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DIPLOMA THESIS

Public Finance and the Current Financial Crisis

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Declaration

I declare, that I have worked on the Diploma thesis on my own and I have used only the resources listed in the references.

Prague, 8th April 2011

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Acknowledgement

I am heartily thankful to my supervisor, Ing. Mansoor Maitah Ph.D. et Ph.D., whose encouragement, guidance and support was of assistance for finishing this work.

I owe my deepest gratitude to Ing. Tomáš Šindelář, for his critics, corrections and friendly recommendations.

Public Finance and the Current Financial Crisis

Veřejné finance a současná finanční krize

Summary:

The Thesis aspires to analyze the consequences of the most recent global financial crisis, which started in summer 2007 and continued onwards.

The main focus is on the development of the current financial crisis in the PIGS countries (Portugal, Ireland, Greece and Spain), the Czech Republic and Estonia. A special focus is put on the development of the long-term interest rates in the mentioned countries, supplied with an econometric calculation of their future development.

Souhrn:

Tato diplomová práce si klade za cíl analyzovat následky nejaktuálnější globální finanční krize, která začala v létě 2007 a pokračuje až do dnes.

Hlavní soustředění je kladeno na vývoj současné finanční krize v PIGS (Portugalsko, Irsko, Řecko a Španělsko), České republice a Estonsku. Speciální zaměření je kladeno na vývoj dlouhodobých úrokových sazeb ve zmíněných zemích, doplněno o ekonometrický výpočet jejich budoucího vývoje.

Keywords:

Crisis, PIGS, the Czech Republic, Estonia, long-term interest rate, econometric modelling, public finance management, school of economics

Klíčová slova:

Krize, PIGS, Česká republika, Estonsko, dlouhodobá úroková míra, ekonometrický model, management veřejných financí, ekonomické školy

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1. Introduction

It took 3.5 years the American economy to fully recover from the Great Depression in 1930's and the consequences of the world's largest financial and economic crisis ended up in suicides, and finally in the WW2.

Now, 80 years later, after experiencing probably the most devastating economic tragedy since 1930's, almost 3 years after the crash of Lehman Brothers (which is likely the breaking point of the crisis), the Wall Street and other financial markets, we all seem fine. This opinion is reflected on behaviour of the Wall Street businessmen who again started to invest into luxury goods, such as watches, accommodation, private jets etc¹. What is even more shocking as the *Wall Street Journal* found out², is that despite the crisis, financials from the *Wall Street* were receiving record earnings for 2009 – about \$145 billion, which is a 18% increase, compare to 2008.

Many experts criticize the financial institutions, which are likely to be responsible for starting up the crisis, those which received its share of government financial support, and eventually used these resources to finance bonuses of their managers and CEOs, which goes against primary governments' objectives, to help people who actually need it³. According to those experts³, huge (mammoth) financial houses are taking the advantage of its strong market position and its strategic role where no one would allow letting them bankrupt.

But on the other hand, the current situation didn't play up to a rational decision making by the world's governments, which were forced by strategic market players from one side, by people from the other, and more pressure was visible from political partners and finally from the media.

To an ordinary man, it might seem, that governments have actually no preselected strategy to apply, that there are no plans which would cope with the crisis and reduced low confidence to financial and other markets, which gives an advantage to those, who have the influence on them. And exactly this is a situation, which should not happen. Governments should be ready to come up with definite strategy, in case of a crisis occurs and stand for it without compromising with the strategic market players.

2. Objectives and Methodology

This thesis builds on and extends the results of the bachelor thesis “The Impact of the current financial crisis on the world and Czech economy” (Tonar, 2009)⁴, and shows an overall picture of the impact of the financial and economic crisis from the summer of 2009 to the spring of 2011.

Its **objectives** are:

- to show the impact of the “Crowding out effect” on selected European countries.
- to predict economic climate in the near future and offer possible solutions which European governments and economists could pursue,
- and to develop the conclusions of the above mentioned bachelor thesis, and to confront them with the current understanding of the crisis,

The overall interest originates in the **hypothesis** that: “The Crowding out effect occurs in all European countries, which have governmental deficit difficulties, with the exception of times of financial and economic crises, when the management of interest rates has to be adjusted in order to resuscitate the economy, which is not an ordinary condition of an economy.”

