V(A) = \sum_{t=0}^n \beta^t u(C, L)$$

Where L is labor and C is the aggregate consumption in the economy and  $\beta$  is the discount factor. The utility function households use is:

$$u(C) = \left( \frac{C_d + C_f}{1 - \gamma} \right)^{1-\gamma}$$

Where C is consumption and underscripts d and f denote consumption of domestic and foreign goods respectively. Labor in the economy evolves according to the following simple autoregressive process:

$$L_t = \alpha L_t + \varepsilon_t$$

Where L is the total labor in the economy,  $\alpha$  is the autoregressive parameter and  $\varepsilon$  is the error term with distribution  $N_L(\mu, \sigma)$ .

The gross domestic product can be presented as standard Cobb-Douglas production function

$$Y = A^{1-\alpha-\beta} K^\alpha L^\beta$$

The gross domestic product or domestic supply can be used for consumptions or for investment so we have the following equality:

$$Y_t^S = C_t + I_t$$

Where  $Y$  is the gross domestic product,  $C$  is aggregate consumption and  $I$  are the investments. However total domestic demand is:

$$Y_t^D = C_d + C_f + I_t$$

Where  $C_f$  denotes the consumption of foreign goods. As we can see the difference between domestic supply and domestic demand depends on the value of  $C_f$ . The stock of capital in the economy evolves according to

$$K_{t+1} = I_t^d + I_t^f + (1 - \delta)K_t$$

Where  $K$  is the stock of capital in the economy,  $I$  is the investments in period  $t$ . We have split the investment in the economy, so there are two sources of investment  $I^d$  and  $I^f$ , where superscripts  $d$  and  $f$  denote domestic and foreign investments.

Now we shall derive the household's budget constraint for the households. On the funds inflow<sup>1</sup> side we have wage  $w$ , income from savings  $\tau S$ , where parameter  $\tau$  has the following values  $0 < \tau < 1$  and new debt  $\phi$ . On the expenditure side we have consumption  $C$ , repayment of debt  $\kappa \Phi$ , where parameter  $\kappa$  has the following values  $0 < \kappa < 1$ , investment in equity  $e$ .

$$w_t + \tau S_{t-1} + \phi = C_t + \kappa \Phi_{t-1} + e$$

The changes in wage, savings, debt and equity can be shown in the following way. Wages evolve according to a simple autoregressive process where  $\alpha$  is the autoregressive parameter and  $\varepsilon$  is the error term with distribution  $N(\mu, \sigma)$ .

$$w_t = \alpha w_{t-1} + \varepsilon_t$$

Total value of saving in the economy is  $S$ , which is the summation of all savings up to time  $t$ . The savings rate the household obtains is  $r$ .

$$S_t = \sum_0^{t-1} s_{t-1} (1 + r_i)^{t-1-i}$$

---

<sup>1</sup> Please note we are using the term funds inflow for households, not income since the households can use funds which are not part of the income, like debt.

The households also accumulate debt  $\Phi$ , which increases with new debt  $\phi$  in each time period plus the interest rate on debt  $r^*$ . We shall also assume there is some maximum value of debt  $\Phi^*$ .

$$\Phi_t = \sum_0^{t-1} \phi_{t-1} (1+r_i^*)^{t-1-i}$$

As we have noted the households can also invest in equity. Total value of equity households have is  $E$  and  $e$  is the new equity purchased in time  $t$ . The value of equity held over from previous period changes based on stochastic parameter  $\lambda$ , which has the following distribution  $N_E(\mu, \sigma)$ .

$$E_t = e_t + \lambda E_{t-1}$$

The model we have created is based on the RBC model, but the model was augmented to allow the behavior of households which cannot be found in the standard RBC model. In our model the households can borrow money and use that money to invest in equity. As long as the household can obtain debt, the household can use the debt the way it wants. The new debt is contingent on the household's ability to borrow, ie. household has not reached the upper limit of debt. The households can also borrow money to increase their consumption. We have not defined banks as part of the model, since we are not interested in behavior of banks or particular economic agents we are more interested in the way capital flows affect the country.

In this set up of the model it is possible to have and increase in household debt just to finance increase in consumption off foreign goods. It is also possible for households to invest in equity on margin, but this type of behavior is not sustainable in the long run and at some point in time it has to come to an end. This is they the optimization problem for the households is not infinity, but it is a fixed  $n$  time periods.

