An Econometric Analysis of Financial Development's Effects on the Share of Final Consumption Expenditure in Gross Domestic Product

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ABSTRACT

The main motivation of this thesis is to search about the connectionbetween certain indicator of financial development and the share of final consumption expenditures in Gross Domestic Product (GDP) in a chosensample of central and east European countries.

The true indicator of financial development that is used for this aim is the share of final consumption expenditure in GDP. The model of consumption function will include an explanatory variables like real interest rate, Lagged value of the share of final consumption expenditure in GDP, the share of Money and quasi money in GDP, the share of Domestic credit offeredby banking in GDP, GDP per capita as constant Local Currency Unit and growth rate of GDP (annual %).

The method which used for this analysis is pooled regression and the data collected from eight East European countries include Bulgaria, Czech Republic, Poland, Romania, Slovenia, Hungary, Ukraine, and Belarus between 1993 and 2011.

Finally by analyzing the E-VIEWS results it will be clear that which variable has positive effect on the share of final consumption expenditure in GDP and which one has the negative effect and the significant and insignificant of these effects.

Keywords:The Share ofFinal Consumption Expenditurein GDP, GDP Per Capita, Real Interest Rate, Money and Quasi Money, Growth Rate of GDP

ÖZ

Bu çalışmanınamacıOrtaveDoğuAvrupaülkelerindefinansalgelişimvenihaitüketimharcamalarıarasındakiilişkiyiincelemektir.

NihaiTüketimharcamalarıfinansalgelişimgöstergesiolarakkullanılmıştır.Tüketimfonksiyonumodelibazıaçıklayıcıdeğişkenleriçerecektir.Örneğin; reel faizoranı, GSYİH yüzdesiolaraknihaitüketimharcamalarınıngecikmelideğeri, GSYİH yüzdesiolarakparavebenzeri, GSYİH yüzdesiolarakbankacılıksektörütarafındansağlananYurtiçikredimiktarı, kişibaşınadüşen GSYİH ve GSYİH büyümeoranı.

Bu çalışmada panel data regresyonmodelikullanılmıştırveverilerDoğuAvrupaülkelerinden 1993-2011 yıllarıiçintoplanmıştır.Bu ülkelersırasıylaBulgaristan, ÇekCumhuriyeti, Polonya, Romanya, Slovenya, Macaristan, UkraynaveBeyazRusya'dır.

Sonuçolarak E-views programıkullanılarakhangideğişkenlerinnihaitüketimharcamalarınaolumluveyaolumsuzetkisiolduğuaçıklanacaktır.

Anahtar Kelimeler: Nihai Tüketim Harcamaları (% GSYİH), Kişi Başına Düşen GSYİH, Reel Faiz Oranı, Para ve Benzeri, GSYİH Büyüme Hızı

To my mom and dad for their love, support and encouragement which got me through.

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INTRODUCTION

Real GDP or national income is the financial worth of total goods and services which creates in a year in a certain country after taking into account the inflation rate from last year to present year. This factor will be useful for measuring output or national income of a certain economy. Two alternative methods exist for calculating GDP. The first one is expenditure method and the second one is incomemethod.

In fact expenditure method is total spending on all final goods and services which produced by an economy in a year. Variations in four different factors have effect on variation of aggregate demand. The first one is total investment spending which is shown by I, the second one is total government spending and the third one is net export which is equal to Export- Import and finally the last factor is consumer spending which presented by C. Consumer spending is the most important component of Aggregate Demand (AD) which is equal to total consumer spending on both un-durable and durable goods and services, therefore fluctuation in C can be a serious source of variation in Y. different factors have effect on variation of C, the most important of these factors are

1) Real interest rate: most empirical studies argue that a slight negative relation among real interest rate and consumption exist that means as real interest rate increase consumption decrease slightly and in the other hand saving rate increase.

2) Disposable income of households: a growth in this factor has a positive effect on not only saving rate but also on consumption rate

3) Wealth level of households: this certain variable has a positive relation with consumption, which means when the wealth of household increase they allocate more portion of their disposable income to consumption

4) Household's expectation about their future disposable income: by prediction more disposable income in future, households prefer to consume more so the total consumption of an economy will increase.

5) Rate of time preference for current VS.Future consumption: this factor depends on the culture and social security system.

However in the last decades some economists have argued that financial development can influence household's decision regarding allocation of their disposable income between saving and consumption.

Financial development usually explained as factors, rules or policies which are useful for producing more effective economy and more efficient market or even it can be explained like growing in the quantity and quality of private banks and financial intermediaries or growing the share of participation of private banks in different sector of financial market or even, more competition in the structure of financial market. In general financial development refers to a situation when private sections of an economy participate more actively in financial activities of a certain economy. Financial development can be assessed by alternative ways such as size, accessibility of capital, depth, efficiency and

stability of a whole financial sectors, it can be evaluated byinspecting the operation of different sectors of economy such as banks, financial markets, bond markets and in general different financial institutions.

The main focus of this thesis is to investigate the impact of alternative measures of financial development on the share of private consumption in GDP.The true indicator of financial development that is used for this study is the share of final consumption expenditure in GDP. The model of consumption function will include an explanatory variables like real interest rate, the share of Money and quasi money in GDP, the share of credit provided by banking in GDP, GDP per capita as constant Local Currency Unit, growth rate of GDP (annual %). For this reason panel data analysis for a group of central and east European countries include Romania, Belarus, Bulgaria, Czech Republic, Ukraine, Hungary, Poland have been done.

1.2 Formatof the Thesis

This research coverssix chapters. Chapter 2 includes a brief introduction about financial development and theories of consumption and saving. Chapter 3 is about Methodology, Data and hypothesis that tested for this study. Analyses of historical data for each country are presented in chapter 4. Panel regression results and their interpretations are presented in chapter 5. In the chapter 6 conclusion of this study is given.

Chapter 2

LITERATURE REVIEW ON THE THEORY OF CONSUMPTION ANDFINANCIAL DEVELOPMENT

John Maynard Keynes was the first scientist that attempts to obtain an organized theory of aggregate consumption spending. His theory was questioned after the Second World War when the families' spending depends on the other factors than current income like their wealth, taxation, interest income and the other factors.

The economists usually believe that the expenditure of households is a function of their income, but they are not decidedon which kind of income, relative or absolute, expected future or current, short run income or long run income. They linked consumption expenditure to different concept of income and the other factors as a resultfour major type of the theory of consumption exist:

1) Absolute-Income Hypothesis
2) Relative-Income Hypothesis
3) Permanent-Income Hypothesis and
4) Life-cycle Hypothesis

2.1 Absolute Income Hypothesis

Keynesian theory of consumption [1]

This hypothesis is linkedwith Keynes and after that with Arthur Smithies and James Tobin. John, M. Keynes (5 june1883- 21 April 1946) was a British economist. He is known as one of founders of modern macroeconomics and the most powerful economist of 20th century. According to Keynes (1936), the factor that effect families' current consumption is their current income which means individual consumers will fix the portion of their current income for consumption on the base of their absolute income. In fact the absolute-income theory of consumption assume that current spending depend on the current level of income.

$$C=f(y)$$

C= Current consumption

Y= Current income

Bellow factors are the main characteristics for the Keynesian theory of consumption

1) The real consumption spending has a positive relation with the real disposable income

$$C=f(y)$$

$$\frac{\Delta c}{\Delta y} > 0$$

2) The marginal propensity to consume (MPC) takes the value between 0 and 1

3) For the average family, marginal propensity to consume will decrease when the level of their income increase.

4) The level of consumption can be forecasted and this happens because consumption is an unchanging function of income.

Keynes (1936) mentioned that increase in the level of the wealth of households is another factor that leads to have more consumption.

Another feature that should be mentioned here is about consumer behavior which argues that when income of households rise they do not consume their whole incremental income and they prefer to save part of this money for different reasons like for financial safety if they lost their job, for illness, for their retirement periods or even for investing to earn more future income. According to the absolute version of this theory, when MPC falls families allocate small amount of marginal income on consumption. The reason behind this fact is that people with lower level of income save lower percentage of their income and those in higher scales of income save bigger portion of their income.

This hypothesis assume that all the factors that have effect on consumption are fix and there is no change in them but this assumption is not realistic and empirical data that collected after the second world war rejected this theory.

Later studies show that there is a straight linear relation between consumption and income that presented by this formula:

$$C= a +b\ Y$$

Where

a= part of consumption due to other factor than income

b = stand for marginal propensity to consume

There are some disadvantages for absolute income version of the Keynesian theory like: it is created more on self-examination than observed facts or the empirical investigations have supported only these two properties of the theory

$$C=f(y) \quad \text{and} \quad \frac{\Delta c}{\Delta y} < \frac{c}{y}$$

2.2 Relative Income Hypothesis

Duesenberry's theory of consumption [2]

As mentioned before Keynesian theory could not be proofed by observed data, because of this fact after the Second World War many economists tried to develop new theory that can be supported by the empirical data. James Duesenberry was the first economist whotries in this respect in 1940s. James, S.Duesenberry (18 July 1918 – 5 October 2009) was an American economists. He offered the relative income theory of consuming which also named Relative Income Hypothesis. He claims that the proportion of income that allocated for consumption depends on the level of income comparative to this factor of other neighbors or families.

Duesenberry(1940) said that households with lower income level who live in the community which its members have advancedlevel of income devotemore ratio of their income in compare of households with advanced level of income thatare in this community.For having accurate analysis about the consumption behavior of households he selected a family from a group of families and named it as a X family and examine its behavior when the level of income change in related to the income of the other

members of this certain group of families. As a consequence of this analysis four below propositions are given

1) If income of all the group members surgeor declineby the same rate, then consumption level of them will raise or fallby the same rate and the family X show the similar pattern as the other group members. This fact show that the ratio of Δc to Δy remain constant for all households by changing their income level with same rate.

2) If the relative income of family X does not change and just its absolute income goes up, then its absolute saving and consumption increase. It should be mentioned that in this position the $\frac{\Delta c}{\Delta y}$ does not change.

3) If the relative income of family X does not change (with income level constant) and the income level of other group members rise, then $\frac{\Delta c}{\Delta y}$ of household X with steady income surge.

4) If household X decide to change its group and choose the new one which has a higher income level, then its ratio ofΔc to Δy will decline.

Both Relative and Absolute income hypothesis propose that a proportional rise in relative income lead to proportion rise in consumption.

In this part it is necessary to talk about two kind of effect, the first one is Ratchet Effect and the second one is Demonstration Effect:

a) Ratchet Effect: Duesenberry (1940) argued that consumption is a function of former level of income, when income level decrease, families try to consume as much as they used to consume before, because they do not want the other families understand that they do not have enough money to consume like before. That is called a ratchet

effect. This effect refers to the propensities for consumption expenditure not to go back to previous level when income decreases.

b) Demonstration Effect [2]:This effect describes the behavior of families at the extension stage of the business cycle. Amount of money which families spend depends on both their needs and on the expenditures of other families which living near them, so the reason of having proportional function for consumption may be is that the income of individuals relate to the income of the other individuals which control how much it saves. Duesenberry called it Demonstration Effect, and also this behavior called "Keeping up with the Joneses".

There are some weaknesses for this certain Hypothesis such as:

1) This hypothesis focuses on the current income but according to Friedman (1957) for having precise description about consumption, permanent income should be considered.

2) According to this hypothesis, economic depressions must be come with a drop in consumption but it can be mentioned that this is not true fact, because during the recession of 1944-45 the consumption raised.

3) Demonstration Effect may not be true all the times. An increase in income may lead to not only increase in saving but also decrease in consumption.

4) It is not fully proved by evidence that consumer with lower level of income will follow the spending pattern of high level income group members.

2.3 The Permanent Income Hypothesis

Friedman's theory of consumption

The Absolute Income Hypothesis connects family's consumption to the current absolute income but the Relative Income Hypothesis connects family's consumption to current relative income.Milton Friedman (1912 – 2006) was an American who worked seriously in economist, statistician field and was a winner of the Nobel Prize in economicsscience;he was famous scientist because of his investigation on consumption analysis and the complexity of stabilization policy. Friedman (1957) divided income into the two components; permanent income and transitory income. The permanent income is the amount of money which an individual supposes to get over a time of minimum several years, while transitory part of income is unpredicted deduction or addition to his income and over the long run these two ought to cancel out each other.

Friedman (1957) argues that permanent consumption is proportional to permanent part of income and individual's saving just can change when transitory part of his income change. In his hypothesis both high level and low level income families dedicate the same fraction of their income for consuming. This theory holds that the ratio of permanent income to permanent consumption is constant for all the income level and there is not any correlation among transitory income and transitory consumption.

Friedman (1957) argued that consumption is the function of permanent income

$$C= f (Y_p)$$

$C=ky_p$

The key assumptions about this theory are:

1) Permanent expenditure is equivalent to K proportion of permanent revenue.

$$c_p = k\, y_p$$

2) Measured income is the money that received by individuals and is equivalent to permanent income + transitory income

$$y_m = y_p + y_{tr}$$

3) Measured expenditure is the actual observable consumption and is equivalent to permanent expenditure + transitory expenditure

$$c_m = c_p + c_{tr}$$

4) Correlation coefficient between y_{tr} and y_p obtain zero amount.

5) Correlation coefficient between y_{tr} and c_p obtain zero amount.

6) Correlation coefficient between c_{tr} and c_p obtain zero amount.

In his work, the permanent income was equivalent to geometrically weighted average of previous and current measured income, for example the permanent income of year t can be simply calculated by summing up a decreasing percentage of income level in the previous years but it was not clear that how many previous years must be taken in to the calculation.

Friedman's way to calculating permanent income has 2 special features:

a) If income level growth constantly over time, then permanent income is less than y_t

b) If income level of families has been steady over time, then the permanent income is also the same.

According to Friedman's theory of consuming and the definition of permanent income, the permanent or long term consumption function can be defined by

$$c_p = k\,[\,\beta y_t + (*1\text{-}\beta)\, y_{pt-1}]$$

Friedman's long term consumption has no intercept. Experimental evidence supports the permanent income theory more than any other theories, but there are some problems about this hypothesis:

1) In this theory both low-level income and high-level income families spend the same proportion of their income and it is not so realistic to think that APC for poor people is same as this measure for rich people but this assumption has been questioned by a lot of economists like Friend and Kravis [3]. They claimed that poor households are force to spend a bigger portion of their income in compared to rich families.

2) According to this theory temporary income are not related to temporary consuming that means short term change in income level has no effect on household's consumption but some economist questioned a lot about this assumption and found some empirical results for rejecting this assumption.

3) Friedman argues that transitory part of income is not used by individuals and all of them are saved, but there is not empirical proof for supporting this certain assumption.

2.4 The Life-Cycle Theory of Consumption

The life-cycle hypothesis [4]

This theory was developed by Ando and Modigliani in the early 1960s. Both Friedman's permanent income theory and life-cycle theory reject the Keynesian theory of consumption because of dependence of current spending on current income. Life-cycle

theory claims that there are three factors that the level of individual consumption depends on them:

a) Rate of return on the individual's capital

b) Resource on the hands of individuals

c) The age of the individuals

The resources on the hands of an individual involve present value of all the current and future income plus the net wealth.

The key propositions of this theory can be listed as fallow:

1) The consumption of a person depends on the level of his financial and physical wealth and his life-time income.

2) The spending level of a person is invariable over the time.

3) There is small relation among current spending and current income.

4) Spending is financed out of the income and wealth.

Proposition 1 and 4 can be transformed to a function as

$$C = aw_R + CY_L$$

Where

w_RIs real wealth

$y_L$is labor income

a is marginal propensity to consume(mpc) from wealth income

c is marginal propensity to consume (mpc) from labor income

In this theory a person expects to live for N years and start working at the age of B and be retired at the age of R so

Working life =(R-B)

Lifetime income=$Y_L(R - B)$

Where Y_L is annual labor income.

If (R-B) is defined asE_L so lifetime labor income can be defined as

$$Y_L \times E_L$$

If a person expects to be alive for N years and expects to consumes annually C amount the consumption theory can be written as

$$C\times N = Y_L \times E_L$$

Or

$$C=\frac{Y_L\times E_L}{N}$$

Like the other theory of consumption, this theory has some drawbacks like:

First, this theory has been carped for its assumption about existence a planned life for a person.

Second, this theory assumes that the units of consumption of each person in his life have a high level of certainty, but this is clear that this statement is not realistic and is unacceptable.

Third, this theory assume that each person has every needed information for making decision, planning for present and future spending and for being a rational person and this kind of information repeat year by year, but in real word it is obvious that this kind of information is not available, so this assumption is unrealistic.

Finally and the more importantly, after developing this theory a lot of empirical studies have been carried but the results of them do not support this theory and most of them show results opposing to this hypothesis.

2.5 Consumption under Uncertainty

Robert Hall's random-walk theory [5]

The theories of consumption that introduced before assume that individuals have assurance about the level of their income, but in reality the level of income is not foreseeable with high level of certainty, that means there is uncertainty about future income level. Robert E. Hall (1978) tried to developed novel theory by combining the factor of uncertainty of income to permanent income and life cycle hypothesis. His theory is named random walk theory or new version of life-cycle (LC) and permanent income (PI) theory.

If doubt about the level of income exists, there is uncertainty about reaching the life time utility to the highest level.

Life time utility=$U(C_t) + U(C_{t+1}) + \cdots + U(C_T)$

The utility maximization can be defined as

$MU\ (C_{t-1}) = MU(C_t) = MU(C_{t+1})$

Hall (1978) used rational expectation theory to describe individual behavior in consuming. According to this theory the aim is to balance marginal utility in time t by expectation about marginal utility in time t+1, so the rule is explained as:

$$E\ [MU(C_{t+1})] = MU(C_t)$$

Corresponding to the Hall's theory, the total utility is contingent to the total consumption, so the rule can be rewrite as:

$$E\,[(C_{T+1})] = (C_T)$$

However the value of $E\,[(C_{T+1})]$ is not observable. In this situation Hall used the theory of rational expectation to the consumption theory.

According to him the observed consumption behavior can be express as:

$$C_{t+1} = C_t + \bar{e}$$

Where:

$\bar{e}$is the expected spending because of sudden increase in income level.

The logic behind this new theory is that there is ambiguity about upcoming income, so individuals try to adjust the level of their spending base on the level of their income. When individuals find unpredicted increase in their income, they increase their consumption and when they find surprising decline in the level of their income, they reduce their spending, so the change in spending because of ambiguity is an unplanned change in consumption and this is the basic outcome of this theory.

2.6 Real Interest Rate and Consumption

2.6.1 The Classical Point of View

Classical economists argue that the real interest rate is an important factor that has crucial effect on individual's consumption and saving decision. Households prefer to save only when they have a great prospection for forthcoming consumption. Rate of interest that they get from their accumulation saving is the feature which determines these prospects of upcoming income and spending.in the basis classical point of view

about interest, economists argue that in the high level of interest rate, individuals prefer to save more portion of their income and consume less portion. Theoretically for investigating the behavior of households in time of changing interest rate, aggregate level of spending can be studied. For macro level study individuals can be belong to one of these three categories:

1) A group which prefers more spending in future than in present time.

2) A group which prefers more spending in present time than in future.

3) A group which there is no preference for them for present or future consumption.

At the macro level for finding the effect of interest rate on saving and spending the sum of these three categories of individual's behavior must be calculated. Theoretically the reaction of these categories to the changing of interest rate is not obvious. There are different points of view, most empirical studies argue that variation in real interest rate does not have any effect in consumption variation, but some scientistsdiscoveredthat there is a positive relation between spending and interest rate and some group of researchers found that there is negative relation among them.

It can be mentioned that a rise in interest rate can have two outcomes:

a) Substitution effect: in this point of view when interest rate increases, households prefer to save more and consume less, because by increasing the interest rate, opportunity cost of present consumption in terms of forgone future consumption will increase, so individuals decide to save more and substitute their present consumption by future consumption.

b) Income effect [6]: in this point of view when interest rate rises, individuals prefer to consume more and allocate smaller portion of their disposable income to saving because their expectation about income stream from a given financial wealth or given saving will increase when interest rate rises.

2.7Financial Development

In the first step it is essential to present definition for financial development, after that the reasons behind having different level of financial development in different economy should be presented and finally it is necessary to illustrate impacts of financial development in different economy.

Financial development can be defined in different styles like:

Factors, rules and policies which are helpful for producing more effective economy and efficient financial market. By these elements access to financial services and capital become easy [7].

Some economists for presenting a good definition of financial development go through financial stability [8], the stability of a system is essential for measuring financial development. They define financial stability like this:

a) Financial stability refers to a situation that would stop a large number of organizations from being unsuccessful or bankrupt

b) Financial stability is a situation that every section of the economy will do all their tasks so perfectly and there is not any disorder to key financial services.

It is clear that financial markets are not perfect .there are different costs that consumers and producers must pay in such a market. Searching for new ideas, collecting information about opportunities that are available for new investments, delivering goods, financial instruments and services, monitoring performances of users all of them are costly. Presences of these costs become a motivation for economists and government to find out and create new methods and instruments for reducing those costs. Some markets are more successful in developing their financial systems and lowering their costs but the others are less successful in this aim. At the basic level financial development occurs when financial market, intermediaries and financial instrument reduce the effects of these inadequacies.

On the other hand, introducing financial development just as a tool for reduction these limitations is excessively meaningless and does not offer a complete overview of financial development. Because of that it is better to use a precise definition. Some researchers decided to use more detailed explanation by concentrating on the financial development's actions like Levin (2005).Now financial development can be defined by its role on five different financial functions as:

1) Collecting additional information about novel possible investment and after processing these information allocate the resources to the best option

2) Improved checking the performance of corporations and individual investors after distribution of capitals.

3) Hurrying the transactions, diversification and handling different risks.

4) Finding better ways for pooling resources.

5) Find better ways for trade of financial and customer services and goods.

Around the world there are various approaches to run these tasks and markets differ intensely with each other in their ability of doing this tasks because of this fact alter level of financial development in various markets can be seen.

Financial development can be assessed by vast factors like size, accessibility of capital, depth, efficiency and stability of a whole financial system. When a system has a great degree of financial development access to financial services, risk diversification are easier for this system. Two different points of view exist for measuring financial development. The first one measures financial development as a result of the obtained consequences, in fact in this position they focus on the size, depth and access of system but in the second one the most part of concentration is on the features of institutional business and political situation. Countries with powerful institutional situation obtained great level of financial development.

There are different factors for economic growth, but huge experiential researches like DeGregorio and Guidotti (1995), King and Levine (1993), Levine and Zervos (1998) and Levine et al. (2000)showed that economic growth and well-being of a country have a direct connection with the level of financial development of that country [9].