This hypothesis was stated due to the conviction that European countries do not manage public finances right under stable economic conditions. In this thesis, the period before the crash of Lehman Brothers (September 2008) is perceived as a time of stable economic growth, followed by a collapse of financial markets and world economies, which led into economic recession of many developed countries. In the course of financial and economic difficulties, European countries made rash decisions, which put governments into more troubles due to previous poor public finance management. Furthermore, those decisions were boosted by an unnecessary fear of market forces which represent powerful market players (e.g. big financial houses and industries), and supported by media, their presentation of catastrophic pictures of current economic situation which people are consuming. Finally, the paper suggests other ways for governments to revitalize economy besides budget cuts as is the case in the Czech Republic.

To meet the objectives, the **methodology** used represents an econometric model, which would show cohesion of statistical data relative to GDP growth / decline, State deficit / surplus, and long-term interest rates of selected European countries which represented an example of poor public finance management. Those countries, referred to as the PIGS (Portugal, Ireland, Greece and Spain), together with the Czech Republic are analysed and compared to a European country which is found to have good governmental management according to the mentioned statistical data. The econometric model is expected to differ slightly across selected countries, but the outcome should generally be the same.

Further, to achieve those objectives, the author of this thesis has scanned the media to provide an overall clear picture about governments' actions which he, in addition, critically assessed.

Please note: The author doesn't stand in defence of any extreme economic or political point of view.

3. Literature Overview

3.1. The Definition and Administration of the Public Finance

Public finance (Hyman, 2002)⁵ is defined as the management of economic activities which are linked with financing government expenditures and the study of its outcomes and impact on regulations, taxes, and borrowing on incentives to work, invest, and spend income.

Further, the BusinessDictionary.com⁶ interprets public finance as “Collection of taxes from those who benefit from the provision of public goods by the government, and the use of those tax funds toward production and distribution of the public goods”.

Therefore, a government is there to make sure that all collected resources are used efficiently, and that outcomes of investments into the economy are benefit both its citizens and the country itself. In theory, in a situation where markets distributed goods and services efficiently, the role of a government would not be needed. But since we recognize different types of economies (from barter to market economy etc.), which apply different policies (in terms of e.g. social justice, public health care etc.), numerous different reasons for market and governmental failures¹ arise.

Campbell & Brue (2005) conclude⁷: „Provision of public goods or services represent e.g. administration of justice, national defence, social security, unemployment, insurance, pension system, protection, transportation network facilities, education, health care, etc.; from which are applied corresponding governmental policies. Government decisions should be provided for maximization of mentioned social benefits and public interest over costs, with effective and fair use of public resources collected through tax system, with no losses” (which are in practice hard to avoid due to overly complicated systems).

Taxation itself is not always a sufficient source of revenue for financing all public goods and services which a government provides. Therefore, apart from other activities which a government embarks on (e.g. shares in corporations), it has to borrow resources

¹ Government failure Burda & Wyplocz (2005): situation when government activities are inefficient and private or voluntary provisions appear

from somewhere else. In case the government borrows money, it creates a deficit^{II}, the accumulation of which is called a “total public debt” (or a government debt^{III}), which consequently gives opportunity to adjust tax base and apply fiscal policy tools. Further explanation of this phenomenon is provided in the next section.

3.1.1. Public finance management system (PFMS)

Public finance, taxation, and its approach towards the treatment of citizens from different social classes are areas strongly linked to topics regarding social equity, distribution of income and government policies. Management of public finance is not in comparison to other businesses any different. It represents one of the most essential functions, equally important for the public sector as for the private one.

In the public sector we recognize the following functions of PFMS:

3.1.2. Collection of resources

Income distribution is an important economic aspect and a political issue. The total national income is redistributed between two factors of production (labour and capital)⁸. There are two macroeconomic tools, which are used to adjust conditions of an economy and both serve to keep unemployment and inflation balanced.

The first tool is the fiscal policy, used by governments, which in essence means the allotment of various taxes to either citizens or importers in the economy. Sawyer & Sprinkle (2006)⁹ says that fiscal policy “entails using changes in governmental taxation or government spending at national level to affect the level of economic activity, therefore GDP”.