## 4. Slovenia

The case of Slovenia is the first one we are going to investigate. Out of all three countries in 2008 Slovenia was most advanced in terms of the transition process and in terms of economic development, Slovenian GDP per capita based on PPS was 87% of EU28. Because of high standard of living, the process of convergence towards EU standard was exceptionally successful. Slovenia was heralded as a country which was quickly adjusting to the EU membership and it was a shining example of a post-communist country making a successful transition into EU.

The process of economic transition in Slovenia is generally split into three separate periods as described in Simoneti (2010). The first period is from 1991 to 2004, so from start of independence to joining the EU. The second period is from 2004 to 2008 when the crisis started and the third period is the period of crisis from 2009 onwards.



The first period is the period of economic transition. Slovenian approach to transition was gradual. The state ownership was not quickly privatized and Slovenia decided to keep control over several key industries like banking as described in Ribnikar (2004). In general Slovenia was regarded as a closed country, where foreign investment and foreign purchases of Slovenian companies was not very welcomed as mentioned in Masten (2010).

The second period is the period of joining the EU and period of economic benefits from the EU membership. As we have seen from the data overview Slovenia had considerable rates of economic growth, but at the same time there was a significant increase in foreign debt. However in case of Slovenia foreign debt was not used for investment in real economy since there were very little investments in Slovenian capital, but it was used for portfolio investments as described by Mrak (2010).

Slovenian stock market in the time period from end of 2003 to end of 2007 had significant growth rates. In this time period growth of main Slovenian stock index increased 151% while DAX index increased 113% and Dow Jones increased only 23%. Clearly this was a great time for portfolio investments in Slovenia. But only a year after at the end of 2008 Slovenian stock index has lost 67% of its value and it has never recovered since. As a matter of fact, the Slovenian stock index SBI 20 was discontinued in 2009 and replaced by a new index SBI TOP.

What has happened in Slovenia? The era of cheap money combined with no capital restrictions and stable economy was used for stock market speculation. What was considered development of stock market and capitalist economy was in fact nothing more but speculation and stock market bubble. The inflow of money into stock market was simply much more than the economy could absorb, the demand for stocks overcame the supply of the financial instruments.

What is staggering is that some economists like Šušteršič (2010) even deep into the crisis in year 2010 are still preaching that stock market should be a long term investment and that liberalization of stock market is the path towards economic growth. This approach misses the most obvious constraint of Slovenian economy: In Slovenia the number of companies and financial instruments is too small for Slovenian economy to fully utilize capital markets as capital markets are utilized in large economies.

What Slovenia has done is to create a massive exposure to a valuation risk on a macro economic level. We can use a simple accounting approach to describe what has happened in Slovenia. On the liabilities side there was foreign debt. On the assets side there were investment in financial instruments. The valuation risk comes into play because the value on the liabilities side is stable, the value of debt changes with repayments or increase in debt. However the value on the assets side is highly volatile since the financial instruments' value reacts fast to any macroeconomic changes. The set up was: stable valuation in liabilities and highly volatile valuation in assets without any possibility to perform macroeconomic hedging. When the stock markets crashed in 2008 and 2009 the value of assets dwindled, while the value of liabilities remained the same. The changes in the value of assets spilled over into real economy causing a long term economic disturbance, manifested as prolonged recession.

From the perspective of our model the case of Slovenia can be explained by the model. The budget constraint was

$$w_t + \tau S_{t-1} + \phi = c_t + \kappa \Phi_{t-1} + e$$

The economic agents can borrow on the inflow side and use debt to finance equity on the expenditure side. If the value of equity is increasing faster than the value of debt then the households has large