The outcomes of these studies denote that financial development has substantial and positive impact on the growth of an economy. In this point it is soessential to understand the mechanism of this phenomenon. More than a few reasons are proposed in supporting this relation. First by having financial development, dealing with risk, mobilization of savings become easier than past so transferring capital from savers to right investors

facilitate and by this way the capital is on the right side. Second as studies show when transferring funds from savers to investors facilitate, the amount of unused liquid asset will decline and cause to have more funds obtainable for new investment and this is another reason behind economic growth. The third logic is that financial development provide economic agent with a structure that permits for equivocations, pooling and swapping risks and in consequence the level of investment and economic growth will increase. It can be mentioned that in a well-developed market intermediaries have enough motivation to do their best so this factor is another reason for having better transferring funds and have economic growth.

There is a discussion related to the different impact of financial development on growth that presented by some researchers. They argue that financial development has variable effect on growth of an economy, which depends on different items such as the level of financial development, time periods and countries situation .some of them like Rioja and Valev(2004) Argue that financial development does not show positive effect all the time, or if does the size of these effects differ by the level of development [10]. In contrast some researchers like Lartey (2010) explore that effects are constant and are independent to the level of development and all the time are positive and meaningful [11].

Aghion et al. (2005) conduct a research to show that countries with either high level of financial development or sufficient level of technology will converge to the borderline growth rate and per-capita GDP but countries that are far from these two factors will diverge [12]. By looking more precise in Levine et al. (2000) study, it will be understand

that in more financial developed economies, financial intermediaries will work so efficient so this will be cause to long-run convergence in growth rates [13]. In fact the absence of efficient financial intermediary can stop weak nations to taking complete benefit of technology transfer and cause some of them to depart from growth. The less developed the nation is, the more break departure is.Level of development of a financial system can has essential influenceon the total saving which transferred in border or even outside a country. Financial development gives a boost to this process and act as a catalyzer for more growth, this theory presented recently by Kelly and Mavrotas [14] and Maimbo and Mavrotas [15] both in 2008. For checking the impacts of financial development on saving a lot of investigations have been done, the results argues that how financial development affects a saving rate of a country depends directly to the level of this factor. There are different sample for improving these outcomes, one of them is twelve developing Asian countries (between 1966 to 2007), and the consequence of this study show that in 50% of the sample with initial level of financial development, saving rates positively affected by financial development. For the other 50% which have well developed financial segments and easy access to private credit, saving rates were negatively affected by level of financial development (Claire Brunel).

In this part of chapter 2, it is so useful to have an explanation about corruption. At first a short definition about this item will be presented and after that the relation between corruption and financial development will be clear.

In the literature, there are a vast number of definitions for corruption but generally corruption refers to misuse of public wealth and saving power by public administrator

for private benefit or an action that done with the purpose of taking some advantage that is conflicting with formal responsibility and right of the others (NaserGalol EL-Din EL-Bahnasawy). There is another description by World Bank that explains corruption as exploitation of public power for sake of private benefits (Andwig et al; 2000:11).

There is 2 point of view that should be mentioned here;

1) Many studies argue that corruption shows a negative influenceon economic performance. They illustrated that corruption has negative effect on income distribution (Gupta et al., 2002) [16], on GDP growth (Mauro, 1995) [17], on level of tax revenues (Tanzi and Davoodi, 2003) [18], and finally on government spending (Mauro, 1998) [19].

2) Another studies argue that financial development will reduce the level of corruption and the reason behind this fact can be explained as: in a financial development situation creditors and other institutions will check the performance of borrowers all the time and encourage them to allocate their resources into the right place, because of this monitoring, efficiency will growth and misusing of resource will decline so corruption will decreased.Another element that will exist by having financial development is deposit insurance. Government in well-function economies and developed countries will support their citizens by insurance in the hope of dropping systematic risk. In fact deposit insurance is a guarantee that government or some organization give to their consumers to protect their deposits in the situation that banks become bankrupt or insolvent. The main obligation of these insurances is to compensate all or just some part of the deposits in the time of bankruptcy. By strengthening depositors' reliance to the stability of the system, they will have more faith to the system and deposit more. In

factby this action we will have more available capital that can be valuable to have deeper finance system and contribute to have more growth rate.

Chapter 3

METHODOLOGY, DATA AND HYPOTHESIS TO BE TESTED

The first section of this chapter is about the methodology that is used for analyzing hypothesis about the relationship between selected indication of financial development and private consumption expenditure(as a percentage of Gross Domestic Product) in a selected sample of central and east European countries. The second part is related to the data and different variables which are used for this study and finally in the last part different hypotheses which are used for this investigation can be found.

3.1 Regression Analysis Methodology

Regression analysis is a method for estimating the relationship between variables. Usually there are one dependent variable and one or more independent variables. More precisely, regression analysis aids to understand how variations of one of dependent variable have effect on the variation of independent variable when the other independent variables are not varied. Usually the aim of regression analysis is to find out a function which shows the relation between different variables, this function is called regression function.

One of the most important usages of regression analysis is prediction the behavior of dependent variable. The most basic type of regression was the technique of least squares which was published by **Legendre** in 1805 [20] and by **Gauss**. **Gauss**(1809) established an expansion of this theory in 1821 which involve an edition of the Gauss–Markov theorem. The phrase "regression" was used by **Francis Galton** in the 19th century to define a natural phenomenon. Linear regression model is used for modeling the relationship between a scalar dependent variable Y and one or more explanatory variable which named X. Linear regression process efforts to solve the regression problem by creating the assumption that the dependent variable is a linear function of the independent variables. The key is that by looking at the equation of

$y = \beta_0+\beta_1 X+\varepsilon$

It should be mentioned that this equation has a linear forms by considering two different factors of $\beta_0 \text{and} \beta_1$.

There are some assumptions about the simple linear regression model:

1) The mean of valuey, for each value of X, is given by the

$$E(y|x) = \beta_0+\beta_1 x$$

2) For each value of x, each values of y are distributed about their mean value

$$VAR(y|x)=\sigma^2$$

3) The values of y are not correlated and their covariance is zero (there is not any linear correlation between y values)

$$COV(y_i|y_j)=0$$

4) x is not a random variable and must catch minimum two different values

5) ε is Random error and

$$E(\varepsilon) = 0 \quad \Longrightarrow \quad E(y) = \beta_0 + \beta_1 x$$

$$VAR(\varepsilon) = \sigma^2 = VAR(y)$$

6) The covariance among any pair of errors is

$$COV(\varepsilon_i, \varepsilon_j) = 0$$

7) Both y and ε are normally distributed about their mean

$$Y \sim N\{(\beta_0, \beta_1 x), \sigma^2\}$$

$$\varepsilon \sim N(0, \sigma^2)$$

There are different methods that are applicable for working on the regression analysis. The famous one is ordinary least square (OLS). In statistics ordinary least square or linear least square is a way for calculating the unidentified factors in a linear regression models. This approach minimizes the summation of squared vertical spaces between the seenanswers in the data and the answers forecasted by the linearestimate. Using OLS has very benefits like:

a) It is uncomplicated to apply on a computer using ordinarily accessible algorithms from linear algebra
b) Its application on new computers is effective, so it can be very fast applied even to problems with hundreds of features and thousands of data,
c) Mathematically analyzing this method is easier than the other regression models
d) Understanding this method is not so difficult for non-mathematician person exactly at the basic level
e) In the certain case is the ideal process

Unfortunately there are some pitfalls for applying ordinary least square method like:

a) Outliers: this method can act so badly when some data in dataset are extremely large or extremely small in compare of the other data.
b) Non-linarites: all linear regression models like ordinary least square hurt from this fact that in reality most systems are not operating in linear style but these methods assume that there is a linear relation between variables and try to fit some linear model to their relation.
c) Dependence between variables: some times by using least square method the prediction cannot be so accurate because of existence of correlation among independent variables.

3.2 Pooled Regression Analysis

Pooled regression or panel data is a statistical techniquethat works with two-dimensional panel data. In fact panel data is a mixture of time series and cross-sectional data. This methodis used when the collections of data that are used to be pooled are homogenous oralike.

For applying panel regression, data must be collected over time and over same individuals and after that the regression applies over these two dimensions.

Panel regression model can be shown as:

$$Y_{it}=a + bX_{it}+\varepsilon_{it}$$

Where:

X is independent variable

Y is dependent variable

i is individual index

t is time index

ε_{it} is the error

a, b are coefficients

In this analysis errors term play very important role because by the different assumptions about the errors two different effects (random effect and fix effect) are presented.

Generally, three different sets of data exist which are used for economics analysis:

1) Time series: it must be mentioned that this sets of data are the most common forms which are easily available.

2) Cross section: it must be mentioned that this data normally obtained over different geographic positions or demographic groups.

3) Panel data: the last one is panel data which obtained as a combination of both cross section and time series.

3.3 Data

Data used in this thesis is derived from Electronic World Bank Database of the World Development Indicators.Different economic variables selected for conducting regression analysis such as Real interest rate,Money and quasi money as a percentage of GDP(FD1),Domestic credit provided by banking sector as a percentage of GDP(FD2), GDP per capita as constant Local Currency Unit(P), growth rate of GDP (annual %) and lagged value of final consumption expenditure (% of GDP). The data are related to 1993-2011 for 8 East European countries include Bulgaria, Czech Republic, Poland, Romania, Slovenia, Hungary, Ukraine, and Belarus.

3.4 Hypothesis to be Tested

1)Does lagged value of finalconsumption expenditure (% of GDP) has a positive effect on final consumption expenditure (% of GDP)? (Or it has negative effect)

2) Does real interest rate have a positive effect on final consumption expenditure (% of GDP) or it has a negative effect?

3) What is the effect of growth rate of GDP (annual %) on final consumption expenditure (% of GDP)?

4) What is the effect of total credit provided by banking sector (% of GDP) on final consumption expenditure (% of GDP)?

5) Does money and quasi money as a percentage of GDP have a negative effect on final consumption expenditure (% of GDP)?

6) Does GDP per capita have a positive effect on final consumption expenditure (% of GDP)?

In all the cases it is necessary to find out how independent variables have effect on dependent variable and find out that these effects are significant or not.

Chapter 4

HISTORICAL ANALYSIS

4.1 Belarus

Belarus was a part of the former Soviet Union, and like the other countries of this union had an advanced industrial base but when the Soviet Union fell, all of these countries deal with a serious economic distress.Belarus has chosen a suitable way for dealing with this problem. Its government present new mechanisms for handling these kinds of crisis, they used administrative controls on exchange rate, prices and concentrate on social welfare and stability of the society which is called a socially oriented market economy. Nowadays Belarusian deals with new challenges like stop a state-run economy system with too much concentration on military production and chooses a national, free market system.

The economic crisis of 1991-1995 affected all units of the national economy and because of the financial and economic crisis which took place on Russia between 1996 and 2000, prices in Belarus increased significantly and their currency devaluate and all of them result another crisis in Belarus. Economy of this country showed sustainable growth between 2001 and 2005. Three reasons can be mentioned for this growth:

1) Decrease in trade deficit.

2) Existence of more living standards.

3) Sustainable growth in GDP since 1992.

It should be mentioned that before 2010 presidential election, Belarusian government decided to increase average salaries to 500$ per month and this wrong decision was one of the main reason for this country to face another crisis in 2011.

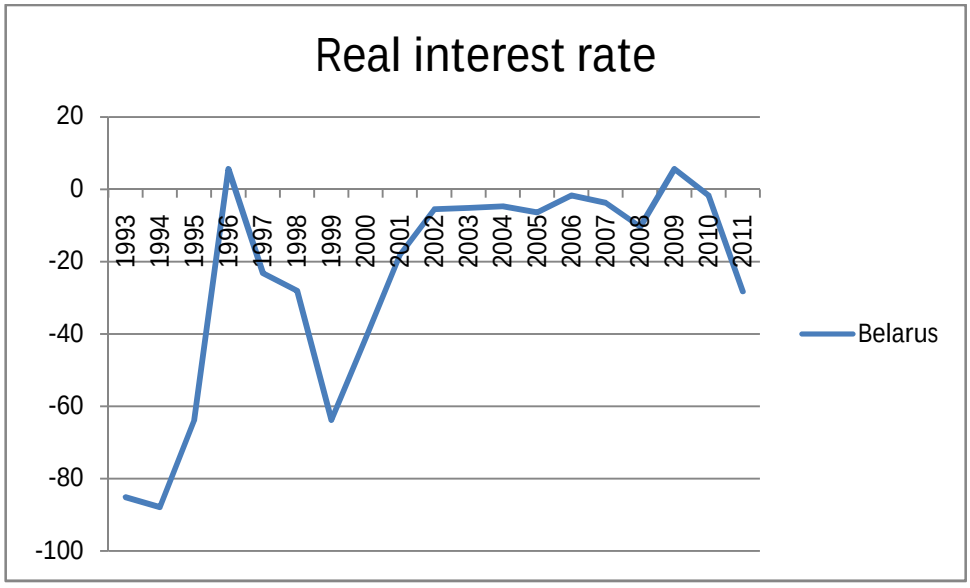

Figure 1. Real Interest Rate in Belarus

Real interest rate can be introduced as a borrowing interest rate which adjusted for inflation change. Between 1993 and 2002 real interest rate fluctuated so much but after 2002 this factor changed its pattern and more fluctuation cannot be observed. The minimum amount for this factor can be observed in 1993 and the highest amount can be recorded in 1996.

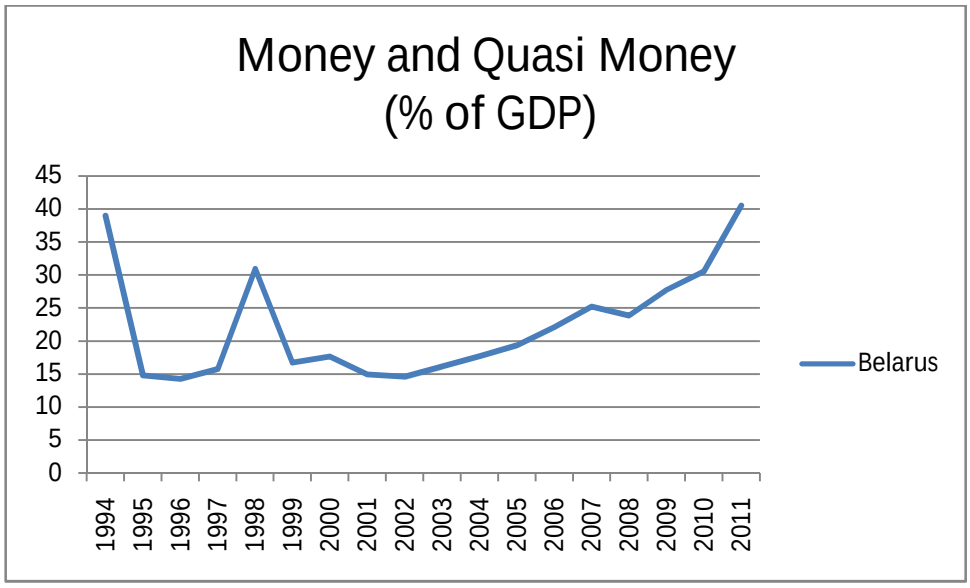

Figure2. Money and Quasi Money(% of GDP) in Belarus

Share of Money and quasi money in GDP include the total money outside banks, demand deposits other than those of central government. After 1994 this factor decreased significantly and had a little fluctuation until 1999 but after 1999 this factor shows an upward trend which causes to have its highest amount in 2011.

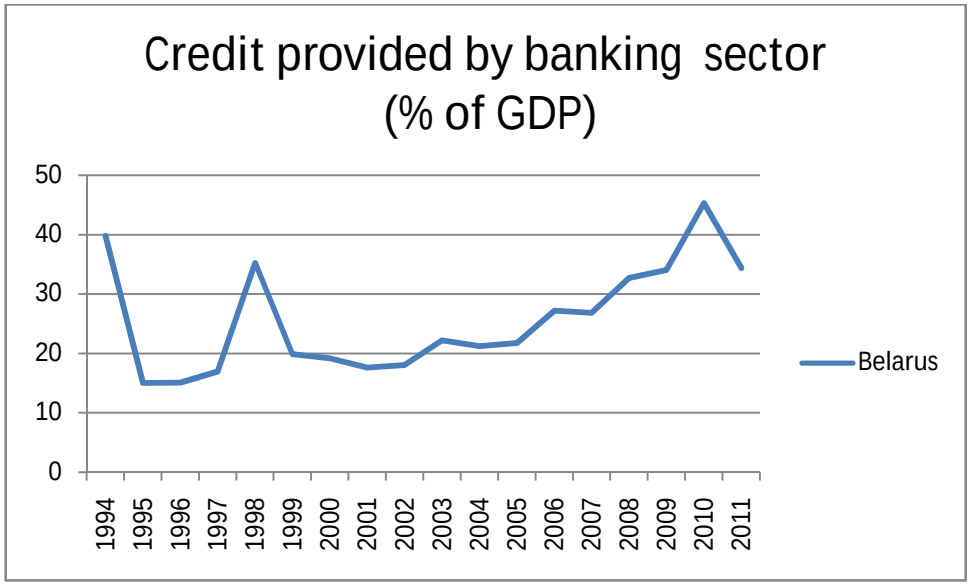

Figure3. Credit Provided by Banking Sector (% of GDP) in Belarus

Domestic credit provided by banking section contain whole credit to different sections on a gross base but the credit which allocate to the central government does not belong to this category. Some samples of banking sectors are mortgage and saving organization or even building and loan associations. The minimum amount for this factor is recorded in 1995 and the maximum amount is for the year of 2010. Between 1999 and 2011 a rising trend can be observed.

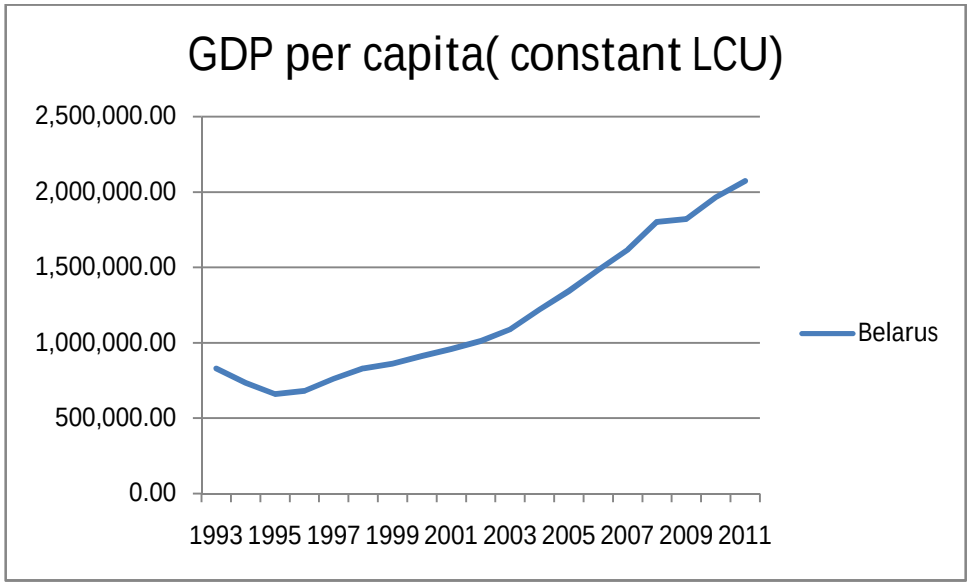

Figure4. GDP per Capita (Constant LCU) in Belarus

The gross domestic product per capita is the national output which divided by the number of the number of the people of the country. This chart presents an upward trend for the GDP per capita during 1995 and 2011. This line reaches its highest point in 2011 and touches its lowest point in 1995.

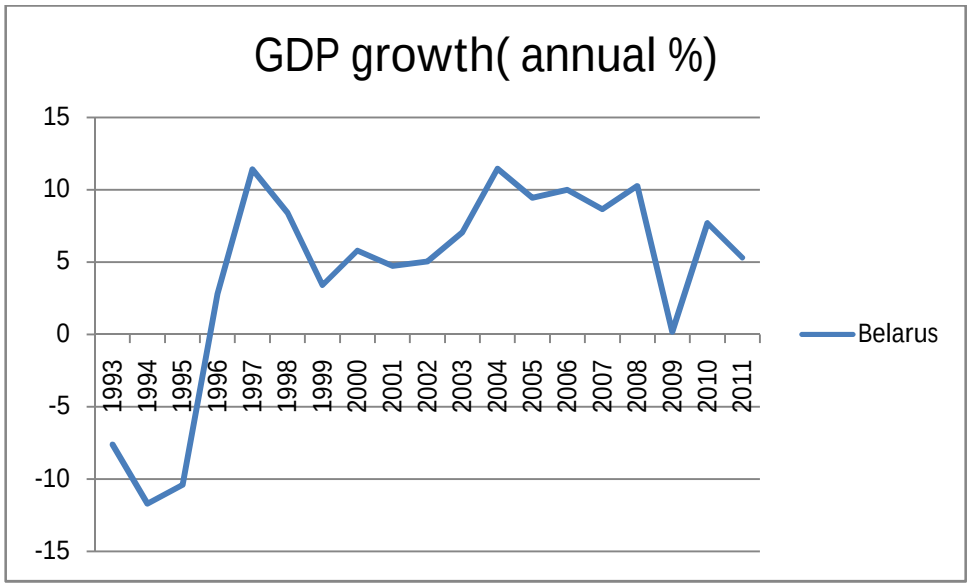

Figure5. GDP Growth (annual %) in Belarus

As the figure shows GDP increased dramatically between 1995 and 1997 and reached the highest point in 1997, but after this year until 2011 this figure shows a lot of fluctuation sometimes positive slope and sometimes negative slope can be observed.

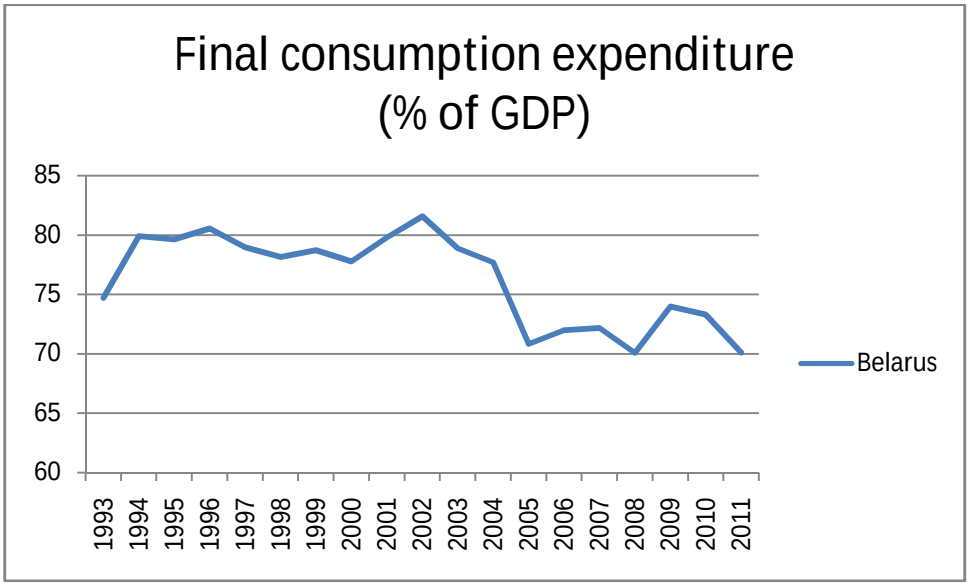

Figure6. Final consumption expenditure(% of GDP) in Belarus

Total consumption (% of GDP) or final consumption expenditure(% of GDP) is the total consumption which consume by both households and general government, in fact final consumption expenditure is the summation of general government spending and private spending. As the figure shows the negative slope of this diagram illustrates a downward trend of final consumption expenditure (% of GDP). This negative slope causes that final consumption expenditure (% of GDP) reached its lowest amount in 2011 among these 19 years.