The role of governments in our economic lives has been growing since the end of World War II. This fact is given by the contribution volume of GDP spent by governments and citizens. But why do governments actually spend so much?

Burda & Wyplosz (2005) explain⁸ that governments generally spend about 1/3 of GDP for transfers and subsidies to individuals in the form of various kinds of insurance (health, unemployment) or poverty alleviation. By transfer we mean income

^{II} In tables, deficit is referred as *General Government Net lending/borrowing*

^{III} In tables, government debt is referred as *General Government Gross Debt*

redistribution from those who have resources to those who have not, to show solidarity among society and reduce inequality.

Another part of the government contribution to GDP arises from its nature of being a consumer as well, a provider of public goods (such as roads, buildings) and in many cases a major employer. Its main role is to produce goods and services, mostly for collective consumption, which may serve exclusively as public goods & services^{IV} or can increase return of investment. The underlying reason is in people's tendency to invest strictly into themselves and not for the benefit of others. If there were no government, it is likely to assume that there would be no streets, bridges, roads etc. available for everyone, but for the creators (owners) only. Human behaviour creates externalities which the government should reduce.

Therefore, to sum up, we identified the following 3 main categories in relation to the fiscal policy:

- Government consumption
- Government investments
- Transfer payments

One could name the following examples of public goods and services: law and order, defence, public gardens etc. Those public goods which serve the population universally, such as education, are called external public goods.

In order to finance all its activities, governments have to generate revenue from its citizens by means of taxation. An ordinary person encounters taxation every day and does not necessarily have to be aware of it. Even the least economic active parts of the population (and most likely the least educated ones) "feel" taxation through the goods and services they purchase (as a percentage of the purchase value), or in the form of taxation of their incomes (as a percentage of their income).

As one becomes more economically active and, thus, wealthier, one starts to encounter tax on e.g. land, buildings, assets and liabilities etc. Entrepreneurs and transnational companies would be taxed for import and export (tariffs) of their goods & services production and transportation. Google "taxation category" to see examples of taxation types. Then you will be able to image the volume of administration behind the scene.

^{IV} Public goods and services are only those which do not serve to an individual

3.1.3. Adjustment of resource creation

The other tool for adjusting the economy is the monetary policy, which uses adjustment of interest rate by the Central bank, defined as “the use of changes in the money supply or interest rates to affect a country’s GDP”⁹. The basic rate of e.g. the Czech National Bank (CNB) has quite a significant effect on interest rates on the financial markets. Through this tool, the bank affects the long-term interest rate, domestic currency exchange rates, bonds and shares. It is interesting that, while during quiet period tight links among those indexes can be predicted, in times of crisis they behave independently.¹⁰

By adjusting the basic interest rate, the central bank signals an expected future inflation tendency. Decrease of the interest rate has an effect on the weakening of the currency or higher earnings for investors.

There are 3 types of CNB interest rates¹¹:

I. 2 week Repo rate

It is the main monetary tool of the central bank, by which it affects the volume of money in the economy. The central bank pulls off the currency from circulation through selling its equity; on the contrary, it releases the currency into the money flow by buying the same equity back.

II. Discount rate

It is a discounted rate for commercial banks, which allows them to deposit money surplus overnight.

III. Lombard rate

It is an interest rate of one day loans for commercial banks.

3.1.4. Deficit creation

Every State creates a plan of financial management for the year ahead, which is drawn up by the government and adopted by the parliament. Its main purpose is to estimate income and expenditures across all sectors of the economy and find a right balance (McConnel & Brue, 2005)⁷. The State budget is a core base for public finance because

of its main concentration and contribution of finances in redistribution of GDP through budget system.

Burda & Wyplocz (2005)⁸ explain: “Governments are not known to be particularly strict in managing their budgets. Deficits are frequent, and most governments are heavily indebted to the private sector and foreigners”. In case a country needs more money in the budget (for instance to finance development, sudden natural disasters or to support strategic industry) it can either increase taxes or borrow. Tax smoothing is a tool for deficit creation to avoid sudden increase of taxes (application of fiscal policy), as a response to temporary shortage of resources caused by extraordinary expenses⁸. Further deepening of the debt is caused by the issued interest.