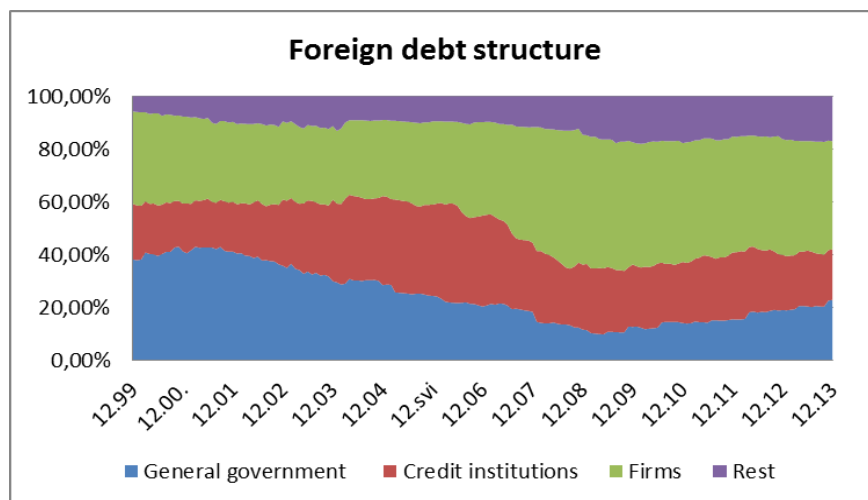
wealth effect, however when the value of equity decreased, the wealth effect becomes the impoverishment effect.

The effects of increase in portfolio investment resulted with loss of value and significant foreign debt. The crisis in Slovenia is therefore a crisis caused not by real economy, but by monetary factors. The process of deleveraging is simple blocking any significant increase in investments and creation of stable economic growth.

## 5. Croatia

Croatia did not have a large capital flows before 2000. After the stabilization program was completed in 1994 the period of hyperinflation has ended there was very little capital inflows. From 1995 to 2000 foreign debt increased by 6 billion dollars and foreign investments were 3,1 billion dollars. The capital inflow boom was in the period from 2000 to 2008 when the foreign debt increased by 30,4 billion euros and foreign investments totaled another 18,1 billion euros. But what is interesting is the actual path of foreign debt. As the can see from the graph 5 the structure of the debt changed from end of 1999 to 2009. The most significant change in the structure was the increase in the debt of firms. Observe how the portion of banks in foreign debt first increases and then decreases from 1999 to 2008, at the same time the portion of firms' debt follows the opposite path.

**Graph 5: Foreign debt structure in Croatia**



*Source: Croatian National Bank*

How did this come about? Starting with 1.1.2007 Croatian central bank introduced a new regulation whose main objective was to decrease credit growth in Croatia. The measure was simple; banks were allowed to have 1% of credit growth per month, if the credit growth was more than 1% per month the banks would have to buy bills issued by central bank. The central bank bills yielded 0%. This simple measure affected the cost of funds for the banks because when the credit growth was more than 1% the

cost of loans issued bank the banks increased. Excess growth in terms of funds can then be presented in the following equation:

$$\phi + CB + RR = S$$

On the assets side we have:  $\phi$  which are the new loans, CB are the central banks bills purchased and RR is the reserve requirement which we shall use as generic term for the regulation. The total value of funds needed to fund the asset side is savings denoted as savings S. At this point it is irrelevant is the domestic savings or imported savings (foreign debt). As we can see central bank bills increase the quantity of funds needed to give out loans. For the bank to have 0 net interest income the following equality has to hold:

$$r_{\phi} + 0_{CB} + r_{rr} = r_s$$

The bank gets  $r_{\phi}$  rate on loan, 0 from central banks fill and  $r_{rr}$  is the income from the reserve requirement. The cost of savings is  $r_s$ . The introduction of central bank bills increased the cost of funds for the banks and lending above 1% per month decreased interest rate margin for banks. In order to compensate for the measure, the banks utilized the advantages of free capital flows in small open economy. The banks first used leasing companies to increase loans, but then leasing companies as part of the banking group were also included in the regulation<sup>2</sup>.

Since the households cannot directly borrow from foreign entities because of complicated procedures, the banks used the 1% limit to lend to households and firms were instructed to borrow from abroad. This had two major important effects. First this increased firm's borrowing from abroad and consequently increased foreign debt. This explains why there was a restructuring of foreign debt in Croatia. In 2000 the firms were a minor part of foreign debt, but by 2008, the firms borrowing as part of the foreign debt has increased significantly in terms of portion of the total foreign debt as it can be seen on the graph 5.

From this we can see the measure of the central bank to decrease excessive credit growth has in effect caused an increase of foreign debt. This is a clear example of how complex is the monetary policy in a small open economy. Central bank has created a measure to affect one variable, but the measure has backfired and created a negative feedback in terms of increase in foreign debt.