4.2 Poland

Poland has a high income economy which is ranked sixth in the European Union and is in the list of fast developing market in Euro zone (this country became one of the EU members in 2004).Before the late 2000s distress, this country recorded annual growth rate around 3% which was too high for European Union on that time and this was the reason why Poland was one of the fastest economic growth in EU. This country is the only member of European Union which did not let its GDP to decrease and according to the figures published by the Central Statistical office polish economy created the highest GDP growth among EU members in 2009.One of the highly developed financial sectors of this country is its banking sector which is the largest and more developed banking sector among central and east European countries.

The polish government introduced a policy of liberalization in 1990s which had two side effects, negative effect for some part of population but positive effect for economic growth. There are different reasons behind economic growth of this country like policy of privatization of publicly owned firms, openness to capital flow from abroad,

producing attractive situation for foreign companies to invest inside the country in different aspect like energy or steel, more concentration on education, pension system and health care which leaded to have high living standards.Between 1990 and 2000 Poland's economy showed fastest growing pattern in European Union, but this trend reduced considerably in 2001 and this country record the highest unemployment rate in EU in 2006, but after this period Poland showed another growth pattern.

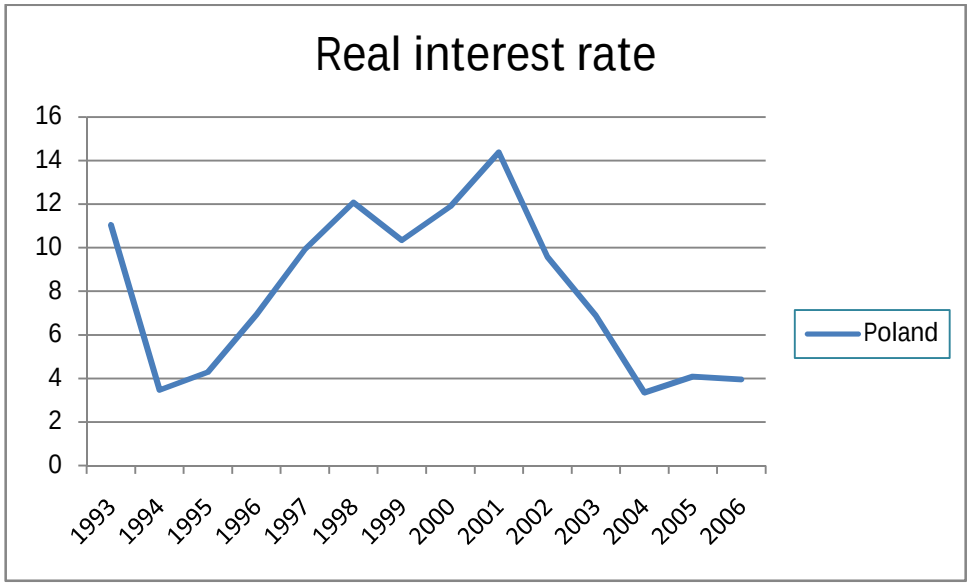

Figure7. Real Interest Rate in Poland

Real interest rate declined considerably among the year 1993 and 1994 and achieved its lowest value in 1994, but after this year real interest rate displays a rising movement which leads to touch its maximum point in 2001. Another reduction happened after 2001 and this pattern continues until 2006.

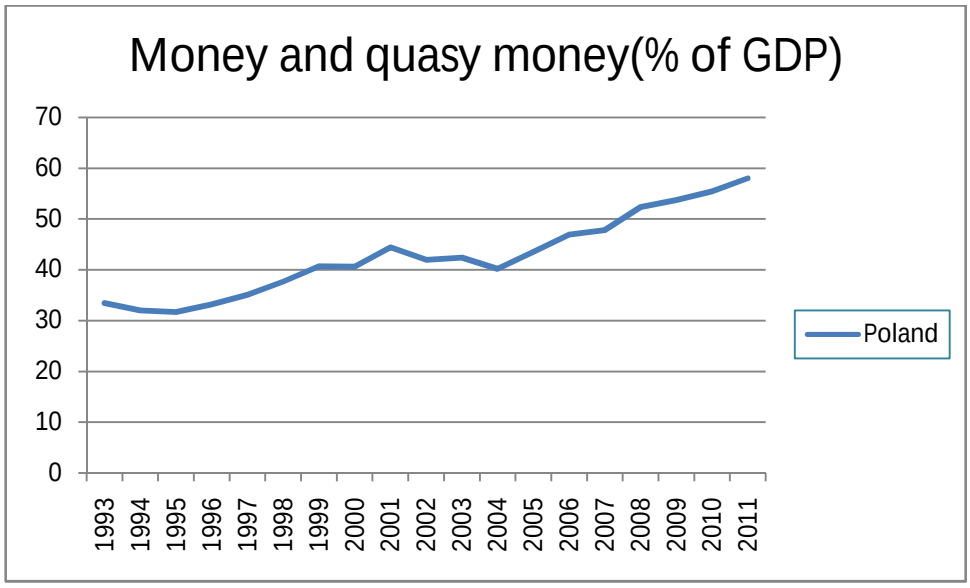

Figure8. Money and Quasi Money (% of GDP) in Poland

Share of Money and quasi money inGDP in Poland touched its lowest point between 1993 and 2011 in the first year of this period and after that a positive slope of the curve shows an upward trend of this factor which leads to touch its maximum point in 2011.

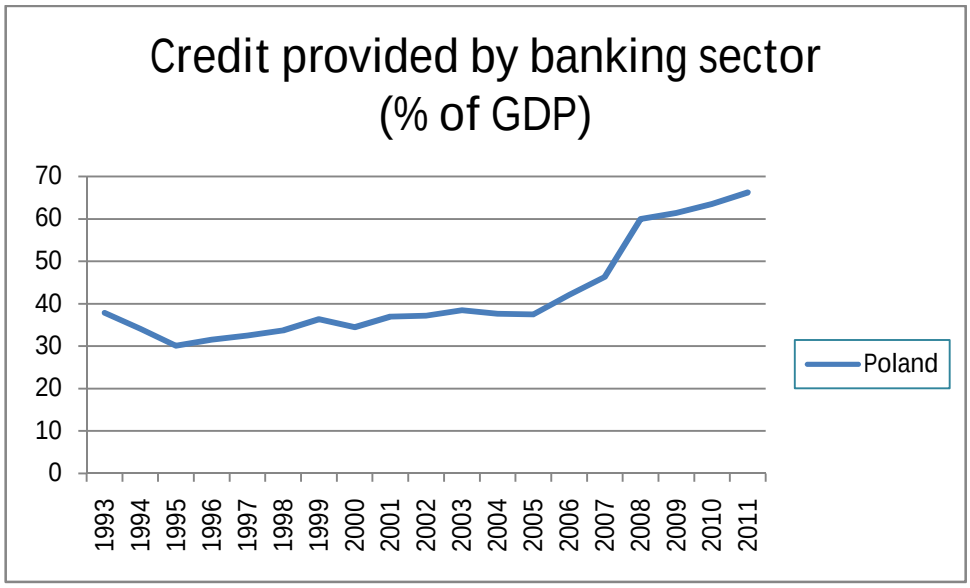

Figure9. Credit Provided by Banking Sector (% of GDP) in Poland

This data published by the World Bank in 2012. Generally a surging tendency can be seen by this factor, this style continues until 2011 when the line touched its highest point between 1993 and 2011.

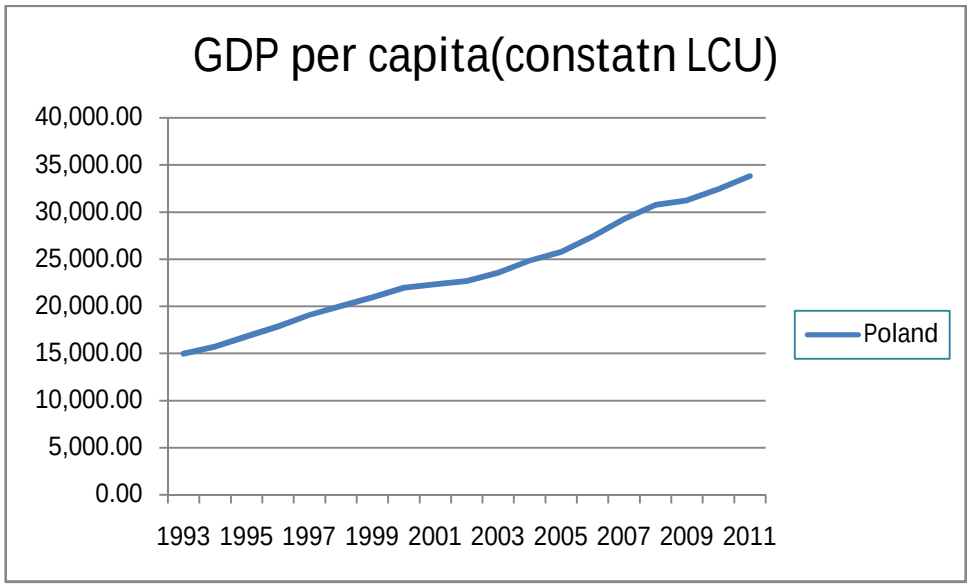

Figure10. GDP per Capita (Constant LCU) in Poland

By looking at this graph it is obvious that GDP per capita (constant LCU) in Poland shows an upward trend during 1993 and 2011. The maximum point in this period belongs to the 2011 and the minimum point is related to the 1993.

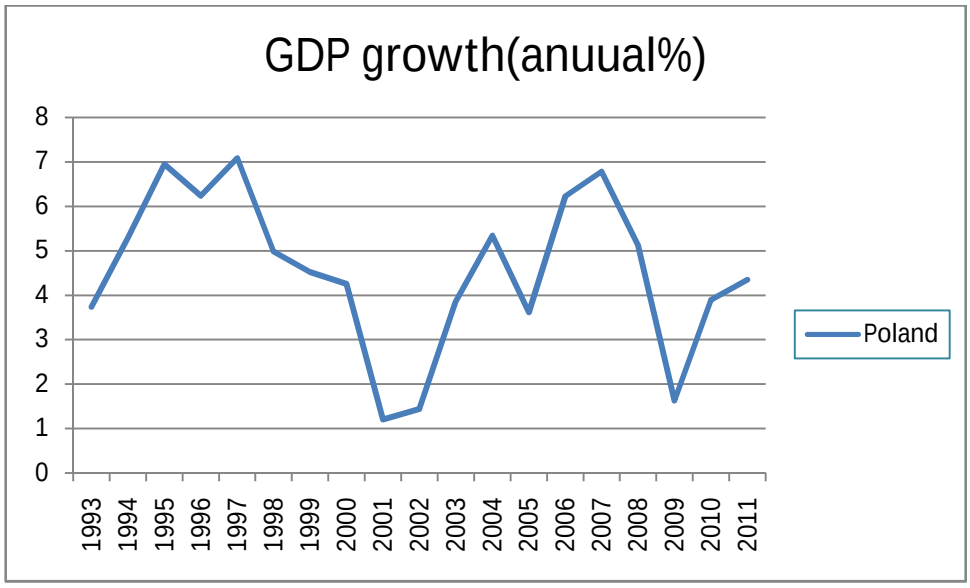

Figure11. GDP Growth (annual %) in Poland

By looking at the GDP growth (annual %) graph of Poland between 1993 and 2011 a certain pattern cannot be observed, sometimes a positive slope can be seen and the other time negative slope. For example after 1997 GDP growth decreased sharply and this pattern changed after 2001 and started to increase gradually. Generally a lot of fluctuation can be observed for GDP growth (annual %) for Poland during this period.

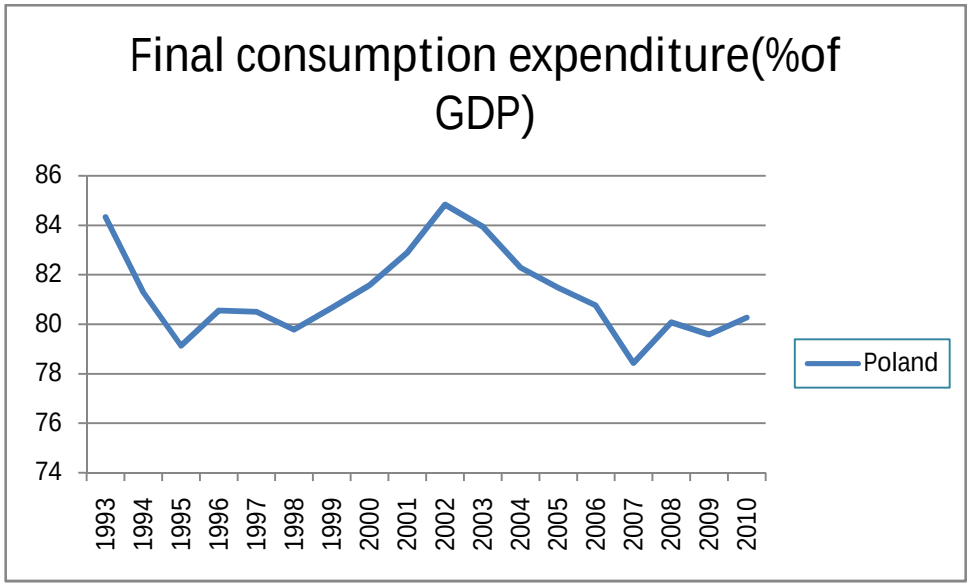

Figure12. Final Consumption Expenditure (% of GDP) in Poland

Final consumption expenditure (% of GDP) for Poland varies between its lowest point 78.429 in2007 and its highest point 84.839 in2002. After 1998 final consumption expenditure (% of GDP) started to increase until 2002 and this trend changed and shows a downward tendency until 2007 when reached its lowest point.

4.3 Romania

Between 1948 and 1989 this country fallowed a Soviet-economy style which concentrated too much on industry, but in 1989 Romania changed its pattern and transit from communism system to free market system, finally this country joined European Union on 2007.Romania has an upper-middle income market economy.By consideration of nominal GDP, this country ranked 11th among EU countries, but by consideration of purchasing power parity this country ranked 8th among EU countries. In consequence of unsuccessful economic policies of its president (Nicola Ceausescu) in the 1970s and wrong privatization plan which applied during 1990s this country was one of the poor member of EU.The country faced a high inflation in 2007-2008, this high inflation decreased in 2009 when GDP growth limited because of economic distress. Romania was deeply affected by financial crisis in 2009. Breakdown of communist system in 1989, becoming a member of European Union in 2007 and its reformation in 2000s help this country to improve its economic outlook.Domestic spending and investment worked as a catalyzer for GDP growth in recent years in Romania.

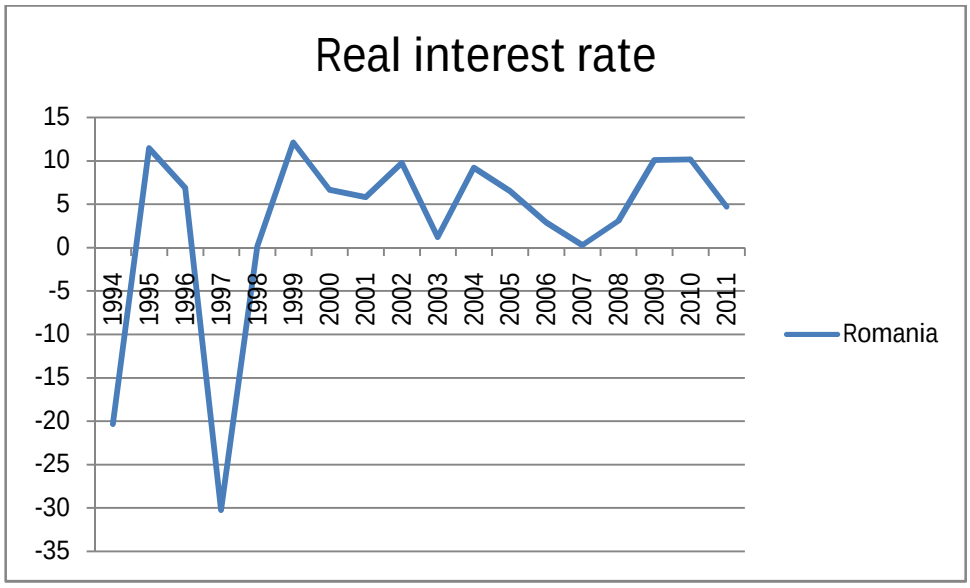

Figure13. Real Interest Rate in Romania

The real interest rate (%) in this country was 10.14 in 2010. By looking more precisely on the above diagram,the highestvalue of this indicator was 12.09 in 1999 and a lowest value was -30.24 in 1997. Between 1999 and 2011 a small fluctuation can be observed.

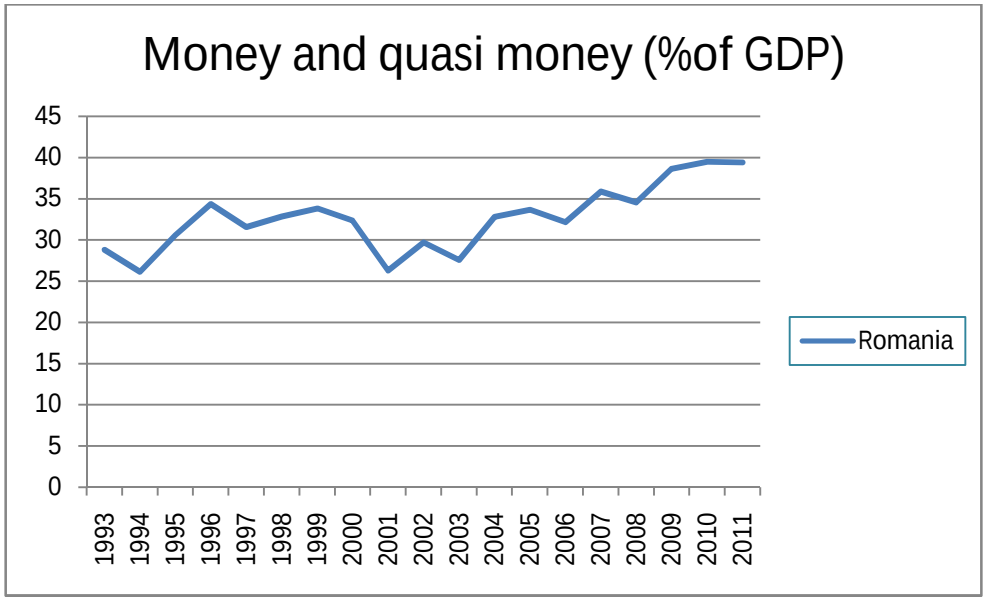

Figure14. Money and Quasi Money (% of GDP) in Romania

Share of Money and quasi money (M2)in GDP in Romania was 38.21 in 2010. Its greatestamount was 55.00 in 1990, in the other hand its lowest amount was 18.86 in 1994. After 2001 the general trend that can be seen is a mounting trend.

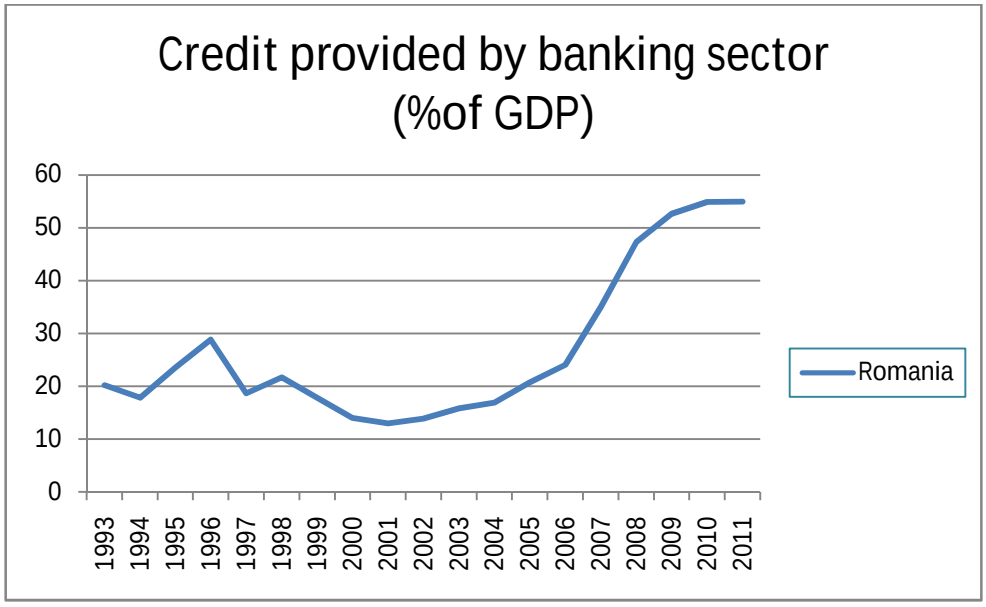

Figure15. Credit Provided by Banking Sector (% of GDP) in Romania

Credit provided by banking sector (% of GDP) in this country was 54.89 in 2010. Its highest amount was 101.30 in 1989, whereas its lowest amount was 12.99 in 2001. After 2001 when this indicator touched its minimum point changed its pattern and increased sharply until 2011.