There is an interesting observation that while European countries have consolidated their budgets in recent years, on average public debt still represents nearly $\frac{3}{4}$ of a year's GDP (as for 2010, IMF reports the EU has an average of over 77% of GDP general government gross debt)⁸. In some countries the stock of public debt still exceeds a full year of national output (see TABLE 2).

There are 3 ways of reducing a debt:

- lower expenses,
- increase taxes,
- or do nothing.

The best way to get rid of accumulated government debt a combination of the first two methods - to retrench expenses and slightly adjust taxes¹². On the other hand, implementing either of the mentioned tools generally leads to dissatisfaction of interest groups that resist cuts (State employees, road construction companies). We often witness public opinion projections in the form of strikes or lawsuits. Interestingly, while many businesses slow down during a recession, law and health businesses are those which prosper.

Furthermore, (certain) governments still have a unique privilege - they can borrow from central banks, which print money to buy the public debt. This unique privilege, based on their monopoly right to create legal tender, is called seigniorage⁸. This step can ultimately lead to a fast money growth and inflation.

If there were only an adjustment of taxes, it would not help, as it was proved that e.g. a twofold tax increase does not lead to a twofold increase of tax revenue (likely due to a decrease of economic activity).

Petr Mach^{12,V} would advise the Czech government to retrench such 2011 expenses as the population census (not likely, since it is an EU-wide initiative), social benefits or government grants on building funds. He sees a chance in introducing tax on hazard games, reduction of primary school attendance by one year, from 9 years to 8, which would instantly increase available workforce, therefore number of taxpayers.

3.1.5. What happens if the government deficit exceeds a certain debt limit?

Certainly, there are limits which (if reached) make the economy go bankrupt in the same way as any other private or legal person. But the difference is in the ways of treating the individuals and governments as borrowers. While no bank would ever loan you more unless a significant portion of your debt was paid, with governments it is different. Unlike people (humans), governments have the advantage of having no clear definition of a lifetime. Nevertheless, it is possible for a country to bankrupt. Historically we experienced the following 3 types of State bankruptcy, caused by¹³:

- 1) Over-indebtedness
- 2) Change of government (regime)
- 3) Decline of the State (after a war)

In this case, we summarize what would happen in the first case, with regards to the current situation in Europe.

Pavel Kohout^{VI} has an interesting point of view¹⁴ on what might happen if a country like Greece would be let to a bankruptcy. His assumptions argue that the difference between a bankruptcy and investments into a financial support would be no more than a few years of difference, after which things should come to the normal state of an economy.

By creating a deficit and borrowing, a government actually increases its “standard of living” which it cannot afford. Just as taking a loan, leasing a car and using a credit

^V Petr Mach – economist and former advisor for economy of the president of the Czech Republic

^{VI} Czech economist and publicist, a member of NERV (National Economic Council), and a former adviser at the Ministry of Finance of the Czech Republic

card, it works as long as you don't have to start to repay. When a government finds itself unable to cover the repayment, it asks for an extension of the repayment period and a refinancing of the debt.

Kohout continues that in case of a State bankruptcy there follows a restructuring of the debt. A creditors' meeting is held and they settle a new repayment calendar – the maturity date is postponed and the interest rates are reduced. Therefore, the value of the State bonds decrease as well. According to Moody's, in such case, average decrease of the State bonds value was 62%, between 1998 and 2008.

If an individual or a firm bankrupts, the executor is likely to ruin the household and to take all the remaining valuables. In case of a State, the creditors want to keep their returns on investments high, but there is no interest to ruin the country. Banks would allow an economical growth in its own interest, so the country would be able to repay the debt.

The short-term effects of a bankruptcy have unfavourable causes and implications, but in the long-run (after couple of years) no consequences have to be noticed. According to findings of financial experts who investigated State bankruptcies in the last 200 years: "Negative effects on a GDP growth, interest rates, ratings and export balance are taken away in 3 years. Costs of State bankruptcy are significant, but short-termed".