How does this relate to the model? In the model we have opened a possibility for the firms to obtain funding from domestic and foreign sources. Once the domestic sources were excluded the banks offered firms to obtain funding from abroad. In case there is no exchange rate risk (with is the case with in Croatia with stable exchange rate regime) the firms do not have preferences in terms of the source of funds, only in terms of the cost of funds.

Also in the model we have allowed households to borrow freely because the households wanted to increase consumption. Rapid growth of credit to households has promoted the central bank to create measures to decrease rates of credit growth. However the problem of credit growth was not the total growth of credit, but increase in expenditure loans given to households by the banks. The central bank

---

<sup>2</sup> The whole evolution of the regulation is presented in Galac (2010)

in Croatia should have created a measure to target those types of loans, but it did not and the measure created has backfired.

## 6. Hungary

Hungary in terms of time line can also be split into three main time periods. Just like in case of Slovenia there is the period from independence to 2004, then the period from 2004 to 2009 and then the crisis period.

One of the main characteristics of the Hungarian economy is the fact that the standard macroeconomic assumption of savings equals loans was able to hold in Hungary up to 2004. The debt of the households was very small in terms of the percentage of the bank's balance sheet. Then in 2003 government started a new program: subsidized housing loans in Hungarian forint. This new banking product was acceptable for the households because of the monetary policy. From 1990 to 2000 Hungary had a variable exchange rate regime, so a long term loan in HUF did not have any currency risk. However because of the budget restrictions in 2004 the subsidized program was finished. Since foreign currency loans had exchange rate risk they were not acceptable to the households under variable exchange rate regime. The changes in lending to households were described in great detail in Banai, Király, Nagy (2011)

In 2000 Hungary has changed its monetary policy and has switched from variable to stable exchange rate regime. The removal of the currency risk opened a new possibility for the banks. The banks were able to carry on with a lucrative product of housing loans, but under the new exchange rate regime the housing loans were in Swiss francs. From short term perspective this product did not have any currency risk because the exchange rate regime imposed by the central bank was based on the exchange rate stability. From the long term perspective loans in Swiss francs also did not have exchange rate risk, because in the long run Hungary would join Euro.

The banking strategy of cheap loans and monetary policy of stable exchange rate regime led to an explosion of household debt. When this new debt was larger than the deposits in the bank, the banks simply moved outside of Hungary to get funds and this led to an increase in the foreign debt. When the crisis came in 2008 and 2009 Hungary devalued its currency and is currently undergoing a severe deleveraging. The growth rate of loans has been negative for almost 6 years<sup>3</sup>.

Unlike Croatia where the increase in foreign debt was due to monetary policy in case of Hungary we can see how a combination of policies caused increase in foreign debt. On one side there was the fiscal policy which first subsidized loans. When the subsidies ended the central bank changed the monetary policy and allowed banks to continue with lending.

## 7. Crisis of 2008

---

<sup>3</sup> Hungarian central bank regularly publishes Trend in lending, a publication regarding changes in lending.

From the data we can see that up to 2008 all three countries have had significant economic growth. However large economic growth only masked the internal instabilities of the economies. Each of the three countries has allowed significant increases in household debt, increase in the stock market values and accumulation of foreign debt. But these monetary variables were not followed by real economic variables like increase in quantity of fixed capital.

We have seen how each of the countries in our example had some reason to allow an increase in foreign debt. When the crisis of 2008 came it became obvious the “unlimited” foreign funding is not unlimited and the funds do not flow freely in all economic situations.

The funds which have entered our three economies were not used for the purposes of the real economy, but in fact were used to create the micro foundations for macro instabilities. The crisis of 2008 is usually perceived as a fiscal crisis because the focus was on the fiscal instabilities in the economies like Greece, Spain and Portugal, however in case of the three countries we have analyzed, the crisis of 2008 is due to the monetary instabilities, not factors in the real economy. The problem became structural when the effects of the implosion of the monetary economy spilled over into the real economy. This spill over can be seen in the standard economic data: loss of jobs, decrease in consumption and increase in bad loans due to decrease in companies revenues (or household’s spending). The problems of fiscal deficit and government revenues are not the main economic problem the three countries we have analyzed have. The problems with the fiscal deficit are in fact the result, not the cause. But because of the prolonged crisis and lack of fiscal revenues the problem of fiscal stability has also become a prime political issue as described in Pâris and Wyplosz (2014). The cause of the problem are the accumulated economic instabilities, but not on the side of the real economy, but on the side of the monetary economy.