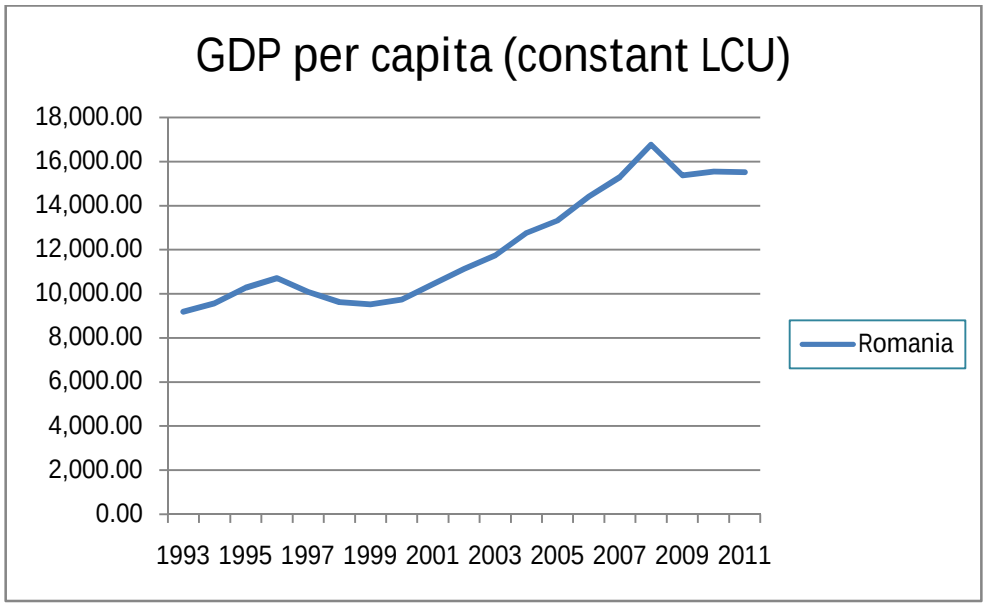

Figure16. GDP per Capita (Constant LCU) in Romania

GDP per capita (constant LCU) in Romania was 15,541 as of 2010. By looking on the presented graph it is obvious that, this indicator reached an extreme value of 16,766 in 2008 and a smallest value of 9,031 in 1992. It can be mentioned that the general trend of this indicator is an upward trend between 1999 and 2008.

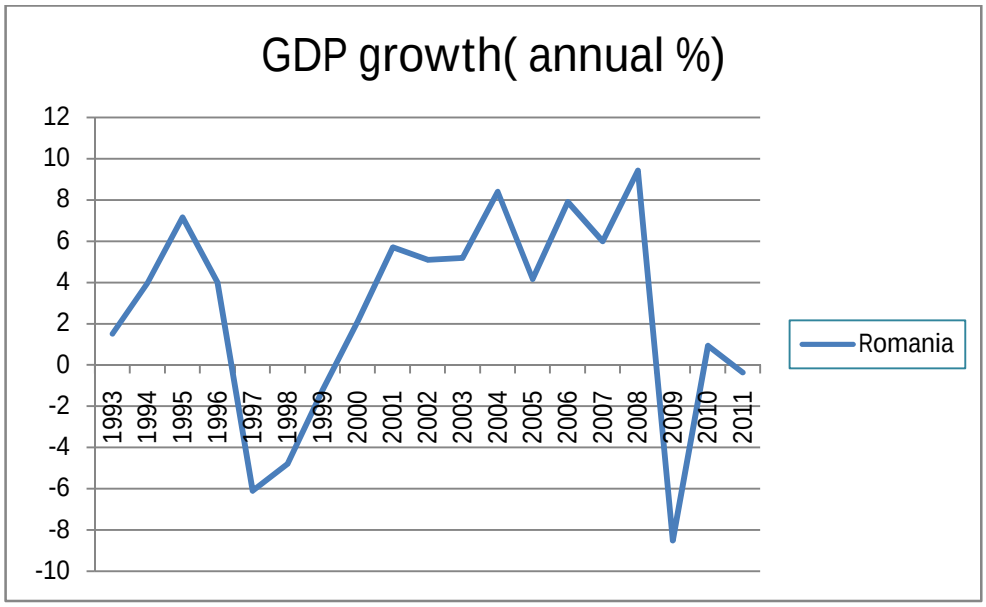

Figure17. GDP Growth (annual %) in Romania

The value for this indicator in Romania was 0.95 in 2010. By looking at the above graph it is obvious that over the past two decades this indicator got a greatest value of 9.43 in 2008 and a smallest value of -8.5 in 2009.

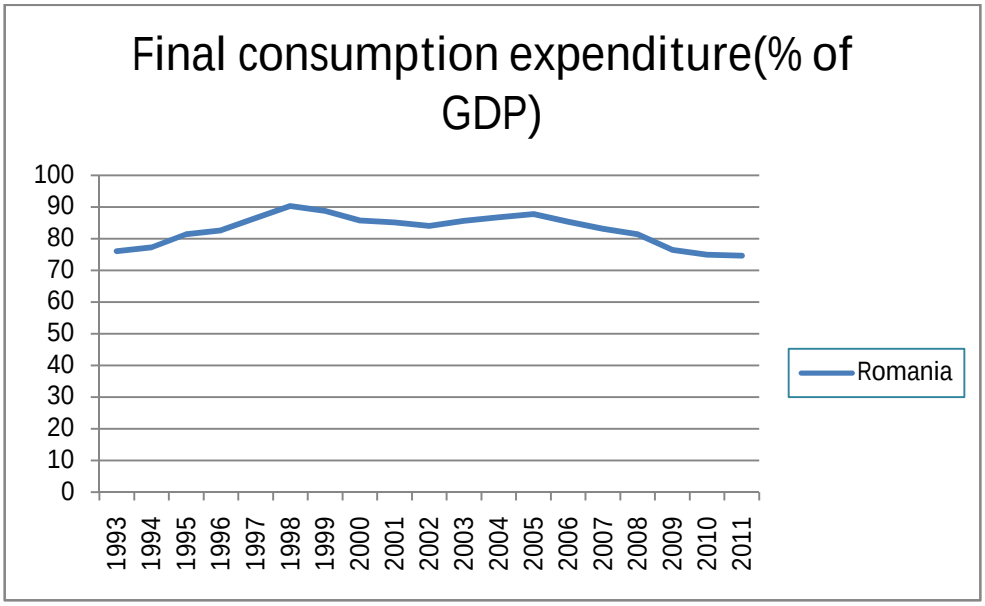

Figure18. Final Consumption Expenditure (% of GDP) in Romania

Final consumption expenditure (% of GDP) in Romania was 74.92 in 2010. Its highest amount was 90.28 in 1998, while its lowest value was 74.58 in the last year of this period.

4.4 Ukraine

Ukraine economy can be classified as an emerging free market. After the fall of Soviet Union, Ukraine became an independence country in1991 which during the first 10 years of independency its GDP decrease significantly and that was a bad shock for this economy. This country can be introduced as a largest geographic country, completely European nation and finally the 5th biggest European nation because of population. This country stands after Russia as a second most important economy component of Soviet Union.As a result of hyperinflation, this country faced very tough recession in 1990s and GDP per capita reached around half of its amount which was recorded before its independency. Between 2000 and 2008 economy of country developed so quickly but that growth rate was not made on a stable basis and came after the economically distress of 1990s.Ukraine changed his manner these years and moved to market economy system which made so many difficulties for both its politician and its citizen.

In 2000 the situation changed and Ukraine's economy started to register a GDP growth and this upward trend continued until 2008, but another crisis happened in this year and hurt Ukraine so badly.

Ukraine's government applied new policies which lead to recovery stage that started in the first quarter of 2010.

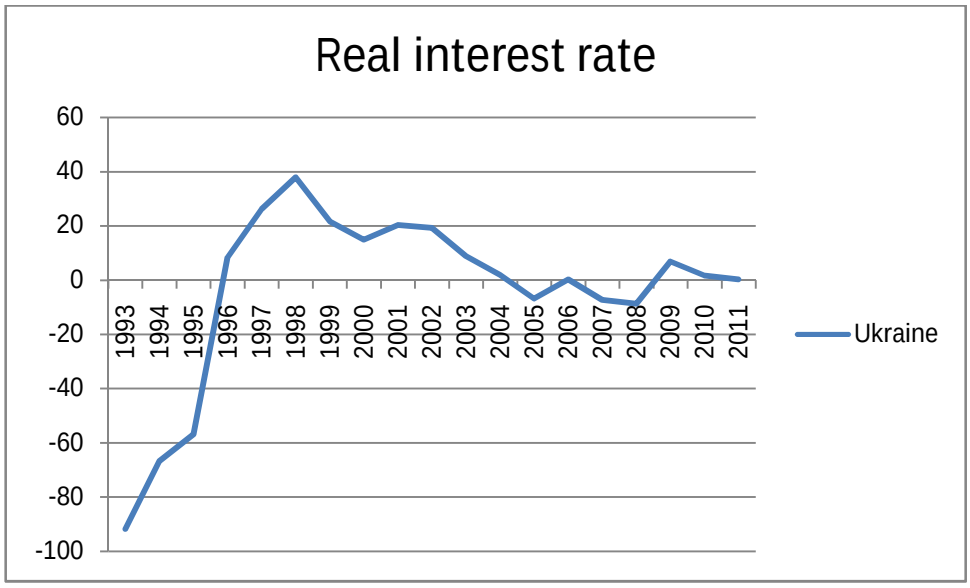

Figure19. Real Interest Rate in Ukraine

The value this indicator in Ukraine was 0.74 in 2010. After 1993 real interest rate increased sharply until 1998 and reached its maximum point. As the diagram above shows, this indicator got a greatest value of 37.93 in 1998 and a lowest amount of -91.72 in 1993. After 1993 real interest rate shows a downward tendency until the end of this period.

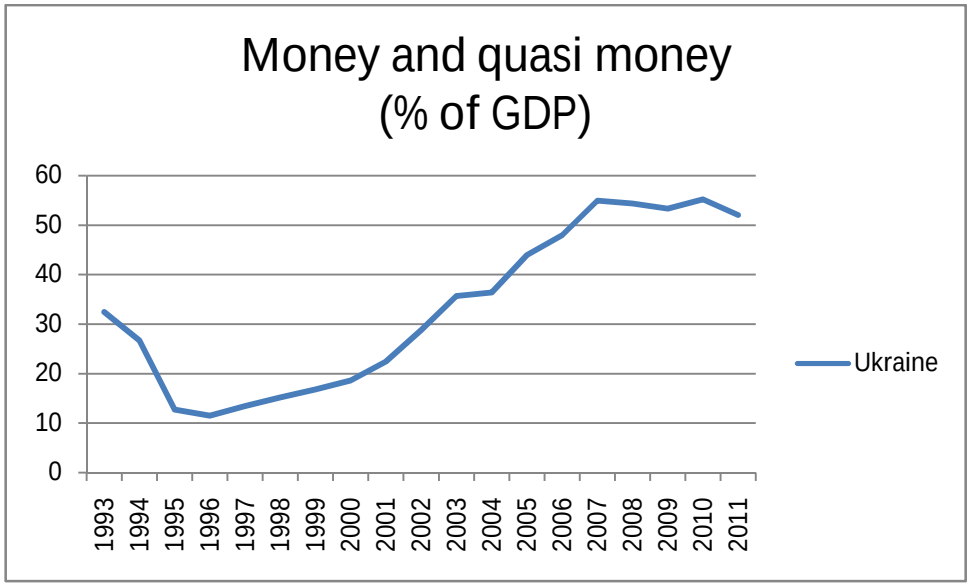

Figure20. Money and Quasi Money (% of GDP) in Ukraine

M2 as % of GDP in Ukraine was 55.23 in 2010. Its highest value over the past 19 years was 54.97 in 2007, while its lowest value was 11.49 in 1996. After 1996 this diagram shows a rising trend until 2007.

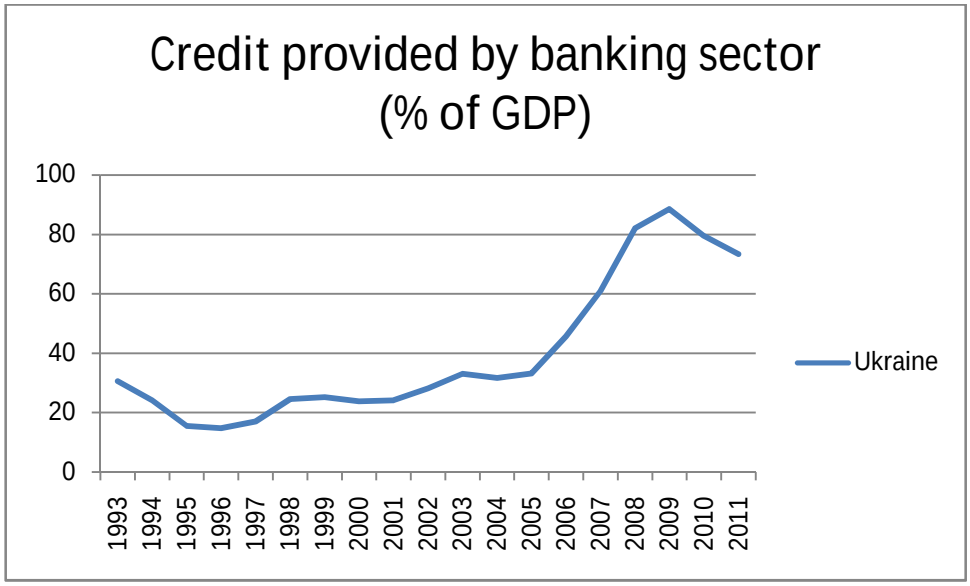

Figure21. Credit Provided by Banking Sector (% of GDP) in Ukraine

Credit provided by banking sector (% of GDP) in this country was 79.49 in 2010. Its highest value during this period was 88.59 in 2009 on the other hand this indicator got its lowest point in 1996 around 14.771. After1996 the general trend which can be mentioned is a rising one.

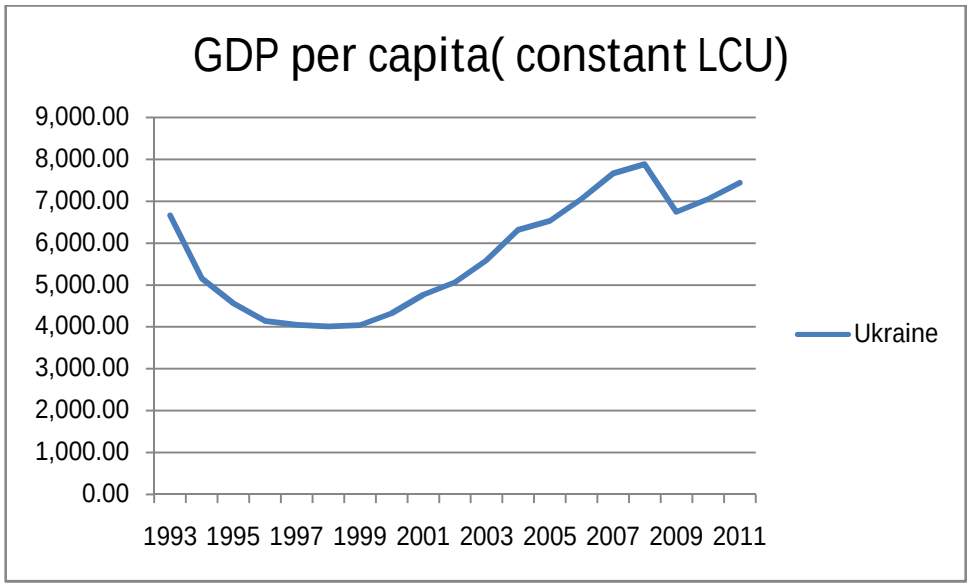

Figure22. GDP per Capita (Constant LCU) in Ukraine

GDP per capita (constant LCU) in this country was 7, 05 in 2010. By looking on the above diagram it can be mentioned that during this period this meter reached a maximum value of 7.88 in 2008 and a minimum value of 4,014 in 1998. After 1998 an upward trend can be seen until the end of 2008.

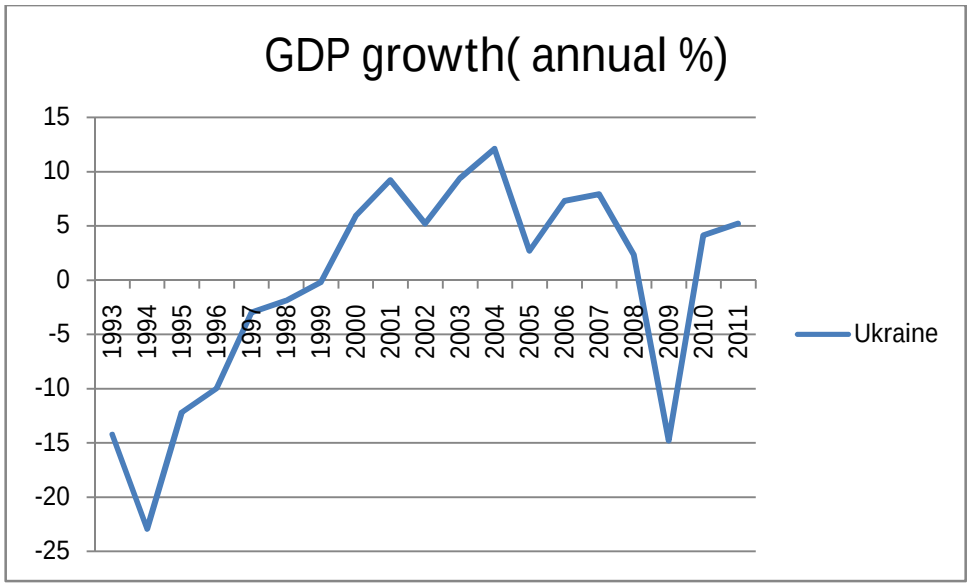

Figure23. GDP Growth (annual %) in Ukraine

The value of this statistic in Ukraine was 4.20 in 2010. As the graph above presents, this indicator reached a maximum value of 12.10 in 2004 and a minimum value of -22.93 in 1994. By looking on this graph a lot of fluctuation can be observed during the recent decades.

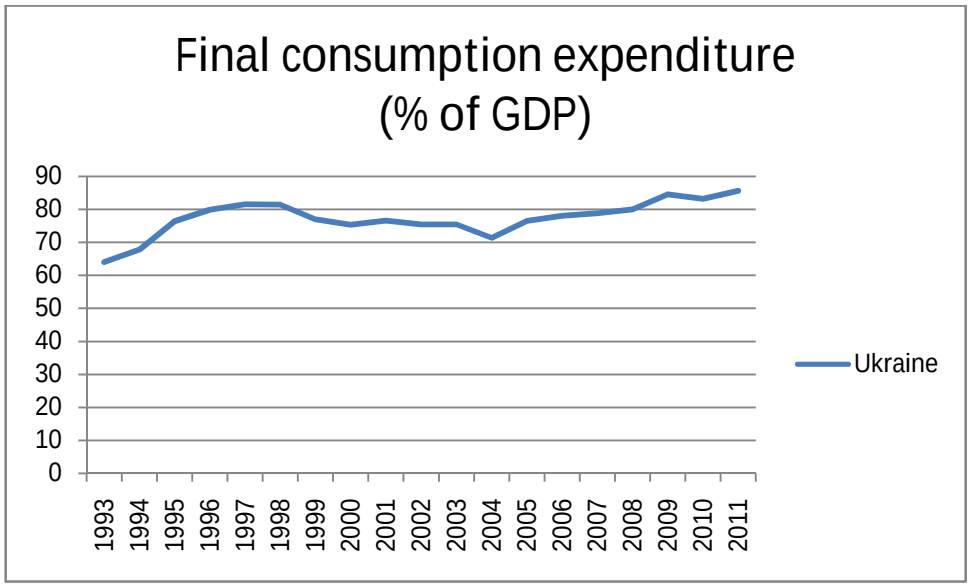

Figure24. Final Consumption Expenditure (% of GDP) in Ukraine

Final consumption expenditure (% of GDP) in this country was 83.253 in 2010. Its maximum value was 84.61 in 2009; on the other hand its lowest point was 64.02 in 1993. By looking on this diagram, it is clear that there is not too much variation in this indicator between 1993 and 2011.

4.5 Hungary

Hungary can be classified as a medium-sized, open economy, high income country which is located in central of Europe.In 1980s around 96% of national income of Hungary was made by the socialist units. Hungary's government applied new policy for changing their system from a socialist economy to a market economy in 1990s; at the

end of 1993 the share of private units decreased and recorded 40%. This new system had negative effect on some units of society. On the other hand in 1991 after privatization and reducing tax rate, unemployment rate went up suddenly and reached around 12%, but this pattern did not continue too much and decreased until 2001. Hungary experienced a stable economic growth since 1990.

As a result of new policies and more stable economy which this country experienced on that period, foreign investors were so interested to invest in this county and new capital flew to Hungary and this event gave opportunity to government to concentrate more on structural reforms in 1996 and 1997.

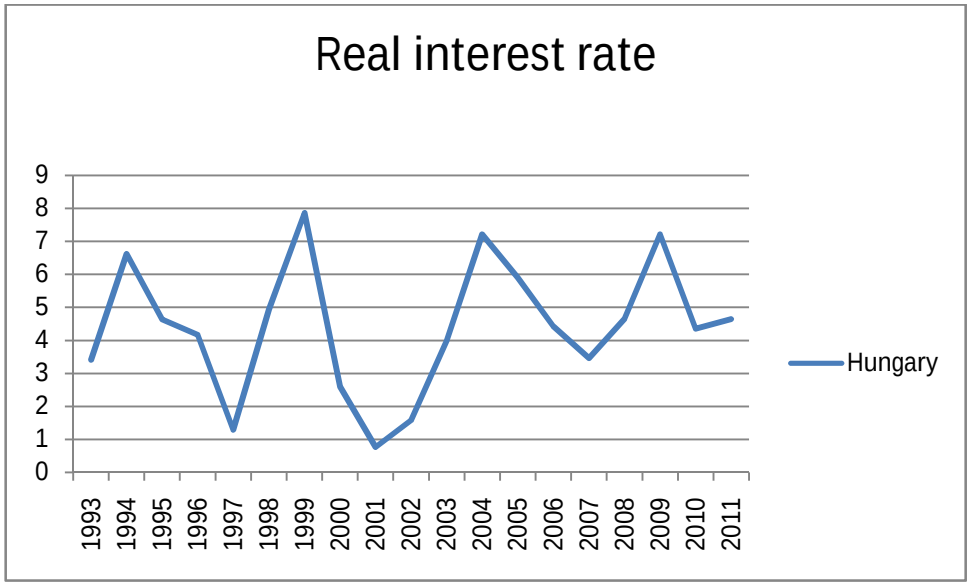

Figure25. Real Interest Rate in Hungary

Real interest rate had a lot of fluctuation during this period. As this diagram shows the maximum point is 7.865 which took place in1999 and the lowest point is0.767 which took place in2001.