Kohout further suggests¹⁴ that instead of offering a 3 years €110 billion bridge loan to Greece, he would let the country bankrupt. But it is impossible due to political reasons. Another difference between a household and a State debt is that the household debt has no effect on incomes of its members, while an increase of the government debt may have a significant effect on the wealth of its citizens. Every healthy economy needs a certain level of a debt, as long as it is under control and the volume of what is loaned creates higher value.

A State bankruptcy may have a positive effect as well, since currency devaluation, which would decrease costs for exports and attract tourism, usually follows.

In case of Eurozone countries, the currency devaluation is only a theoretical idea, as long as the country remains in the Eurozone. Therefore instead an internal devaluation, in form of a decrease of the government spending (wages, rents, social benefits etc.), would take place, which is rather theoretical as well, because of the public unpopularity.

Kohout¹⁴ sees the way out in a form of restructuralization of the State debt, but one which would not be allowed by the interest groups i.e. creditors (banks).

Around October 2010, there was a debate about the devaluation of the Euro currency, because the recovery of economies was slowed down by an appreciation of the Euro¹⁵, but no action has been taken. Other countries like Brazil or Japan, on the other hand, did devaluate their currencies in autumn 2010.

4. The current Crisis

4.1. What caused the financial and economic crisis?

The IMF¹⁶ explains the cause of a crisis as follows: “The causes of economic and financial crises are varied and complex. Key factors can include weak domestic financial systems; large and persistent external or domestic imbalances (including current account deficits or fiscal deficits, or both); high levels of external and/or public debt; exchange rates fixed at inappropriate levels; spillovers of economic and financial crises from other countries; natural disasters; armed conflicts or a sudden and strong increase in the price of key commodities, such as food and fuel”.

The current crisis slightly differs from the explanation above. It basically started up in the US by the burst of the mortgage crisis¹⁷, which was caused by frivolous investments into risky mortgages. With the help of media a wave of hysteria followed, which further created, what somebody calls, a crisis of a confidence.

When the bubble burst there was a crash of the property market, followed by a crash of securities. Owners of the securities started to panic; they tried to sell them, which decreased their values and owners’ return on investment. Consequently it had an effect on their financial activities, which in the large scale had an effect on the global business activity, followed by a recession.

There were people forecasting the crisis before 2007. While at that time, they were accused of lying, currently they are celebrities¹⁸.

4.2. What are the typical impacts of a crisis?

The most influential impacts are:

- Decrease of a value of shares
- Expensive mortgages
- Scarcity of resources in the banking sector which slows down world economies
- Reduction of business activities, manufacturing and subsequent downsizing

Unemployment is a typical lagged indicator, which worsens after the full start of a crisis and improves after recovery. After a burst of a crisis, industrial production and the GDP are first to recover. The situation has come so far that people undervalue their work performance. For the same work which they would ask approximately CZK 50,000 before 2008, now they are happy to earn half the amount.

What a bank crisis started, a recession worsens even more. State deficits are hit by an increase of expenditure and decrease of revenue. What started as a bank crisis ended up as a crisis of public finance. There were various intensities of affection, but almost everyone was affected¹⁹. It is expected that Asian countries would lead the world economy from the world recession.

Interesting findings come from the Financial Crisis Inquiry Commission²⁹: “The Commission concluded that this crisis was avoidable—the result of human actions, inactions, and misjudgements. Warnings were ignored. “The greatest tragedy would be to accept the refrain that no one could have seen this coming and thus nothing could have been done. If we accept this notion, it will happen again“.

4.3. How to approach a crisis?

Do governments have an economic role to play at all? This question has been debated since time immemorial between the right, the left and the centre, between partisans of laissez-faire and interventionists.

There has been an antagonism of micro and macro economy or controversy of Keynes and Friedman/Hayek schools or views of how to manage an economy.