All three countries have allowed monetary policy from large economies like the USA and EU to spill over into their countries. In the time period from 2004 – 2008 money in the USA was cheap, so was the money in EU. Once EU and USA became too saturated with money the funds simply spilled over into other smaller economies. These smaller economies allowed the inflow of funds and used funds for different purposes. In our case Slovenia used it for stock market speculation, Croatia to funds consumer spending and corporate loans, Hungary to fund housing boom. The funds which have entered the economies were not used for economic foundations as theoretically explained in the RBC model.

When the crisis came in 2008 the first effect of the crisis was monetary, there was a decrease in liquidity and money has stopped to flow. In a special study<sup>4</sup> it was clearly stated Slovenia has faced sudden stop. In case of Hungary and Croatia there was no significant outflow of capital, but the fact capital has stopped to flow in had the same macro economic effect as the outflow of funds.

Just like in the good times when the money was abundant the monetary economy has had effect of the real economic variables, same has happened when the tides turned. When money stopped flowing in the effects of monetary economy were also felt in the real economy, this is best manifested in terms of decrease of economic growth rates and inability to have economic growth once the crisis has ended.

## **8. Lessons to be learned**

---

<sup>4</sup> Razvojne priložnosti trga kapitala v Sloveniji po finančni krizi: končno poročilo (2010)

As we have seen there are considerable differences between the models which are standard in economics and the real life. In real life savings is not used only for investments in fixed capital and households do not have a hard budget constraint. But the most important is the issue of capital flows in small open economy.

Again we come back to the relation of investments and savings. From the perspectives of the model and the data presented in this paper we can see the central banks have assumed this relationship and that was a mistake. The capital flows in the three countries have not been used as investments into capital, but for other purposes. However the end result was the same: deep and prolonged recession with the structure of the economy incapable of delivering long term growth.

Flowing from this, we should argue the large capital inflows were a mistake. Lack of regulation and control from the central bank was also a mistake. But both of these mistakes came from the same source: central bank's indifference towards capital inflows. This paper has once again demonstrated there is more to the central bank than just control of inflation and focus on stability of prices.

All countries also have one major thing in common and that is taking the credit growth and capital flows for granted. In all three countries credit growth was perceived and presented as something good in the long run. Large credit growth was called "credit deepening" and it was perceived as one of the elements of convergence towards developed countries of EU as described by Kraft (2002) and Kiss-Márton and Nagy-Balázs (2006). When the crisis came in 2008 it became clear the "credit deepening" is in fact "credit problem" and not a positive long run convergence. The side of the problem and be found in Cuerdo, Drumond, Lendvai, Pontuch, Raciborski, (2013).

What can be learned from all this? The first important thing is that the structure of the economy and the role of the central bank have to change. The central bank cannot any longer focus only on the stability of the prices, but has to focus on other elements of the economy. Most importantly the central bank has to focus on the structure of credit and the effects credit growth has on the economy in the long run. In our simple model we have integrated monetary and real economy. In our model it is possible to the households to borrow to increase consumption or to borrow and increase investments in equity. This kind of behavior is not standard in economic models, but as we have seen from the data it is standard in economic data. This clearly points to the importance of the control of the development of monetary economy. This monitoring should be done by the central bank.

The importance of sources of fiscal revenue has also come into spotlight with the 2008 crisis. Countries which do not have a clear source of revenue based on real economic activity cannot sustain their spending in the long run. As we have seen from the data all three countries have problems with volatility in domestic demand. This problem did not arise because of problems in the real economy, but because of the lack of controls of cash flows in and out of a small open economy.

Credit has to follow real economy and real economy cannot be fuelled by credit growth expenditures. Real economy has to be fuelled by real economic activity and investments. This is the perception we should also take regarding the process called deleveraging. From our perspective deleveraging is nothing more than decrease and implosion of monetary economy.

Let us examine two opposite cases. Case one: if inflows from foreign debt were used for real economic activity and increase in fixed capital. In this case, real economy would be able to recover and there would be no reason for fast deleveraging because the real economy needs investments to maintain the quantity of capital. Case two: if capital inflows were used for speculative investments and increase in consumption then deleveraging is nothing more than a natural process of money leaving the economy and debts being repaid.