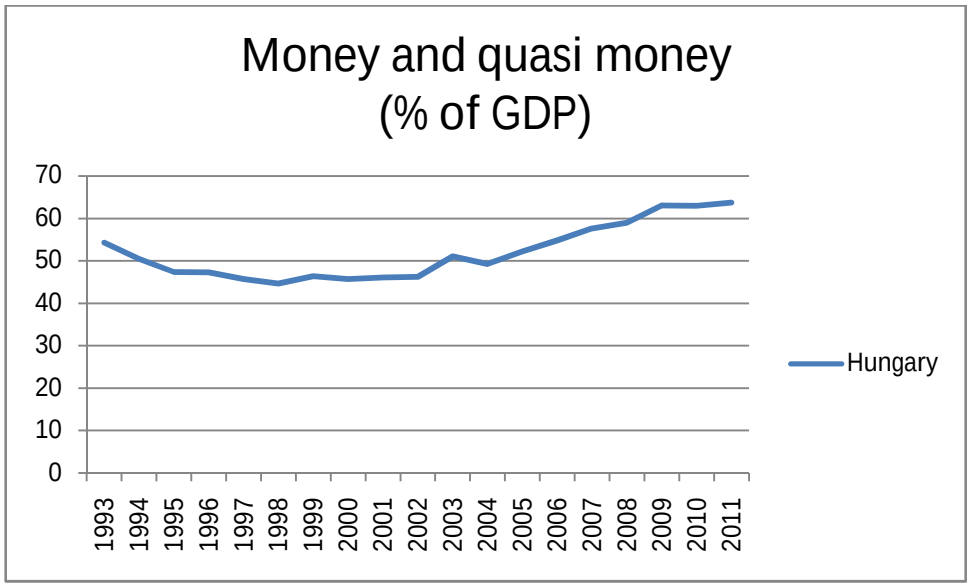

Figure26. Money and Quasi Money (% of GDP) in Hungary

Share of Money and quasi money in GDP in Hungary was 62.93 as of 2010. Its maximum value over the past two decades was 63.69 in the last year of this period, whereas its minimum value was 44.68 in 1998.

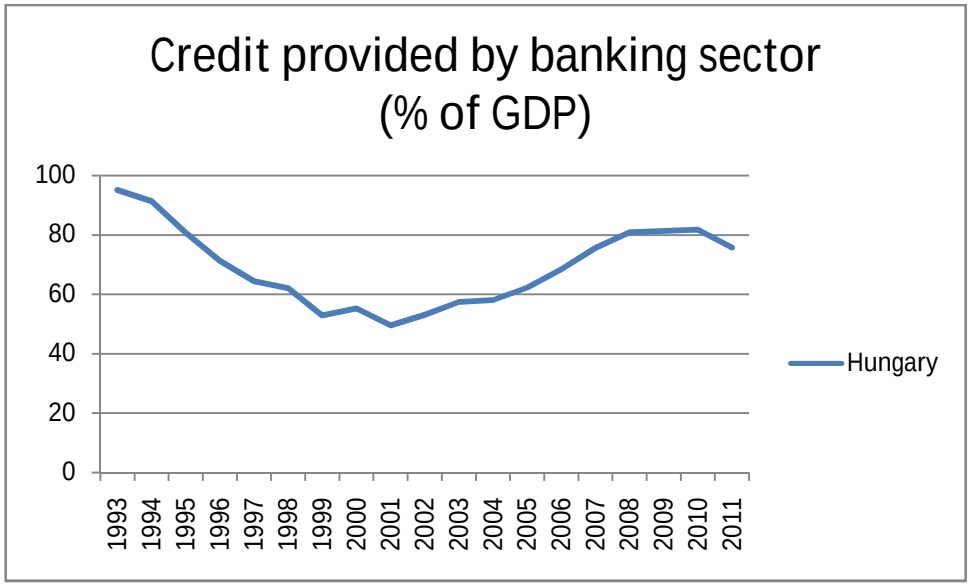

Figure27. Credit Provided by Banking Sector (% of GDP) in Hungary

Credit provided by banking sector (% of GDP) in Hungary was 81.71 in 2010. Its minimum value over the past two decades was 49.601 in 2001, while its maximum value was 95.086 in 1993. The slope of this graph is negative before 2001 but this slope changed and became positive after this year.

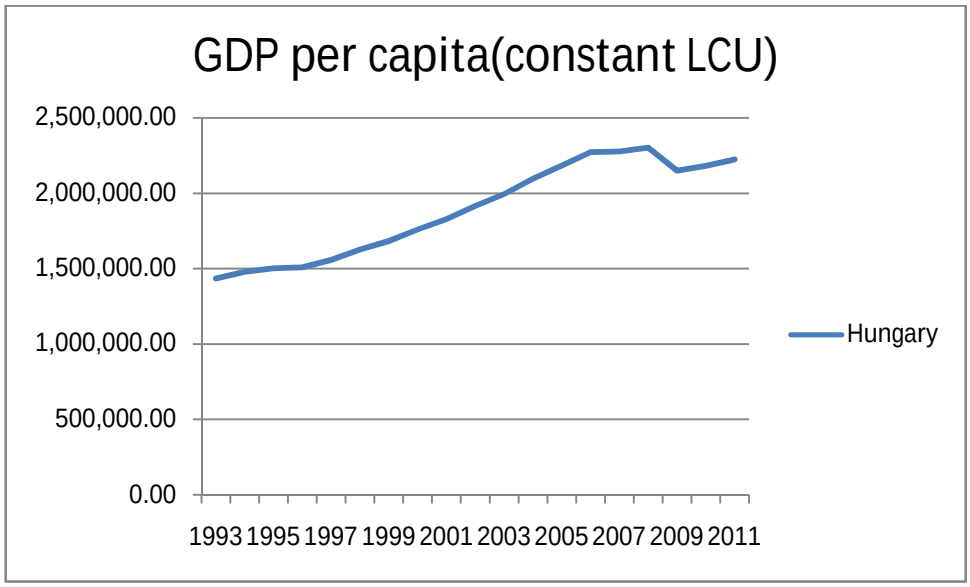

Figure28. GDP per Capita (Constant LCU) in Hungary

The value for GDP per capita (constant LCU) in this country was 2,180,737 in 2010. During this period this indicator toucheda greatestvalue of 2,301,949 in 2008 and a lowest value of 1434906.41 in 1993. The general tendency of this indicator is an upward trend.

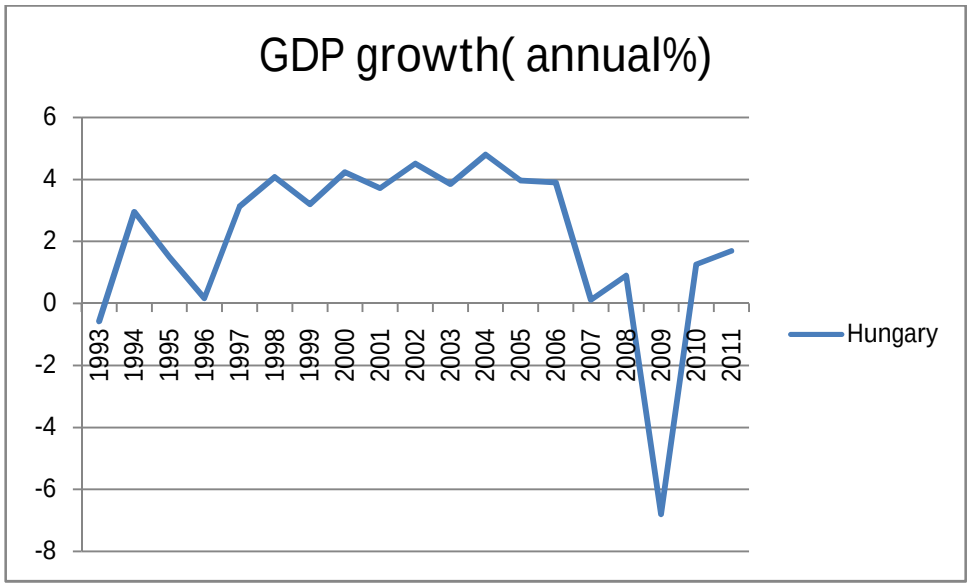

Figure29. GDP Growth (annual %) in Hungary

GDP growth (annual %) in this country was 1.26 as of 2010. As the graph above presents, over the last two decades this indicator got a highest value of 4.79 in 2004 and a lowest value of -6.799 in 2009. After 2008 GDP growth (annual %) decreased significantly until it touched its lowest point in 2009.

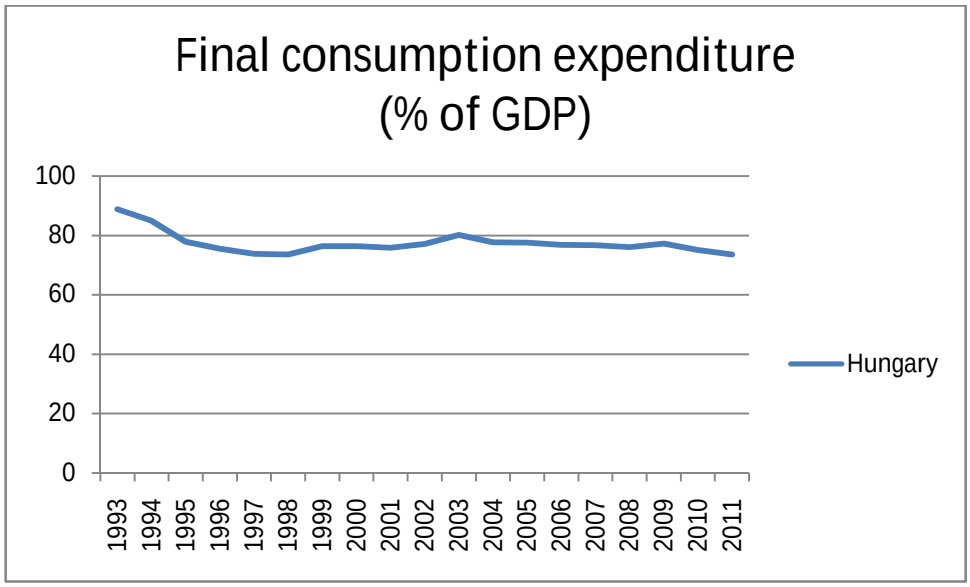

Figure30. Final Consumption Expenditure (% of GDP) in Hungary

By looking on this diagram, it can be mentioned that there is not too much variation during this period. Maximum value is 88.79 which happened in 1993 and the lowest point is 73.57 which this indicator got it at the end of this period.

4.6 Slovenia

Slovenia can be introduced as independence, developed country which is the first member of European Union that accepted Euro as a new currency. This country like the other EU members has been hurt because of different financial and economic crisis that happened in different time like 2000 and 2009 and finally in the last quarter of 2011. This crisis leads to significant decrease in national consumption and even in exports of Slovenia.It should be mentioned that high level of international trade makes this country so sensitive to the global situation.

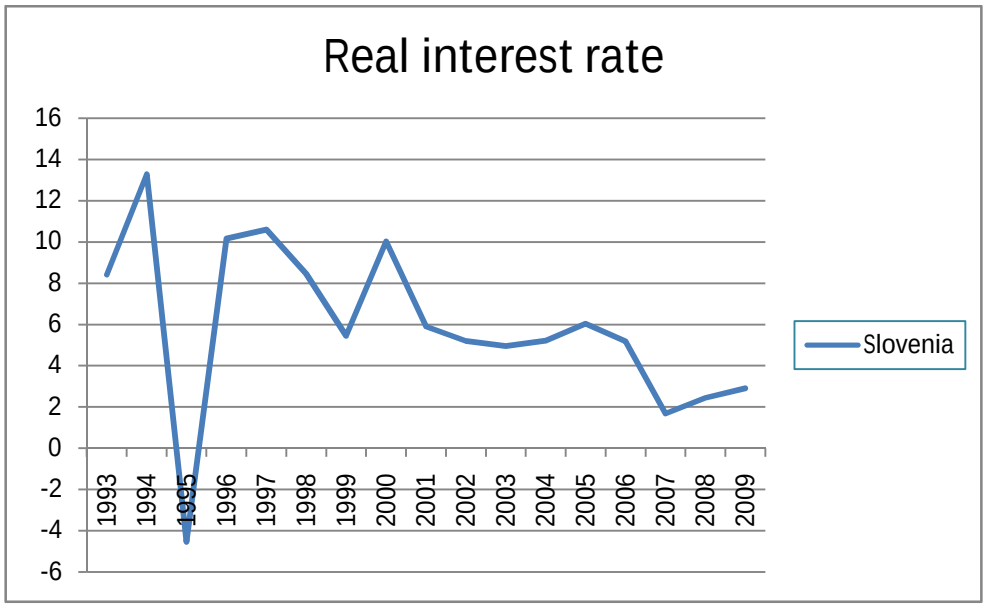

Figure31. Real Interest Rate in Slovenia

The highest point in this diagram is 13.279 which is the real interest rate in 1994, after this year real interest rate decreased dramatically and reached the lowest point in 1995 which is equal to -4.545. This graph shows an upward trend between 1995 and 1996. From the year 1996 until the end of this period a downward trend can be observed.

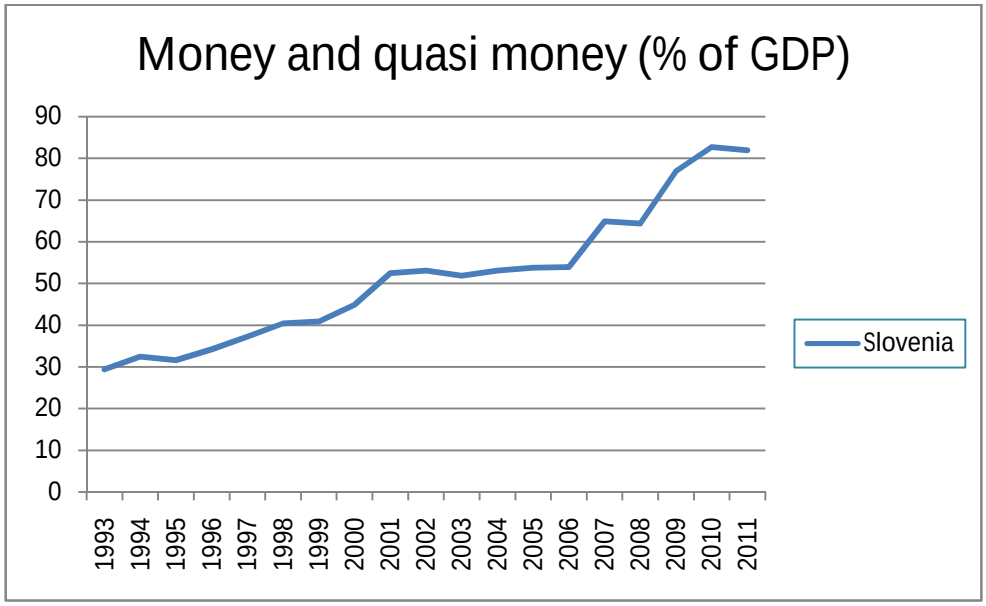

Figure32. Money and Quasi Money (% of GDP) in Slovenia

The general trend which can be mentioned in this case is an upward trend. The minimum point belongs to the year of 1993 which is equal to 29.37 and the maximum point is located in the 2010 which is equal to 82.65.

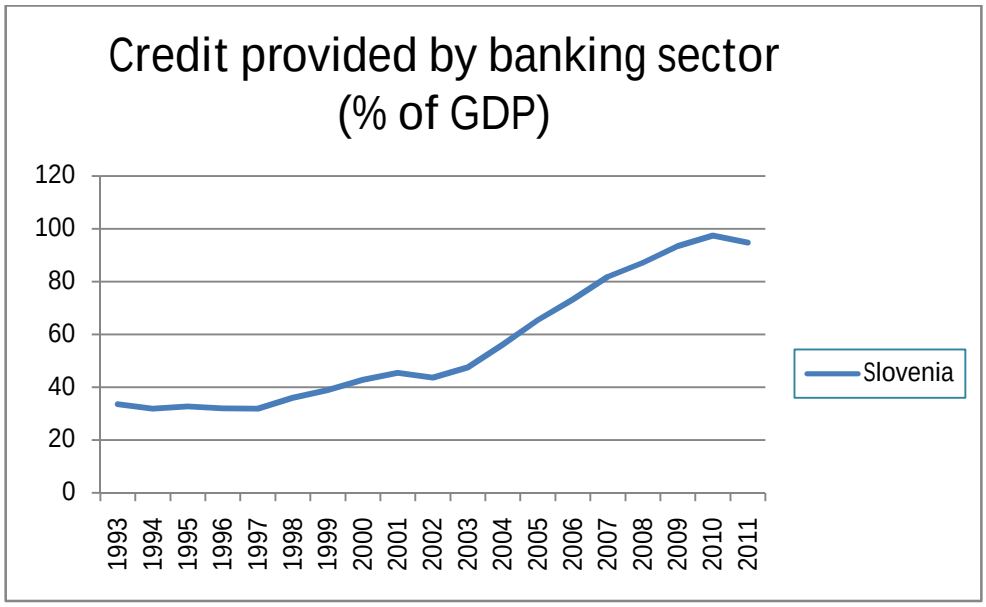

Figure33. Credit Provided by Banking Sector (% of GDP) in Slovenia

Share of Credit provided by banking system in GDP did not change too much between 1933 and 2002. After 2002 this graph boosted intensely until 2010 and touched its highest point which is equal to 97.39. The minimum value is 31.88 that belong to the 1997.

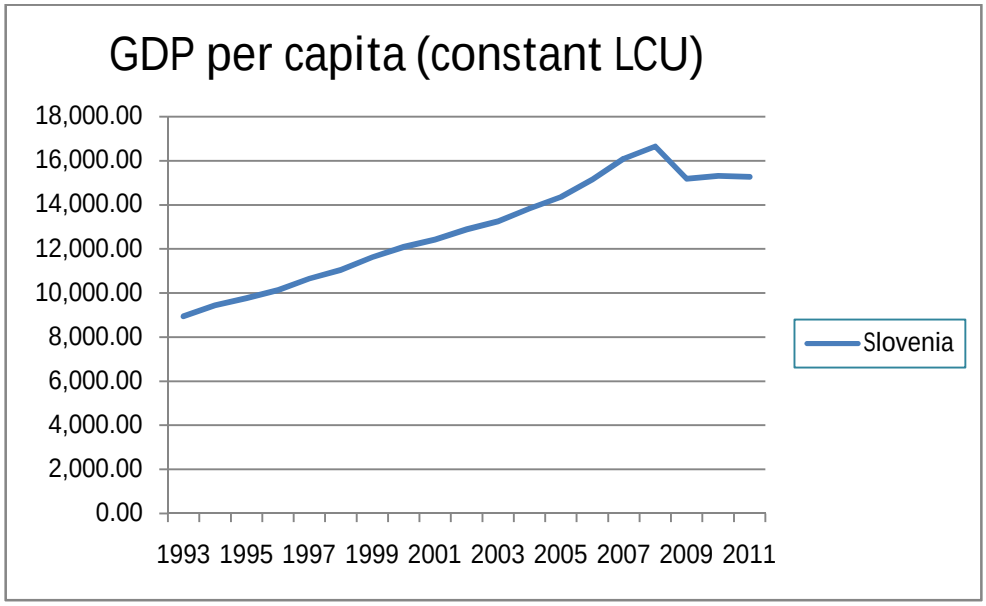

Figure34. GDP per Capita (Constant LCU) in Slovenia

GDP per capita (constant LCU) touched its lowest point in 1993 which is equal to 8942.28. After this year GDP per capita (constant LCU) increased significantly and reached its maximum value equal to 16651.18 in 2008.

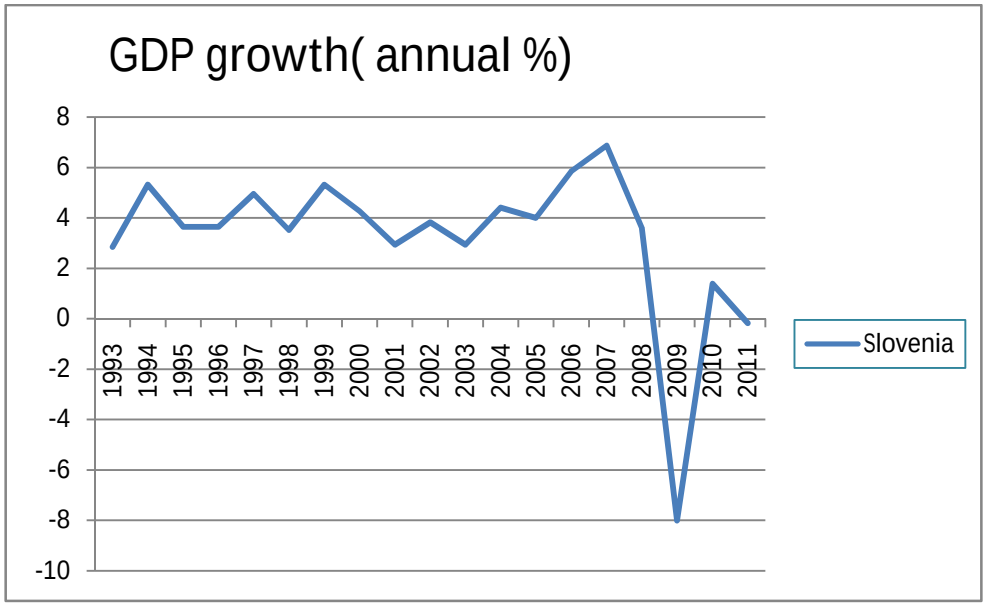

Figure35. GDP Growth (annual %) in Slovenia

GDP growth (annual %) in this country was 1.38 in 2010. As the diagram above shows, this indicator reached a maximum value of 6.87 in 2007 and a minimum value of -8.90 in 1991.between 1993 and 2007 GDP growth fluctuated too much and after 2007 decreased significantly until 2009.

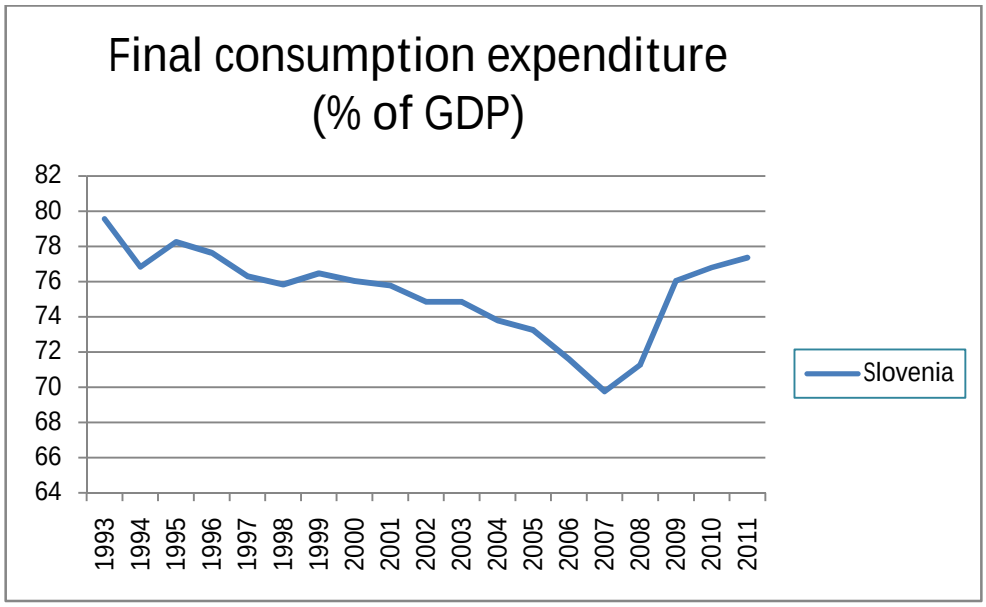

Figure36. Final Consumption Expenditure (% of GDP) in Slovenia

Final consumption expenditure (% of GDP) in this country was 76.81 in 2010. Its highest amount was 79.57 in 1993; on the other hand its minimum value was 69.77 in 2007. Between 1995 and 2007 this graph shows a downward trend until touching its lowest point.