4.3.1. Stockholm School

It is said that John Maynard Keynes⁷ (1883-1946) changed more lives in the modern history than any other scientist. With the introduction of his book *General Theory of Employment, Interest and Money* we associate the birth of macroeconomics. Keynes criticized high unemployment during the great depression and low economic intervention of the government. He believes that government is there to regulate the market to avoid or reduce market failures. Burda & Wyplocz (2005)⁸ state: “one important message of the Keynesian revolution was that fiscal policy can be used to

fight recession in particular when monetary policy is ineffective – either because expansionary monetary policy no longer lowers the nominal interest rate or when investment spending is depressed by bad “animal spirits“. Deficit spending was taken on board in many countries after the WWII, in effect becoming conventional wisdom”. Almost all world economies (US, UK, Japan, Germany etc.) applied Keynesian school for coping with the current crisis¹⁹. Unfortunately, Keynesian policy was in this case too expensive because the majority of prominent States used the stimulation policy even before the start of the crisis.

4.3.2.Chicago School

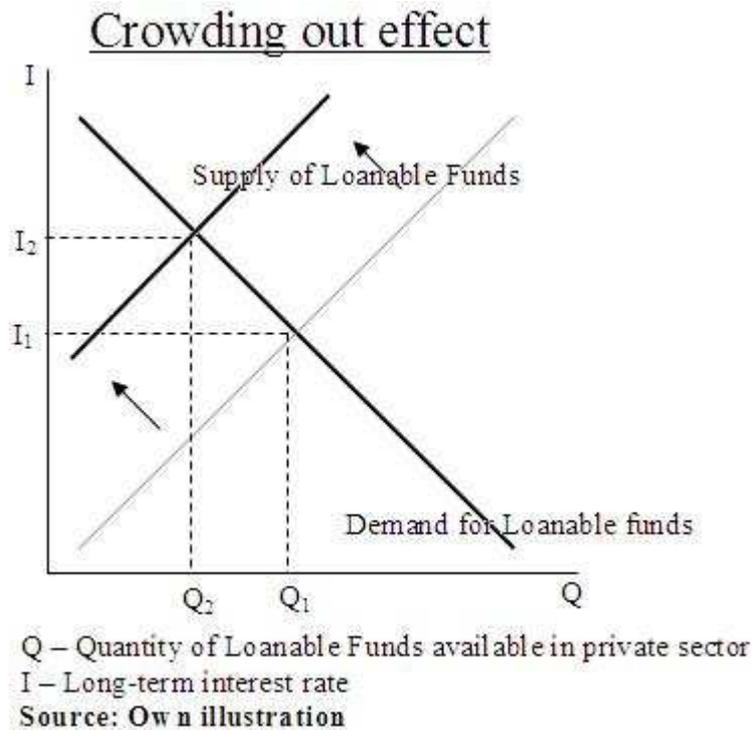
Chicago school, represented by Milton Friedman and Friedrich von Hayek⁸, is a strong supporter of free markets, which Keynesians see as subject to failure. Chicago school believes that:

- governments threaten freedom
- they defend the idea of laissez-faire
- fiscal policy works, while monetary policy is useless
- consumption is the main driver of the economy

While Europe has been more oriented towards Keynesian principals, Chicago school worked well for the UK during the Thatcher era.

Another classification of economic behaviour is according to a monetary policy approach²⁰. There are those who are in favour of lowering the basic interest rate because otherwise it slows down the economic growth - Doves. Those who prefer increasing the basic interest rate in order to fight the inflation are called Hawks.

4.4. Crowding out effect



Under ideal market conditions (and if the theories work), governments have a balanced income and expenditure side, private companies purchase loans from banks, which create its revenue from reinvesting customers' deposits. With stable state of an economy, there is a certain volume of money circulation in the system, which is likely to

slowly increase (if managed well) and all economic theories are likely to hold until there is a market failure^{VII}, which makes the theories behave unpredictably.

If a market failure occurs and a government gets into a budget deficit, government goes to a market (a bank) and asks for a loan or it sells bonds. Both ways eventually mean an increase of expenditure side in the form of unavoidable instalments or ²¹debt-service coverage^{VIII}. Each transaction is valued according to an actual condition of an economy and investors orientate themselves according to e.g. agency ratings. Therefore, we get a monetary value of a bond and an interest rate issued to it (there is an example of long-term interest rates in TABLE 4).