Lack of economic growth, lack of jobs creation and decrease of consumption are nothing but consequence of a case when monetary economy simply overwhelms the real economy. In this particular case the process of deleveraging is nothing more but purging of bad money from the economy, a necessary process. The problem that remains is the fact that the possibilities of economic growth will be greatly diminished once the deleveraging process is over.

## **9. Role of the central bank**

A separate issue which has to be addressed is the role of central bank in both processes of leveraging and deleveraging. During the time of accumulation of imbalances the central banks stood idly by. In case of Slovenia the maneuvering room was very limited because of the process of ERM and adoption of Euro. In case of Croatia and Hungary the maneuvering room was much larger. The case of Croatia was already described: the central bank regulation is the main reason for the increase in the foreign debt. In case of Hungary the central bank did nothing to address the increase in capital inflows. As pointed out by Banai, Király, and Nagy (2011) the lack of action by the central bank is astonishing.

What all of the research consulted concludes is that the central banks in three countries were able to keep inflation rates low. From this we can conclude the central banks in Hungary and Croatia have chosen a simple trade-off between the accumulation of imbalances in the form of credit and foreign debt in order to have smaller rates of inflation. What was neglected was the fact that inflation is a monetary variable and can be controlled on short term basis, on the other hand household debt, foreign debt and fiscal imbalances have effects on the real economy, which cannot be corrected on short term basis.

Central banks were focused on the low inflation completely ignoring instabilities and bubbles which were being created around them. The stock market bubble, credit bubble, foreign debt bubble, housing prices bubble were all caused by monetary factor: capital inflows. The central banks have simply ignored them focusing on low inflation. When the monetary bubbles exploded the effects were not only monetary, but real.

From the data we see the three economies are in economic glut for the last six years, which clearly indicates the lasting effects of the accumulated imbalances. Therefore the capital outflows and deleveraging is nothing more than monetary economy readjusting to the real economy. However as we can see from the GDP growth rates the process of readjustment is exceptionally long and expensive and the future remains uncertain.

## **10. Conclusion**

This paper creates an overview of events in three economies. Three economies are different in their structure, response to crisis of 2008, monetary arrangements and many other factors. However there are

several important similarities which can be seen in the data. Period before the crisis was marked by: increase in stock market value, household credit, foreign debt and lack of action by the central bank. The period of crisis was marked by: sharp deleveraging, decrease in credit in the economy and thus decrease in investment and inability to find constant economic growth. From the setup of the paper we have constructed a scenario where monetary variables affect real economic variables with lasting consequences. This can be seen from the data as well.

For the theoretical framework we have used real business cycle model, but since our starting hypothesis is that is more to economy than just the real side. We have augmented the RBC model for monetary variables. In doing this we have been able to explain several real economic fluctuations as caused by disturbances in the monetary variables. Our model clearly point out there is a need for further integration of monetary variables into real economic models.

The accumulation of monetary imbalances has caused real economic imbalances and when the crisis came in 2008 the economies had hard time readjusting. As it can be seen from the GDP growth rates all three economies are not able to find sustainable sources of economic growth even 6 years into the crisis.

There is also one important issue which has to be addressed at the end and that is the role of the central bank. In the paper it was clearly presented the central banks did nothing to address the capital inflows, however all three cases are different. Slovenia was undergoing an ERM-2 procedure and possibilities to control the capital flows were limited, Hungary simply did nothing and Croatian central bank actually caused rise in capital inflows because of the regulation. All this clearly points to the need to address the role of the central bank in a small open economy. The roll of the central bank cannot be limited to just the control of inflation, but the role of the central bank has to be extended for the control of capital flows and credit policies of the banks.

## Bibliography

Banai, Á. Király J., Nagy, M. (2011). Home high above and home deep down below lending in Hungary *Policy Research Working Paper 5836* Pages: 34 <http://elibrary.worldbank.org/doi/pdf/10.1596/1813-9450-5836>

Bauer, P., Mariann E., Regina K., Zsolt K., Ádám M., Olivér R., Schindler, I. (2013). Excessive household debt: causes, trends and consequences *MNB Bulletin Special Issue, October 2013*, pages 28 - 36

Cuerpo, C., Drumond, I., Lendvai, J., Pontuch, P., Raciborski, R. (2013). Indebtedness, Deleveraging Dynamics and Macroeconomic Adjustment European Economy. *Economic Papers. 477*. April 2013. Brussels. 52pp [http://ec.europa.eu/economy\\_finance/publications/economic\\_paper\\_/2013/pdf/ecp477\\_en.pdf](http://ec.europa.eu/economy_finance/publications/economic_paper_/2013/pdf/ecp477_en.pdf)

Galac, T. (2010) The Central Bank as Crisis-Manager in Croatia – A Counterfactual Analysis *CNB working paper W-27*, December 2010.