4.7 Czech Republic

Czech Republic can be introduced as a tiny, open market which is so sensitive to the international performance of other markets specially Germany because of its export policy. Czech Republic is famous because of its developed industrial systems and the main industry in this country is motor-vehicle.1948 is a year which communist system collapse in this country and new government tried to use policies like more concentration on production of consumer goods and services. In 1968, when Alexander Dubcek took the power hope of new range of economic reforms came. In 1989 after the

Velvet revolution country went to the new stage with different chances for economic growth and sustainable market.When in 2008 eastern European countries faced crisis, demand for Czech Republic's goods and services decreased significantly and as a result this country fell into the recession, consequently real GDP reduced in 2009, but the country went to the recovery stage and tried to increase its real GDP and this pattern continued until 2011.

There are different reasons behind recorded growth of this country between 2000 and 2005. One of them is successful exports to other European Union and the other is domestic demand which plays crucial role in this growth in fact Czech government tried so hard to keep both domestic and foreign market alive and earn money by selling their products not only inside the country but also outside the country specially to the other European union member.Czech market become so attractive for foreign investors and because of strong capital inflow to the country, its currency gained valued gains dollar and euro.

This country solved its problems of different financial crisis so wisely and become so famous because of its stability and prosperous and as a result named the first post-communist country which received an investment-grade credit rating by international credit organization. Government used privatization policy in early 1990s.

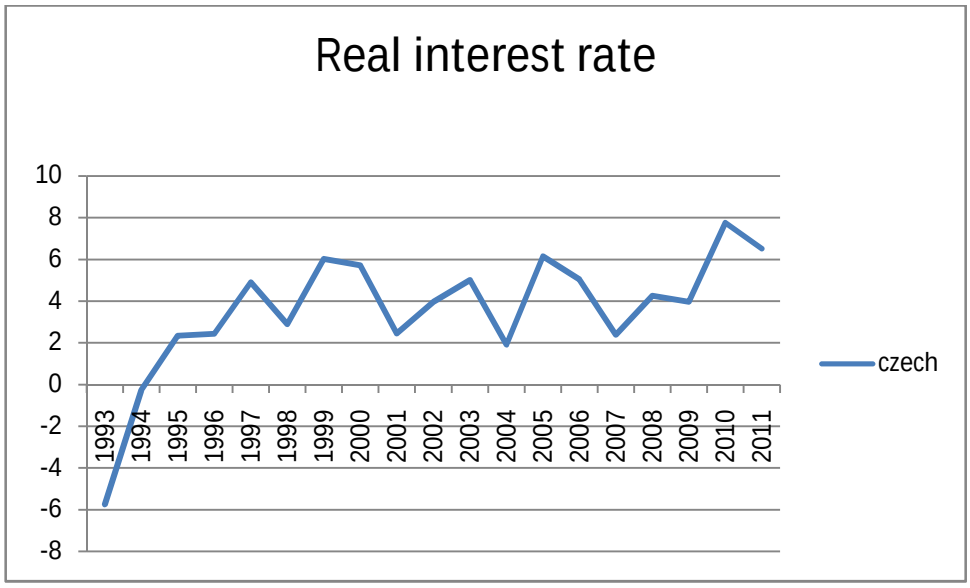

Figure37. Real Interest Rate in Czech Republic

Real interest rate varied too much during this period. The graph touched its highest value in 2010 and its minimum value in 1993.

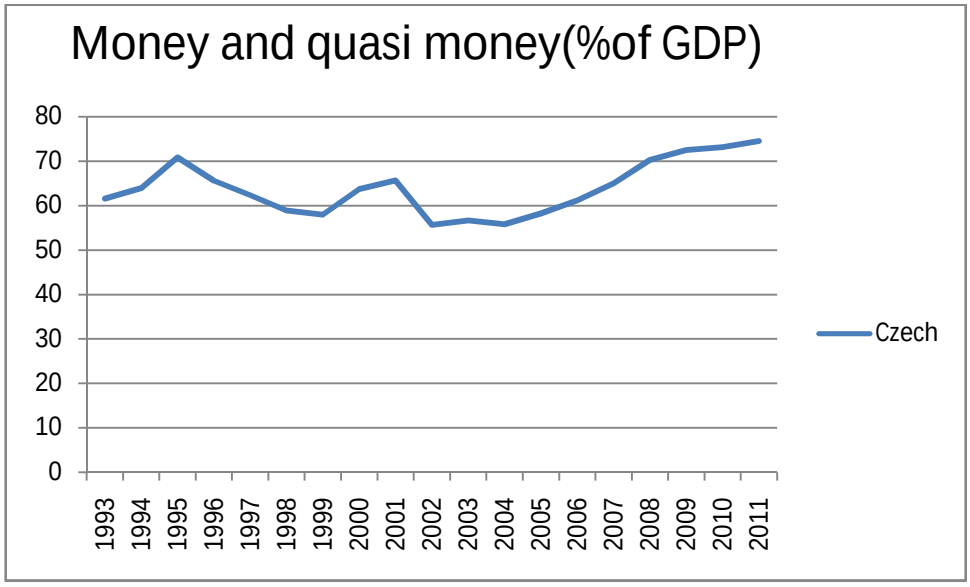

Figure38. Money and Quasi Money (% of GDP) in Czech Republic

Maximum value for money and quasi money (% of GDP) for this country is74.48 in 2011 and minimum value is 55.65 which happened in 2002. Between 2002 and 2011 this graph shows an upward trend. In general this graph does not have too much fluctuation during this period.

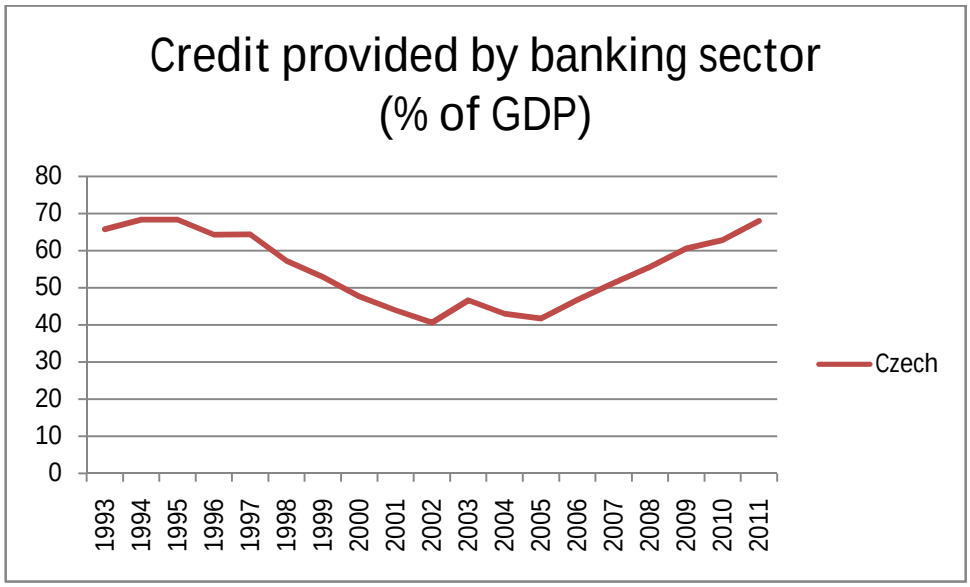

Figure39. Credit Provided by Banking Sector (% of GDP) in Czech Republic

Credit provided by banking sector (% of GDP) in this country was 62.866 in 2010. Its maximum value was 68.35 in 1994, while its minimum amount was 40.558 in 2002. After 2005 this statistics rise sharply until the end of this period.

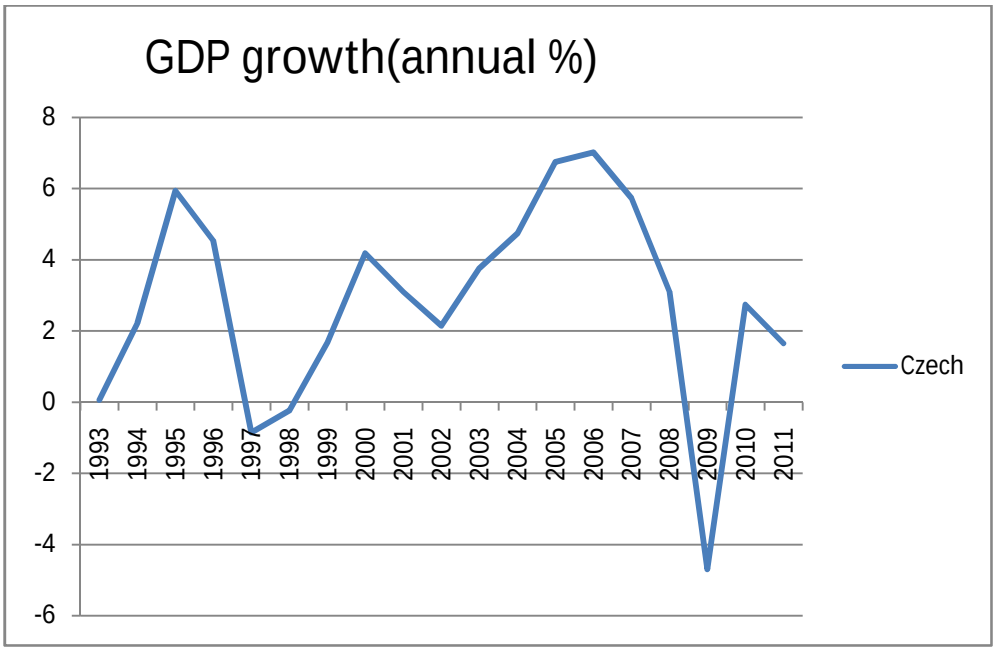

Figure40. GDP Growth (annual %) in Czech Republic

GDP growth (annual %) in this country was 2.73 as of 2010. As the diagram above shows, this statistic touched a maximum value of 7.02 in 2006 and a lowest value of -4.695 in 2009.

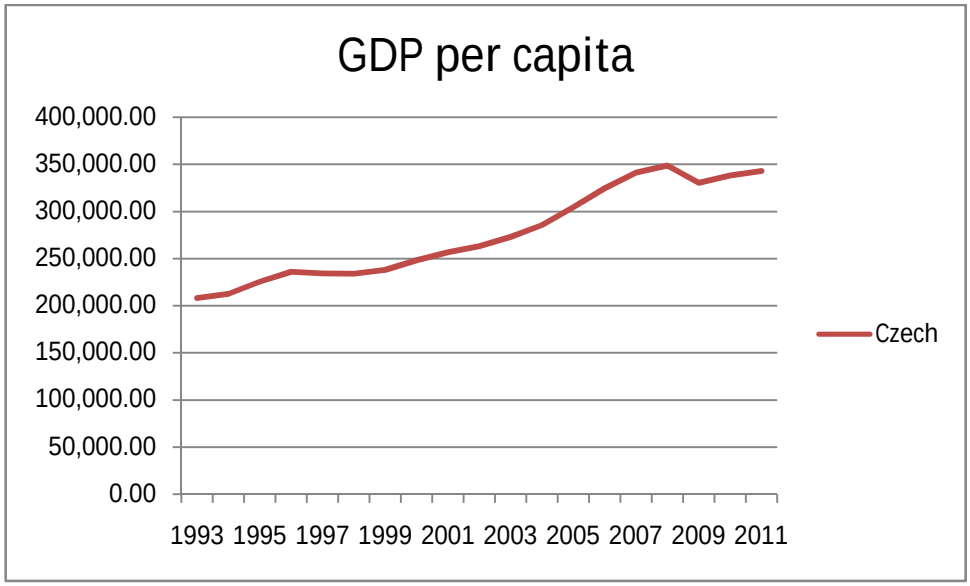

Figure41. GDP per Capita (Constant LCU) in Czech Republic

The value for GDP per capita (constant LCU) was 338367.34 in 2010. As the chart above displays, during this period this indicator reached a maximum value of348736.27 in 2008 and a minimum value of 208118.26 in 1993.the general trend is a rising one during this period.

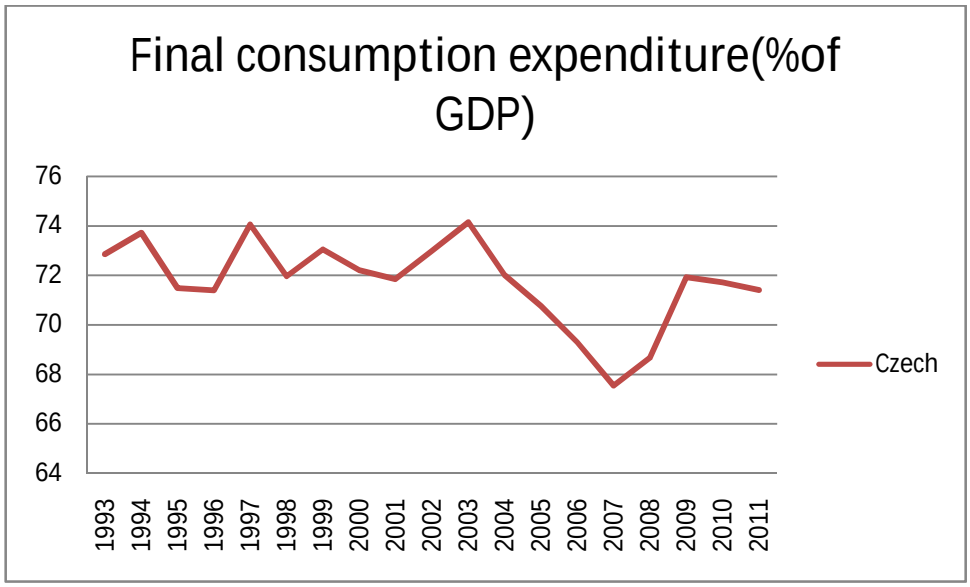

Figure42. Final Consumption Expenditure (% of GDP) in Czech Republic

Final consumption expenditure (% of GDP) in Czech Republic was 71.41 in 2011. Its highest point was 74.152 in 2003, while its lowest point was 66.537 in 2007.this diagram shows a lot of fluctuation during the last two decades.

4.8 Bulgaria

Bulgaria is one of the member of former Soviet Union which has an upper-middle income economy with great private sections and less significant public sectors. This country become a European Union members in first of January in 2007 but this membership was not important shock for the economy just open its border for international markets.Bulgarian economy experienced quick economic develop in recent

years but its income average is one of the smallest average among the other EU members.After failure of Soviet Union, Bulgaria lost its main market which was closely depend on it, because of this loss faced severe drop in its market during 1990s.

After the collapse of Soviet Union, Bulgarian government applied new polices which introduced novel market to the world. It can be mentioned that new capital flow, effective foreign direct investment, more export to the EU members , low and flat taxation system and other factors caused this country experienced growth and budget surplus in 1990s.

Another growth recorded between 2004 and 2008 because of successful foreign direct investment, government policies, good amount of domestic consumption and stable foreign market, but global crisis decreased domestic expenditure and had negative effect on both export rate and amount of capital which flew to the country and as a result significant distress happened for Bulgarian economy.

The next challenge for this country is corruption for both public and private sectors and existence of organized crime which hurt the economy so badly.

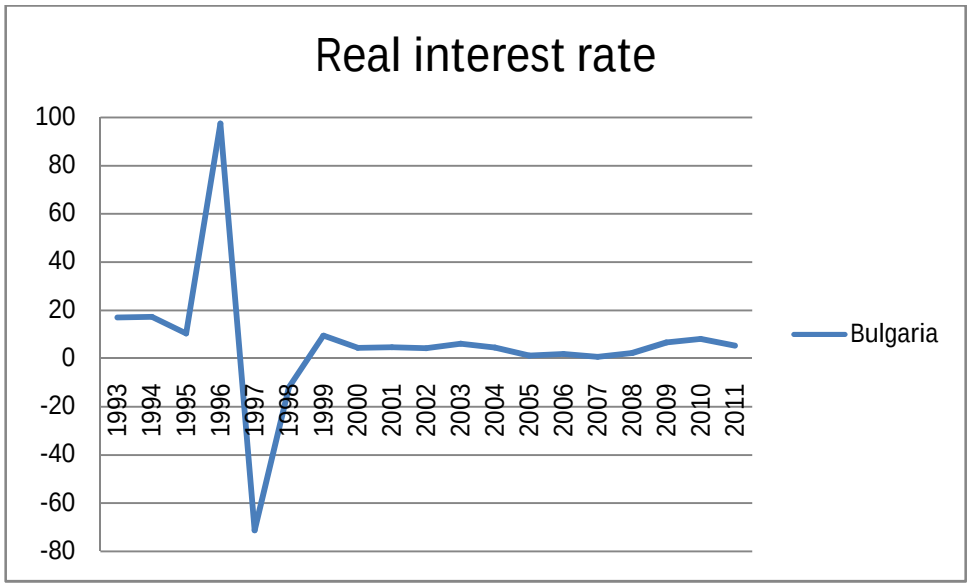

Figure43. Real Interest Rate in Bulgaria

As the graph above presents, this indicator reached a maximum value of 97.47 in 1996 and a lowest value of -71.21 in 1997. After 1995 real interest rate increased significantly and touched its maximum value. After 1996 real interest rate changed its trend and decreased significantly until 1997 which got its minimum value.

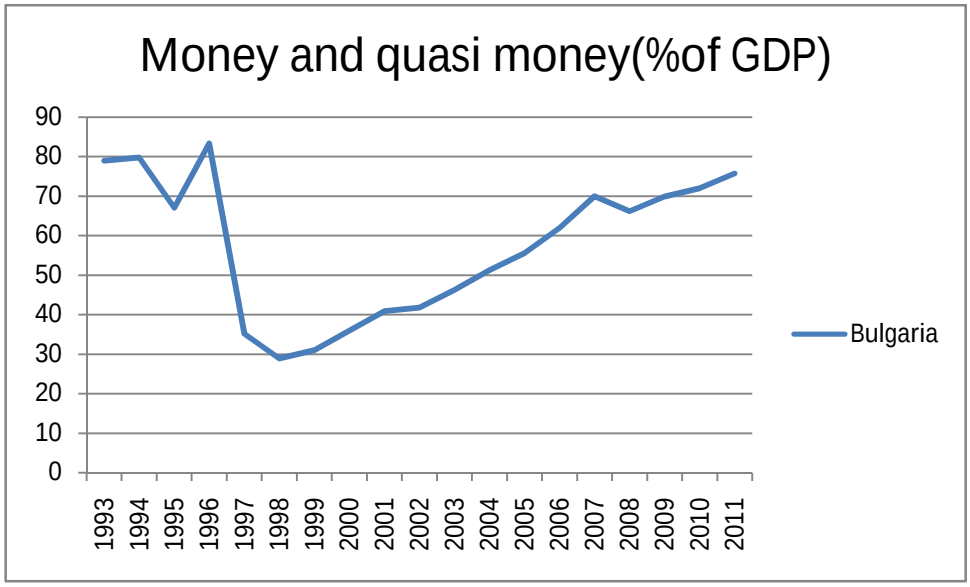

Figure44. Money and Quasi Money (% of GDP) in Bulgaria

The value for M2 (current LCU) in this country was 71.969 in 2010. As the diagram above presents, during this period this statistics got a maximum value of 83.305 in 1996 and a lowest amount is 28.909 in 1998. After 1996 M2 decreased significantly until 1998 and after that increased dramatically until 2007.

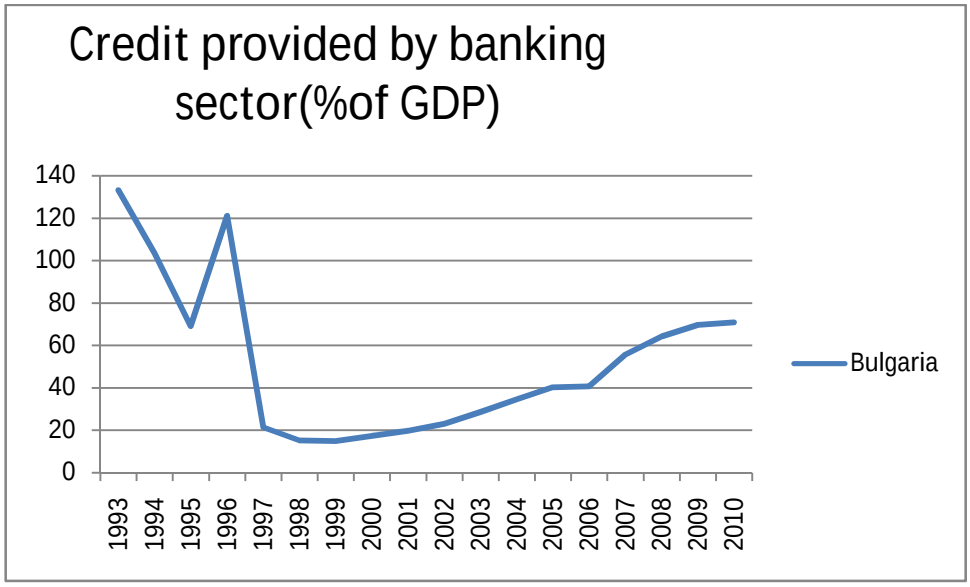

Figure45. Credit Provided by Banking Sector (% of GDP) in Bulgaria

Credit provided by banking sector has the maximum value equal to 133.133 in 1993 and the minimum value equal to 14.975 in 1999. After 1996 this statistics decreased significantly until 1999 but changed its pattern and presented a slow increase until the end of the period.

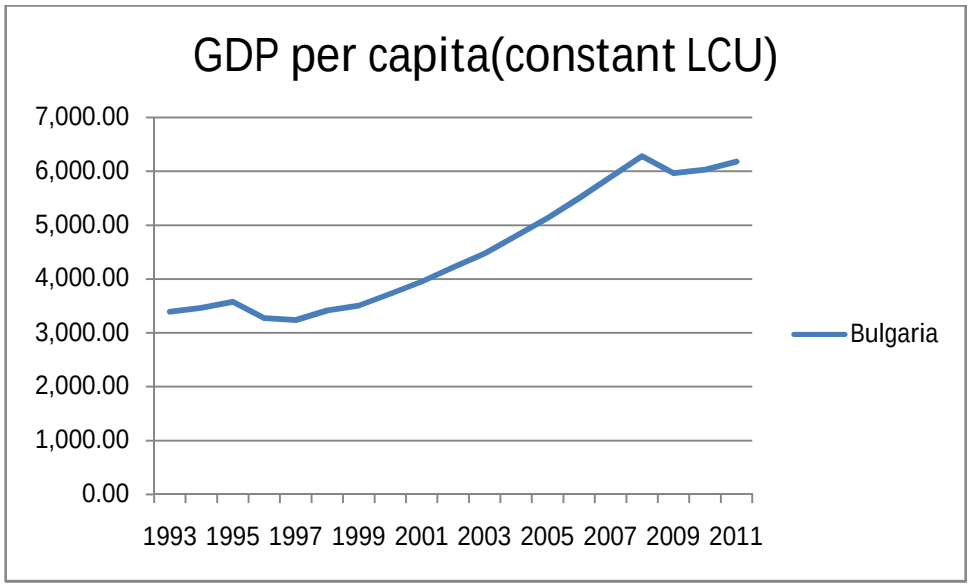

Figure46. GDP per Capita (Constant LCU) in Bulgaria

Generally this statistics shows an upward trend between 1993 and 2011. Its maximum value is 6279.42 which happened in 2008 and its minimum value is 3240.65 which happened in 1997.