Hoffmann, M., Balázs K., Péter K. (2013). Developments in the external balance of the Hungarian economy: indebtedness and adjustment *MNB Bulletin Special Issue, October 2013*, pages 69 – 80



Hosszú, Z., Gyöngyi K., Bálint T., Balázs V. (2013). Impact of the credit supply on the Hungarian economy *MNB Bulletin Special Issue, October 2013*, pages 81 – 90 [http://english.mnb.hu/Root/Dokumentumtar/ENMNB/Kiadvanyok/mnben\\_mnbszemle/mnbenspec\\_bulletin-oct-2013/hosszu-kormendi-tamasi-vilagi.pdf](http://english.mnb.hu/Root/Dokumentumtar/ENMNB/Kiadvanyok/mnben_mnbszemle/mnbenspec_bulletin-oct-2013/hosszu-kormendi-tamasi-vilagi.pdf)

Kerényi, Á. (2012). Need for rethinking of the Hungarian fiscal and monetary policy. *Crisis Aftermath: Economic policy changes in the EU and its Member States*, Conference Proceedings, Szeged, University of Szeged , Vol. 9, pp. 234-241.

King, R., Rebelo, S. (2000). Resuscitating Real Business Cycles, In John Taylor and Michael Woodford (eds.) *Handbook of Macroeconomics*, North-Holland, pages 927-1007,

Kiss–Márton, G., Nagy–Balázs, V. (2006). Credit Growth in Central and Eastern Europe: Convergence or Boom? *MNB working papers* [http://english.mnb.hu/Root/Dokumentumtar/ENMNB/Kiadvanyok/mnben\\_mnbfuzetek/mnben\\_wp2006\\_10/wp2006\\_10.pdf](http://english.mnb.hu/Root/Dokumentumtar/ENMNB/Kiadvanyok/mnben_mnbfuzetek/mnben_wp2006_10/wp2006_10.pdf)

Komáromi, A. (2008). The structure of external financing: Is there a reason to worry about financing through debt? *MNB Bulletin April 2008* pages 14 – 23 [http://english.mnb.hu/Root/Dokumentumtar/ENMNB/Kiadvanyok/mnben\\_mnbszemle/mnben\\_MNB\\_Bulletin\\_April\\_2008/mnb\\_bull\\_2008\\_04\\_and\\_ras\\_komaromi\\_en.pdf](http://english.mnb.hu/Root/Dokumentumtar/ENMNB/Kiadvanyok/mnben_mnbszemle/mnben_MNB_Bulletin_April_2008/mnb_bull_2008_04_and_ras_komaromi_en.pdf)

Koroknai, P. (2008). Hungary's external liabilities in international comparison *MNB Bulletin December 2008* pages 13 – 18 [http://english.mnb.hu/Root/Dokumentumtar/ENMNB/Kiadvanyok/mnben\\_mnbszemle/mnben\\_szemle\\_cikkei/mnb\\_bull\\_2008\\_12\\_peter\\_koroknai\\_en.pdf](http://english.mnb.hu/Root/Dokumentumtar/ENMNB/Kiadvanyok/mnben_mnbszemle/mnben_szemle_cikkei/mnb_bull_2008_12_peter_koroknai_en.pdf)

Kraft, E. (2002). Foreign Banks in Croatia: Another Look *CNB working papers W – 10* <http://www.hnb.hr/publikac/istrazivanja/w-010.pdf>

Masten, I. (2010). Finančna stabilnost v sloveniji in uravnovežen razvoj finančnega Sistema In Simoneti, Marko (ed.) *Razvojne priložnosti trga kapitala v Sloveniji po finančni krizi: končno poročilo* Inštitut za ekonomska raziskovanja Institute for Economic Research, Ljubljana, pages 105 – 118 <http://www.ljse.si/cgi-bin/jve.cgi?att=12634>