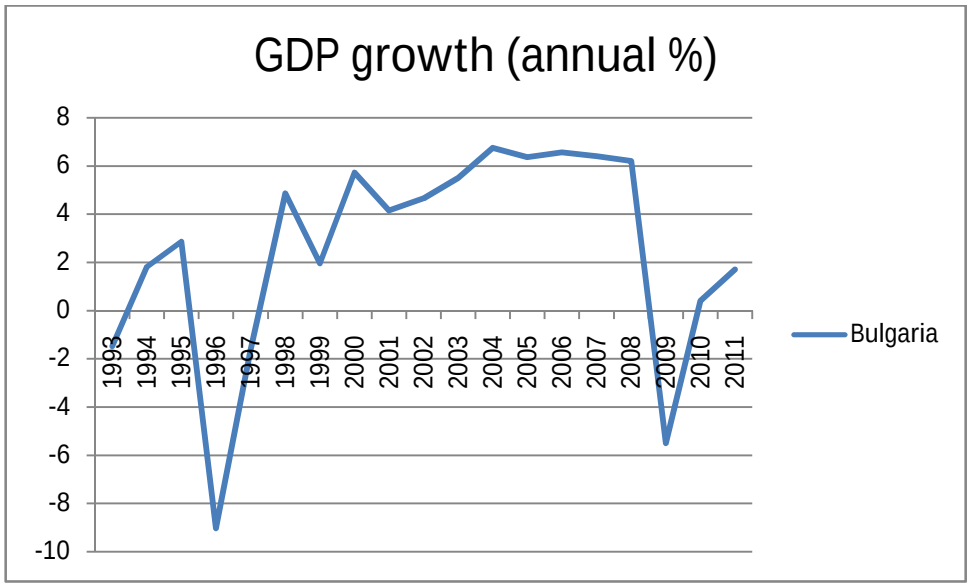

Figure47. GDP Growth (annual %) in Bulgaria

GDP growth (annual %) in Bulgaria fluctuated too much between 1993 and 2011. After 1995 this statistics decreased dramatically until 1996 which got its lowest value around -9.03, but after this year changed its pattern and increased significantly until1998. The highest value is 6.748 which happened in 2004.

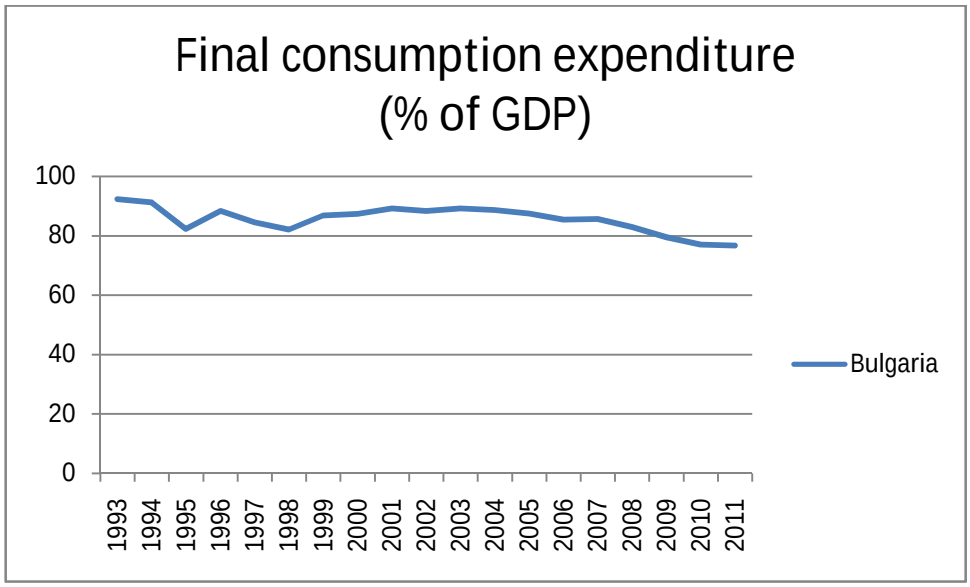

Figure48. Final Consumption Expenditure (% of GDP) in Bulgaria

Final consumption expenditure (% of GDP) did not fluctuate too much between 1993 and 2011. The highest value is 92.34 which happened in 1993 and the minimum value is76.71 which happened in 2011.

In this section of chapter 4 the diagrams of different variables will be plotted for all the eight sample countries.

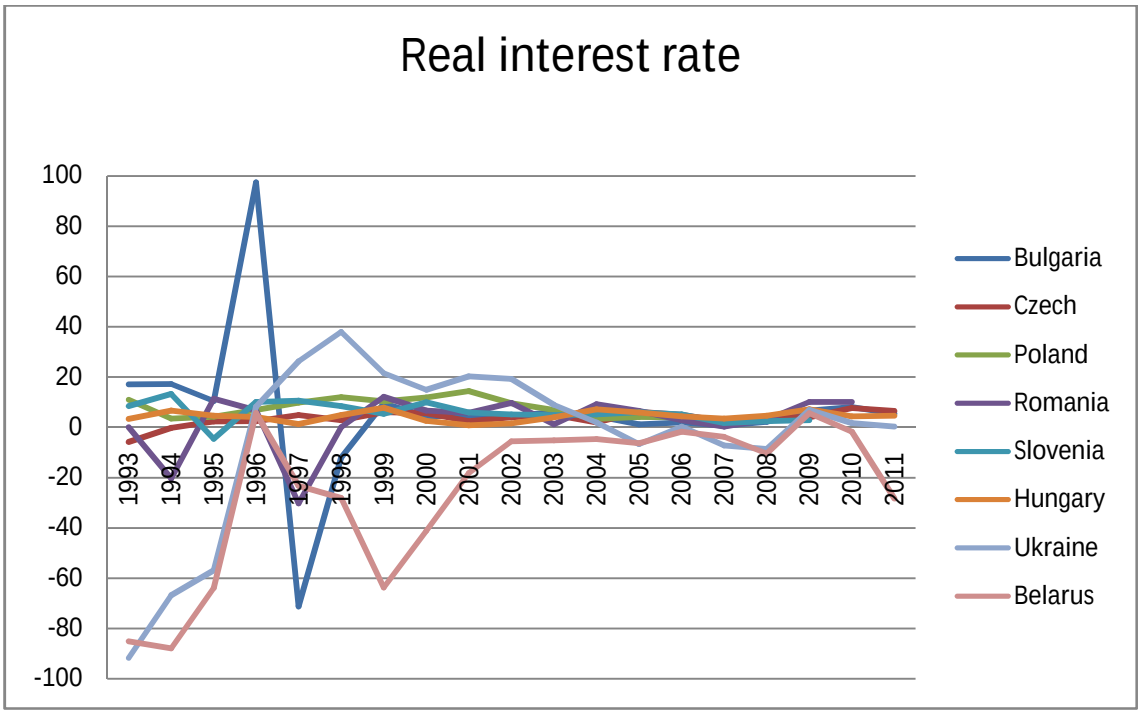

Figure49. Real Interest Rate in Sample Countries

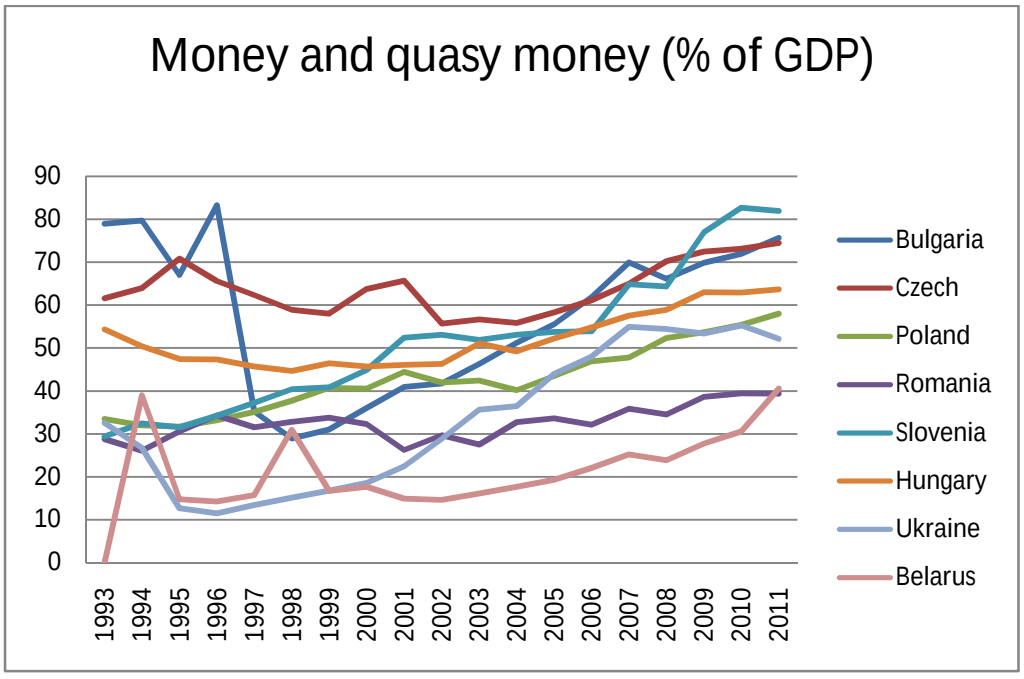

Figure50. Money and Quasi Money (% of GDP) in Sample Countries

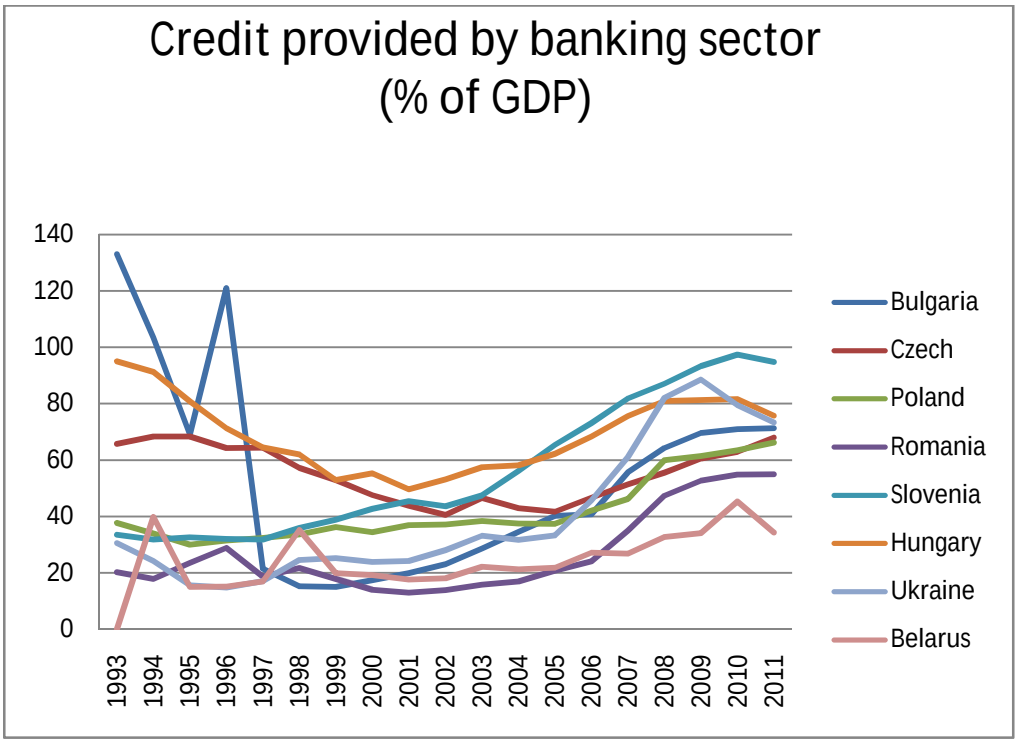

Figure51. Credit Provided by Banking Sector (% of GDP) in Sample Countries

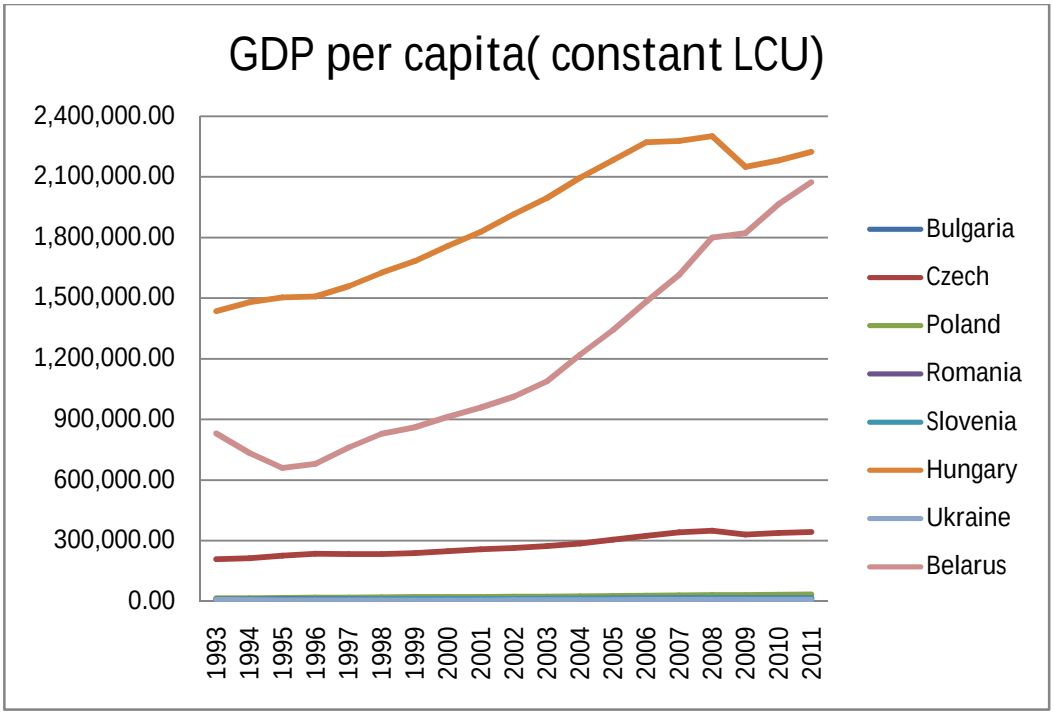

Figure52. GDP per Capita (Constant LCU) in Sample Countries

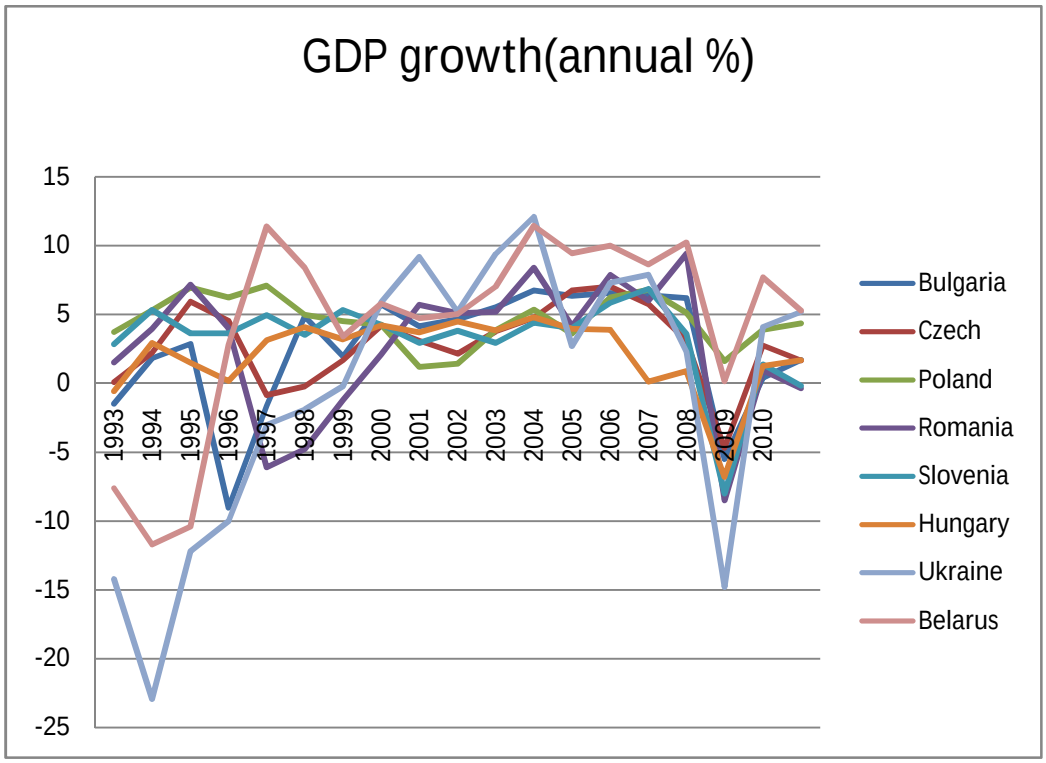

Figure53. GDP Growth (annual %) in Sample Countries

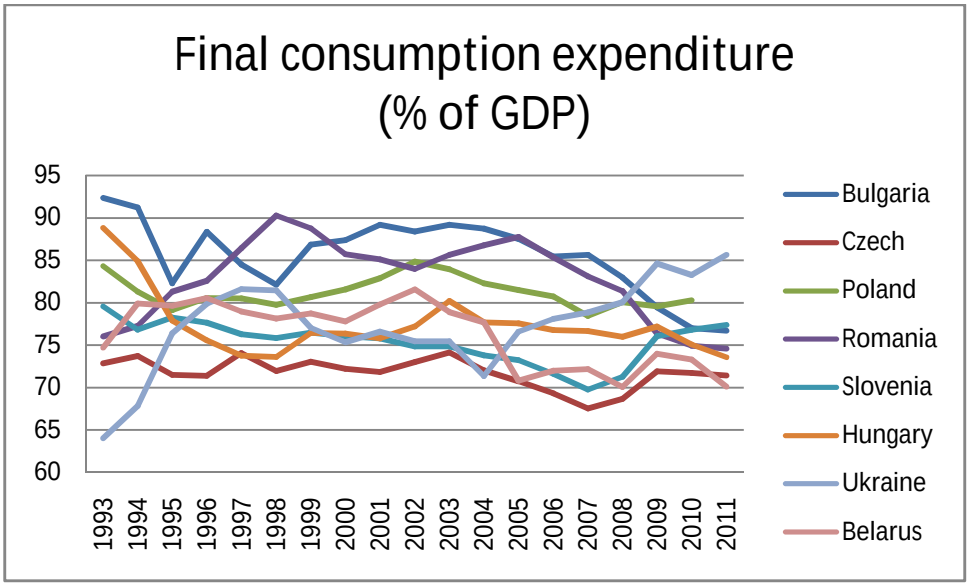

Figure54. Final Consumption Expenditure (% of GDP) in Sample Countries

4.9 Arithmetic Averages

Table 1 presents the average rate of Real interest rate for 8 selected East European countries between 1993 and 2011.

Table1.Average rate of Real Interest Rate

Country	1993-2011
Bulgaria	6.26
Czech Republic	3.56
Poland	8.01
Romania	2.78
Slovenia	5.96
Hungary	4.41
Ukraine	-3.64
Belarus	-24.61

By looking on the table 1 it can be seen that in Belarus average rate of real interest rate is lowest one in this sample and Poland has the highest average rate among the other countries. Table 2 shows the average rate of money and quasi money as a percentage of GDP for these European countries.

Table2. Average Rate of Share of Money and Quasi Money in GDP

Country	1993-2011
Bulgaria	57.43
Czech Republic	63.85
Poland	42.70
Romania	32.65
Slovenia	51.56
Hungary	52.00
Ukraine	33.30
Belarus	22.32

The minimum value is 22.32 which is related to Belarus and the maximum value is 63.85 which is for Czech Republic.

Table 3 presents the average rate of share of domestic credit provided by banking sector in GDP for these 8 European countries between 1993 and 2011.

Table3. Average Rate ofShare ofDomestic Credit Provided by Banking Sector in GDP

Country	**1993-2011**
Bulgaria	53.40
Czech Republic	55.23
Poland	41.97
Romania	26.95
Slovenia	56.08
Hungary	69.35
Ukraine	39.81
Belarus	25.69

By looking on this table, it is clear that Romania has the minimum average among the other countries of this sample and the value for this average is 26.95, on the other hand Hungary has the maximum average rate of credit provided by banking sector (% of GDP) in this sample and this average is equal to 69.35.

Table4. Average rate of GDP per capita (constant LCU)

Country	**1993-2011**
Bulgaria	4528.29
Czech Republic	276112.49
Poland	23767.71
Romania	12153.93
Slovenia	12848.20
Hungary	1893298.56
Ukraine	5740.71
Belarus	1192054.91

Table 5. Average Rate of Growth of GDP

Country	**1993-2011**
Bulgaria	2.54
Czech Republic	2.82
Poland	4.56
Romania	2.66
Slovenia	3.22
Hungary	2.13
Ukraine	-0.42
Belarus	4.31

The lowest point among these averages belongs to Ukraine which is equal to -0.42 and the highest point belongs to Poland which is equal to 4.56.

Table6. Average Rate of Final Consumption Expenditure (% of GDP)

Country	1993-2011
Bulgaria	85.54
Czech Republic	71.74
Poland	81.24
Romania	82.81
Slovenia	75.39
Hungary	77.42
Ukraine	77.35
Belarus	76.26

In the last table the minimum value related to Czech Republic and is equal to 71.74.The highest value for average rate of share of final consumption expenditure in GDP in this sample is 85.54 which is related to Bulgaria.

Chapter 5

RESULT

5.1 Panel Regression

Panel regression is a statistical method that works with two-dimensional panel data. In fact panel data is a mixture of time series and cross-sectional data for homogenous groups. There are six specificcases at panel regression in this study and panel regressions are constructed by Heteroscedasticity correlation in order to achieve more reliable results.

1) CY =F (CY (1), R, FD1, FD2, $\log P$)

2) CY=F (CY (1), R, FD1, FD2, GGDP)

3) CY=F (CY (1), R, FD1,$\log P$)

4) CY=F (CY (1), R, FD2,$\log P$)

5) CY=F (CY (1), R, FD1, GGDP)

6) CY=F (CY (1), R, FD2, GGDP)

Where

CY is share of final consumption expenditure in Gross Domestic Product (% of GDP)

CY (1) is one year lagged value of final consumption expenditure as a percentage of Gross Domestic Product (% of GDP)

R is Real interest rate

FD1 is share of Money and quasi money (M2) in Gross Domestic Product (% of GDP)

FD2 is share of Domestic credit provided by banking sector in Gross Domestic Product (% of GDP)

P is a GDP per capita (constant Local Currency Unit)

GGDP is growth rate of GDP (annual %)

The aim of these individual regressions is to realize that how these independent variables have effect on the dependent variable and to understand the relation between these independent variables.

In the following for each case of regression, the equation, t-statistics and the figure of R-square are given.

In this research t-statistics will used to understand whether these independent variables significantly influence the dependent variable or not. These amounts will be presented under each statistics in parenthesis.

Three different positions will be analyzed here:

a) If the coefficient is significant at 10% level, t-value will be marked with one star (t-value)*

b) If the coefficient is significant at 5% level, t-value will be marked with two stars (t-value) **

c) If the coefficient is significant at 1%, t-value will be marked with three stars (t-value) ***

For α= 95% confidence level the tabular value of t is 2.064 and for α=90% confidence level tabular value for t is 1.711. If the observed t-statistics are below -2.064 or above

2.064 at α= 95% the variables are significant. Also for α=90% if the observed t-statistics is below -1.711 or above 1.711 the variables are significant.

By looking on the correlation matrix it can be observed that there is a correlation between two variables named money and quasi money (% of GDP) and credit provided by banking sector (% of GDP), the percentage of this correlation is around 82% but there is not any correlation among the other variables which be more than a 50 %. For solving this problem different cases have been analyzed and in some of them the relation of these two variables has been studied individually.

5.2 Case1

The effects of lagged value of final consumption expenditure as a percentage of GDP, Real interest rate, share of money and quasi money(M2) in GDP, share of Domestic credit provided by banking sector in GDP and GDP per capita(constant LCU) on share of final consumption expenditure in GDP .

Equation:

CY = 3.33+ 0.95* CY (1) + 0.04*R - 0.03*FD1 + 0.02*FD2 + 0.08*LOG (P)

(0.84) (24.31) *** (4.21) *** (-2.17) ** (1.33) (0.85)

R-square:

0.84

All the independent variables are positively correlated to final consumption expenditure (% of GDP) instead of money and quasi money (% of GDP). 1% increase in money and quasi money (% of GDP) causes 0.03% decrease in final consumption expenditure (% of GDP) but 1% increase in lagged value of CY causes 0.95% rise in final consumption

expenditure (% of GDP), 1% rise in real interest rate causes 0.04% rise in CY, 1% growth in credit provided by banking sector (% of GDP) causes 0.02% growth in final consumption expenditure (% of GDP)and finally 1% increase in log of GDP per capita causes 0.08% increase in final consumption expenditure (% of GDP).

Lagged value of final consumption expenditure (% of GDP), Real interest rate and money and quasi money (% of GDP) significantly affect final consumption expenditure (% of GDP) in this case, but credit provided by banking sector (% of GDP) and log of GDP per capita are insignificant. Normally GDP per capita has a negative effect on final consumption expenditure (% of GDP) and positive effect on saving rate, but here opposite effect can be observed but by looking at t-statistics it can be observed that this effect is not significant.

By looking on R-squared value it is obvious that variation in independent statistics accounts for 84% variation in dependent variable.

5.3 Case2

The effects of lagged value of final consumption expenditure (% of GDP), Real interest rate, money and quasi money (M2) (% of GDP), Domestic credit provided by banking sector as a percentage of GDP and growth rate of GDP (annual %) on final consumption expenditure as a percentage of GDP.

Equation:

CY = 4.60 + 0.94*CY (1) + 0.03*R - 0.04*FD1 + 0.03*FD2 +0.04*GGDP

(1.25) (23.92) *** (2.91) *** (-2.14) ** (1.28) (0.81)

R-squared:

0.840574

All the right hand side variables are positively correlated to final consumption expenditure (% of GDP) instead of share of money and quasi money in GDP which 1% increase in money and quasi money (% of GDP) results 0.04% decrease in share of final consumption expenditure in GDP, but 1% rise in lagged value of final consumption expenditure as a percentage of GDP leads to 0.94% rise in final consumption expenditure (% of GDP), 1% rise in Real interest rate causes 0.04% rises in final consumption expenditure (% of GDP), 1% increase in credit provided by banking sector(% of GDP) leads to 0.03% rises in final consumption expenditure(% of GDP) and finally 1% rises in growth rate of GDP leads to 0.04% increase in final consumption expenditure(% of GDP).Similarly to the previous case lagged value of final consumption expenditure (% of GDP), Real interest rate and share of money and quasi money in GDP significantly affect share of final consumption expenditure in GDP but credit provided by banking sector (% of GDP) and growth rate of GDP (annual %) are insignificant variables. By looking on R-squared value it is obvious that variation in independent statistics accounts for 84% variation in dependent variable.

5.4 Case3

The effects of lagged value of final consumption expenditure(% of GDP), Real interest rate, money and quasi money as a percentage of GDP, GDP per capita (constant LCU) on final consumption expenditure as a percentage of GDP.

Equation:

CY = 2.67 + 0.95*CY (1) + 0.04*R - 0.004*FD1 + 0.12* LOG (P)

(0.58) (22.22) *** (4.54) *** (-0.23) (1.07)

R-squared:

0.837039

In the third case like the two cases before money and quasi money (% of GDP) has a negative effect on CY, 1% increase in M2 (% of GDP) leads to 0.004% reduction in CY, but it can be mentioned that 1% rise in lagged value of CY causes 0.95% increase in CY and 1% rise in real interest rate causes 0.04% increase in final consumption expenditure (% of GDP) and finally 1% increase in log of GDP per capita (annual %) leads to 0.12% growth in CY. It is clear that the two variables that have significant effect on final consumption expenditure (% of GDP) are Real interest rate and lagged value of CY, but money and quasi money (% of GDP) and log of GDP per capita are insignificant variables in this case. By looking on R-squared value it is obvious that variation in independent statistics accounts for 84% variation in dependent variable.

5.5 Case 4

The effects of lagged value of share of final consumption expenditure in GDP, Real interest rate, credit provided by banking sector as a percentage of GDP and GDP per capita(constant LCU) on share of final consumption expenditure in GDP.

Equation:

CY = 1.89 + 0.96*CY (1) + 0.04*R + 0.01*FD2 +0.11*LOG (P)

(0.45) (23.62) *** (4.44) *** (0.43) (1.13)

R-squared:

0.837515

In this case all the dependent variables have positive effect on share of final consumption expenditure in GDP. 1% increase in Real interest rate leads to 0.03% increase in CY (% of GDP), 1% increase in lagged value of CY (% of GDP) causes 0.96% increase in CY (% of GDP), 1% rise in credit provided by banking sector (% of GDP) causes 0.01% increase in final consumption expenditure (% of GDP) and finally 1% increase in log GDP per capita causes 0.11% rises in CY (% of GDP). Like the other cases Real interest rate and lagged value of CY (% of GDP) are significant variable but both of credit provided by banking sector (% of GDP) and GDP per capita do not have any significant effect on final consumption expenditure(% of GDP). By looking on R-squared value it is obvious that variation in independent statistics accounts for 84% variation in dependent variable.

5.6 Case5

The effects of lagged value of final consumption expenditure (% of GDP), Real interest rate, money and quasi money (M2) as a percentage of GDP and growth rate of GDP (annual %) on final consumption expenditure as a percentage of GDP.

Equation:

CY =5.62 + 0.93*CY (1) + 0.04*R - 0.003*FD1 + 0.02*GGDP

(1.59) (24.12) *** (3.81) *** (-0.14) (0.45)

R-squared:

0.835484

In this case real interest rate has a positive effect on final consumption expenditure (%of GDP). 1% rise in this factor leads to 0.04% increase in final consumption expenditure (% of GDP) and this factor has a significant effect on dependent variable. 1% increase in the lagged value of final consumption expenditure (%of GDP) causes 0.93% increase in dependent variable and like the other cases CY(1) is a significant variable. 1% rise in money and quasi money (% of GDP) leads to 0.002% decrease in final consumption expenditure (% of GDP) but this variable has no significant effect on dependent variable because of its t-statistics value and finally 1% rises in growth rate of GDP shows 0.02% rises in final consumption expenditure (% of GDP) and like money and quasi money (% of GDP) this variable does not have any significant effect on dependent variable. By looking on R-squared value it is obvious that variation in independent statistics accounts for 83% variation in dependent variable.

5.7 Case6

The effects of lagged value of final consumption expenditure (% of GDP), Real interest rate, Credit provided by banking sector as a percentage of GDP and growth rate of GDP (annual %) on final consumption expenditure as a percentage of GDP.

Equation:

CY =3.96 + 0.94*CY (1) + 0.03*R + 0.01*FD2 + 0.03*GGDP

(1.03) (23.01) *** (2.92) *** (0.56) (0.68)

R-squared:

0.836966

In the final case all the variables have positive effect on final consumption expenditure (% of GDP). 1% increase in lagged value of CY leads to 0.94% increase in CY and 1%

increase in Real interest rate shows 0.03% increase in final consumption expenditure (% of GDP), 1% rise in credit provided by banking sector (% of GDP) leads to 0.01% rise in final consumption expenditure (% of GDP) and finally 1% increase in growth rate of GDP causes 0.03% increase in final consumption expenditure (% of GDP). Among these variables both real interest rate and lagged value of final consumption expenditure (% of GDP) are significant variables with t-statistics equal to 23.01 and 2.92 but other variables are insignificant and By looking on R-squared value it is obvious that variation in independent statistics accounts for 83% variation in dependent variable.

5.8 Additional Notes on Carried Analysis

There are some points that should be mentioned in this part. Firstly, the significance of Real interest rate and Lagged value of final consumption expenditure (% of GDP) in all the cases; secondly, the insignificance of credit provided by banking sector as a percentage of Gross Domestic Product (% of GDP) and Growth rate of GDP (annual %) and GDP per capita in all the cases.For each case in panel regression high values of R-squared could be observed. These values show that the independent variables that used for this study are good predictors of final consumption expenditure (% of GDP) in the selected East European countries. For example in all the cases R-squared values are approximately 80% which means that these independent variables are responsible for 80% changes in final consumption expenditure (% of GDP).

Chapter 6

CONCLUSION

Based on panel regression analysis and general trends in the macro economy of selected countries,Regression results present that lagged value of final consumption expenditure (% of GDP) has a positive effect on final consumption expenditure (% of GDP) in selected East European countries, in addition it should be mentioned that this certain variable has a significant effect on the share of final consumption expenditure in GDP in this group of countries (significant level is 1%).

Another variable which should be analyzed here is Real interest rate. Generally real interest rate has a negative effect on final consumption expenditure (% of GDP), that means when real interest rate increase, people prefer to save more and consume less so by increasing real interest rate, saving rate will increase and consumption rate will decrease. In fact by increasing real interest rate people prefer to allocate more part of their disposable income for saving because by allocation more part of their income for saving they can earn more money and become wealthier in future. In fact they choose to save now and consume in future instead of consume now. The point in these countries is that by increasing real interest rate share of final consumption expenditure in GDP increased significantly and consequently saving rate decreased, this means that individuals in these countries as a group prefer to consume more and save less by

increasing real interest rate, in fact by increasing real interest rate people prefer to allocate more portion of their disposable income to consumption instead of saving. That means people prefer consume more and save less at present time. The significant level of real interest rate in these cases is 1%.

In the first two cases of this study, money and quasi money (% of GDP) negatively influences share of final consumption expenditure in GDP and this effect is significant and the significant level is 5%, but in the other cases the negative influence of money and quasi money (% of GDP) on share of final consumption expenditure on GDP is not significant.

The next variable is credit provided by banking sector (% of GDP). In all the cases this variable has a positive effect on final consumption expenditure (% of GDP) in this group of countries but these effects are not significant, that means variation of this certain variable does not have significant effect on share of final consumption expenditure on GDP in this group of countries.

Another variable is GDP per capita (constant Local Currency Unit). The situation for this variable is exactly like the credit provided by banking sector (% of GDP), that means this variable has a positive and insignificant effect on final consumption expenditure (% of GDP) in these countries.

The last variable is growth rate of GDP (annual %) which has positive effect on final consumption expenditure (% of GDP) in these countries but the effect of this variable is not significant.

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APPENDIX

Appendix A:

E-VIEWS Tables

Dependent Variable: CY
Method: Panel Least Squares
Date: 01/14/13 Time: 13:31
Sample (adjusted): 1993 2010
Periods included: 18
Cross-sections included: 8
Total panel (unbalanced) observations: 137
White cross-section standard errors & covariance (d.f. corrected)

Prob.	t-Statistic	Std. Error	Coefficient	Variable
0.0000	24.30563	0.039179	0.952280	CY(1)
0.0000	4.212756	0.009279	0.039091	R
0.0318	-2.170225	0.013775	-0.029895	FD1
0.1861	1.329051	0.017942	0.023846	FD2
0.3956	0.852322	0.091711	0.078167	LOG(P)
0.4049	0.835544	3.990694	3.334400	C

78.61807	Mean dependent var	0.840025	R-squared
5.708228	S.D. dependent var	0.833919	Adjusted R-squared
4.569222	Akaike info criterion	2.326275	S.E. of regression
4.697104	Schwarz criterion	708.9140	Sum squared resid
4.621190	Hannan-Quinn criter.	-306.9917	Log likelihood
1.879522	Durbin-Watson stat	137.5756	F-statistic
		0.000000	Prob(F-statistic)

Estimation Command:
==========
LS(COV=CXWHITE) CY CY(1) R FD1 FD2 LOG(P) C

Estimation Equation:
==========
CY = C(1)*CY(1) + C(2)*R + C(3)*FD1 + C(4)*FD2 + C(5)*LOG(P) + C(6)

Substituted Coefficients:
==========
CY = 0.952280491992*CY(1) + 0.0390914712948*R - 0.0298947053065*FD1 + 0.0238459626327*FD2 + 0.0781673926343*LOG(P) + 3.33440033007

Dependent Variable: CY
Method: Panel Least Squares
Date: 01/14/13 Time: 13:33
Sample (adjusted): 1993 2010
Periods included: 18
Cross-sections included: 8
Total panel (unbalanced) observations: 137
White cross-section standard errors & covariance (d.f. corrected)

Prob.	t-Statistic	Std. Error	Coefficient	Variable
0.0000	23.91712	0.039477	0.944184	CY(1)
0.0042	2.911062	0.011468	0.033383	R
0.0344	-2.138040	0.016447	-0.035165	FD1
0.2034	1.278347	0.024473	0.031285	FD2
0.4197	0.809517	0.050840	0.041156	GGDP
0.2152	1.245429	3.695978	4.603079	C

78.61807	Mean dependent var	0.840574	R-squared
5.708228	S.D. dependent var	0.834489	Adjusted R-squared
4.565784	Akaike info criterion	2.322280	S.E. of regression
4.693666	Schwarz criterion	706.4810	Sum squared resid
4.617752	Hannan-Quinn criter.	-306.7562	Log likelihood
1.892224	Durbin-Watson stat	138.1396	F-statistic
		0.000000	Prob(F-statistic)

Estimation Command:
==========
LS(COV=CXWHITE) CY CY(1) R FD1 FD2 GGDP C

Estimation Equation:
==========
CY = C(1)*CY(1) + C(2)*R + C(3)*FD1 + C(4)*FD2 + C(5)*GGDP + C(6)

Substituted Coefficients:
==========
CY = 0.944184094126*CY(1) + 0.0333827146868*R - 0.0351651715563*FD1 + 0.03128533212*FD2 + 0.0411561956548*GGDP + 4.60307884396

Dependent Variable: CY
Method: Panel Least Squares
Date: 01/14/13 Time: 13:34
Sample (adjusted): 1993 2010
Periods included: 18
Cross-sections included: 8
Total panel (unbalanced) observations: 137
White cross-section standard errors & covariance (d.f. corrected)

Prob.	t-Statistic	Std. Error	Coefficient	Variable
0.0000	22.22493	0.042919	0.953877	CY(1)
0.0000	4.543244	0.009171	0.041664	R
0.8192	-0.229054	0.016499	-0.003779	FD1
0.2886	1.065442	0.113805	0.121252	LOG(P)
0.5648	0.577248	4.624070	2.669237	C

78.61807	Mean dependent var	0.837039	R-squared
5.708228	S.D. dependent var	0.832101	Adjusted R-squared
4.573115	Akaike info criterion	2.338973	S.E. of regression
4.679684	Schwarz criterion	722.1451	Sum squared resid
4.616422	Hannan-Quinn criter.	-308.2584	Log likelihood
1.864822	Durbin-Watson stat	169.5028	F-statistic
		0.000000	Prob(F-statistic)

Estimation Command:
==========
LS(COV=CXWHITE) CY CY(1) R FD1 LOG(P) C

Estimation Equation:
==========
CY = C(1)*CY(1) + C(2)*R + C(3)*FD1 + C(4)*LOG(P) + C(5)

Substituted Coefficients:
==========
CY = 0.953877262621*CY(1) + 0.0416639976499*R - 0.00377926355204*FD1 + 0.121252386996*LOG(P) + 2.66923661683

Dependent Variable: CY
Method: Panel Least Squares
Date: 01/14/13 Time: 13:36
Sample (adjusted): 1993 2010
Periods included: 18
Cross-sections included: 8
Total panel (unbalanced) observations: 137
White cross-section standard errors & covariance (d.f. corrected)

Prob.	t-Statistic	Std. Error	Coefficient	Variable
0.0000	23.62378	0.040627	0.959769	CY(1)
0.0000	4.436685	0.008615	0.038220	R
0.6704	0.426557	0.014854	0.006336	FD2
0.2611	1.128681	0.097367	0.109896	LOG(P)
0.6540	0.449302	4.201164	1.887591	C

78.61807	Mean dependent var	0.837515	R-squared
5.708228	S.D. dependent var	0.832592	Adjusted R-squared
4.570189	Akaike info criterion	2.335555	S.E. of regression
4.676758	Schwarz criterion	720.0356	Sum squared resid
4.613496	Hannan-Quinn criter.	-308.0580	Log likelihood
1.865759	Durbin-Watson stat	170.0961	F-statistic
		0.000000	Prob(F-statistic)

Estimation Command:
==========
LS(COV=CXWHITE) CY CY(1) R FD2 LOG(P) C

Estimation Equation:
==========
CY = C(1)*CY(1) + C(2)*R + C(3)*FD2 + C(4)*LOG(P) + C(5)

Substituted Coefficients:
==========
CY = 0.9597693349*CY(1) + 0.0382204925279*R + 0.00633590780264*FD2 + 0.10989626381*LOG(P) + 1.88759137985

Dependent Variable: CY
Method: Panel Least Squares
Date: 01/14/13 Time: 13:38
Sample (adjusted): 1993 2010
Periods included: 18
Cross-sections included: 8
Total panel (unbalanced) observations: 137
White cross-section standard errors & covariance (d.f. corrected)

Prob.	t-Statistic	Std. Error	Coefficient	Variable
0.0000	24.11951	0.038629	0.931722	CY(1)
0.0002	3.808569	0.010033	0.038212	R
0.8920	-0.135977	0.018809	-0.002558	FD1
0.6543	0.448750	0.039343	0.017655	GGDP
0.1151	1.586242	3.543430	5.620736	C

78.61807	Mean dependent var	0.835484	R-squared
5.708228	S.D. dependent var	0.830499	Adjusted R-squared
4.582613	Akaike info criterion	2.350108	S.E. of regression
4.689182	Schwarz criterion	729.0370	Sum squared resid
4.625920	Hannan-Quinn criter.	-308.9090	Log likelihood
1.813375	Durbin-Watson stat	167.5884	F-statistic
		0.000000	Prob(F-statistic)

Estimation Command:
==========
LS(COV=CXWHITE) CY CY(1) R FD1 GGDP C

Estimation Equation:
==========
CY = C(1)*CY(1) + C(2)*R + C(3)*FD1 + C(4)*GGDP + C(5)

Substituted Coefficients:
==========
CY = 0.931722376504*CY(1) + 0.0382118886856*R - 0.00255763126169*FD1 + 0.0176553344832*GGDP + 5.6207360689

Dependent Variable: CY
Method: Panel Least Squares
Date: 01/14/13 Time: 13:39
Sample (adjusted): 1993 2010
Periods included: 18
Cross-sections included: 8
Total panel (unbalanced) observations: 137
White cross-section standard errors & covariance (d.f. corrected)

Prob.	t-Statistic	Std. Error	Coefficient	Variable
0.0000	23.00582	0.041072	0.944890	CY(1)
0.0041	2.922212	0.011058	0.032313	R
0.5792	0.555898	0.019285	0.010721	FD2
0.4994	0.677237	0.051252	0.034710	GGDP
0.3072	1.025057	3.860975	3.957720	C

78.61807	Mean dependent var	0.836966	R-squared
5.708228	S.D. dependent var	0.832025	Adjusted R-squared
4.573566	Akaike info criterion	2.339501	S.E. of regression
4.680134	Schwarz criterion	722.4707	Sum squared resid
4.616873	Hannan-Quinn criter.	-308.2893	Log likelihood
1.847385	Durbin-Watson stat	169.4115	F-statistic
		0.000000	Prob(F-statistic)

Estimation Command:
==========
LS(COV=CXWHITE) CY CY(1) R FD2 GGDP C

Estimation Equation:
==========
CY = C(1)*CY(1) + C(2)*R + C(3)*FD2 + C(4)*GGDP + C(5)

Substituted Coefficients:
==========
CY = 0.944889524195*CY(1) + 0.0323131061354*R + 0.0107205784187*FD2 + 0.0347095493947*GGDP + 3.95771984524

Correlation
matrix

	CY	CY(1)	FD1	FD2	GGDP	LOG(P)	R
CY	1.000000	0.902560	-0.115078	-0.100923	-0.004768	-0.421017	0.203453
CY(1)	0.902560	1.000000	-0.166674	-0.194257	-0.071524	-0.486350	0.067114
FD1	-0.115078	-0.166674	1.000000	0.817823	-0.083706	0.038772	0.304276
FD2	-0.100923	-0.194257	0.817823	1.000000	-0.188729	0.182613	0.306237
GGDP	-0.004768	-0.071524	-0.083706	-0.188729	1.000000	0.124603	0.294480
LOG(P)	-0.421017	-0.486350	0.038772	0.182613	0.124603	1.000000	-0.163368
R	0.203453	0.067114	0.304276	0.306237	0.294480	-0.163368	1.000000