Mankiew, G. N. (1989) Real Business Cycles: A New Keynesian Perspective *Journal of Economic Perspectives*, Vol. 3, No. 3, pp. 79-90, (Summer 1989)

Mihalyi, P. (2011). Inflation Rather Than Austerity - Hungary's Economic Strategy *CASE Network E-briefs No. 03/2011* [http://www.case-research.eu/sites/default/files/publications/34899072Ebrieif\\_20113\\_Mihalyi\\_0.pdf](http://www.case-research.eu/sites/default/files/publications/34899072Ebrieif_20113_Mihalyi_0.pdf)

Mrak M. (2010). Plačilno-bilančni vidik neto prilivov kapitala v Republiko Slovenijo In Simoneti, Marko (ed.) *Razvojne priložnosti trga kapitala v Sloveniji po finančni krizi: končno poročilo* Inštitut za ekonomska raziskovanja = Institute for Economic Research, Ljubljana pages 119 – 139 <http://www.ljse.si/cgi-bin/jve.cgi?att=12634>

Pâris, P., Wyplosz C. (2014) PADRE: Politically Acceptable Debt Restructuring in the Eurozone, *Geneva Special Report on the World Economy 3*, ICMB and CEPR. 39 pages [http://graduateinstitute.ch/files/live/sites/iheid/files/sites/international\\_economics/shared/international\\_economics/prof\\_websites/wyplosz/Geneva%20Reports/Geneva%20Special%20Report%203.pdf](http://graduateinstitute.ch/files/live/sites/iheid/files/sites/international_economics/shared/international_economics/prof_websites/wyplosz/Geneva%20Reports/Geneva%20Special%20Report%203.pdf)

Radošević, D. (2012). Upravljanje kapitalnim računom Hrvatske i dužnička kriza Evropske monetarne unije: Preispitivanje. *Ekonomski pregled*, Zagreb. Volumen 63, issue 3-4; pages 127-162

Radošević, D. (2013). Financijalizacija periferije Evropske unije, kapitalne kontrole i platna bilanca *Ekonomija/Economics* volumen 20, issue 1; pages 131-153

*Razvojne priložnosti trga kapitala v Sloveniji po finančni krizi: končno poročilo* (2010). Marko Simoneti. (ed.) Inštitut za ekonomska raziskovanja = Institute for Economic Research, Ljubljana, pages 224 <http://www.ljse.si/cgi-bin/jve.cgi?att=12634>

Ribnikar, I (1993). Ukidanje društvenoga vlasništva (uopće i prvenstveno u Sloveniji). *Društvena istraživanja*, year 2, issue 1 31-50

Ribnikar, I. (2004). Rapid privatization of the banking sector and early adaptation of the euro. *Ekonomika istraživanja*, 2004 , no. 2, vol. 17, str. 33-44.

Sági, J. (2012). Debt trap - monetary indicators of Hungary's indebtedness *Crisis Aftermath: Economic policy changes in the EU and its Member States*, Conference Proceedings, Szeged, University of Szeged , Vol. ISBN 9, (2012).. pp. 145-156.

Simoneti, M. (2010). Razvojne priložnosti trga kapitala v sloveniji po finančni krizi In Simoneti, Marko (ed.) *Razvojne priložnosti trga kapitala v Sloveniji po finančni krizi: končno poročilo* Inštitut za ekonomska raziskovanja = Institute for Economic Research, Ljubljana pages 1 – 18 <http://www.ljse.si/cgi-bin/jve.cgi?att=12634>

Šušteršič, J. (2010). Slovenski razvojni model in nerazvitost trga kapitala krizi In Simoneti, Marko (ed.) *Razvojne priložnosti trga kapitala v Sloveniji po finančni krizi: končno poročilo* Inštitut za ekonomska raziskovanja = Institute for Economic Research, Ljubljana pages 92- 104 <http://www.ljse.si/cgi-bin/jve.cgi?att=12634>

Trends in lending June 2014 (2014). Hungarian central bank 26 pages <http://english.mnb.hu/root/dokumentumtar/enmnb/kiadvanyok/trends-in-lending/201406/hitelezesi-folyamatok-201406-en.pdf>

Vidaković, N. (2014) Exchange rate regimes: choices and consequences Lap Lambert Academic Publishing, 332 pages