Banks are used to loaning big amounts to private companies and businessmen, but in case of governmental borrowing, we are talking in billions of €. In such case,

^{VII} Market failure Burda & Wyplocz (2005): when markets are not functioning according to theories; i.e. in a situation when there is imperfect competition, information advantages, strong economies of scale or externalities

^{VIII} In government finance, it is the amount of export earnings needed to meet annual interest and principal payments on a country's external debts.

governments actually consume much of the supplied money on the market, which causes an increase of demand for money.

Further, the more the government borrows (and the higher the volume of the debt is), the higher is the percentual interest rate on government bonds is. This means, that the government will get worse conditions for purchasing further loans in the future.

The usual fight against the necessity to borrow more is a decrease of the basic interest rate (in CZE “2 week Repo rate”) by the Central Bank, in order to make borrowing for tax payers cheaper, which has a further effect on economic activity and therefore an increase of tax collection for the government. Interestingly, the government has actually no authority (in Europe and Western world) to adjust the interest rate, as it is in control of the Central Bank, which should act independently from political forces. You can see the counter-effect on behaviour of the basic interest rate and the interest rate on government bonds by comparing TABLE 4 with TABLE 8 and TABLE 12.

In addition, those who loan (or buy government bonds) the government are likely to be financial houses (banks). Petr Mach comments¹² on the Czech government debt that the current situation makes banks buy virtually only government bonds, or they deposit free money in the Czech Central Bank. This is rather an easy way for profit revenue, as lending to business people would be more demanding on e.g. administration etc.

This is a rather dangerous position for every economy. We explained that in order for the economy to work, there is a need for the circulation of a certain amount of money on the market so that the government could collect enough tax revenues to cover expenditures. But the current situation, as described by Petr Mach (and which is common in other European economies), brings us to a dead end. As long as the banks do not start to loan to entrepreneurs, we cannot expect any improvement of the state of the economy.

4.5. The Euro convergence criteria (Maastricht Criteria)

The EU has set 4 strict rules for those who wish to join the Eurozone, exactly because they wanted to prevent the occurrence of e.g. the crowding out effect, at least for a certain time, which would protect the currency after its introduction in 2002. Every member of the Eurozone was to fulfil the Euro convergence criteria. The next section

offers a list of those criteria and analyzes the current situation, proving a non-statistical visibility of poor governmental management among European States.^{IX}

A. Price stability

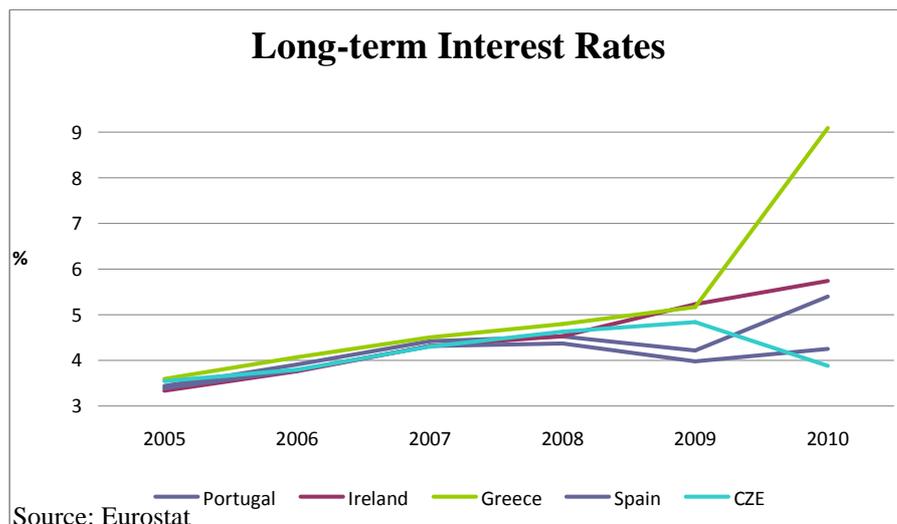
Referred to as the Inflation rate stability, the criterion requires that the average annual inflation rate is not higher than 1.5 percentage points above the reference value, i.e. as long as the rate of a candidate Member State does not exceed that of the best Member States by more than 1.5%, the criterion of price stability is fulfilled²².

Using this definition, according to my own calculation of data from the IMF, the average inflation rate for 2010 was 0.97%, consisting of the average of three best performing countries: the Slovak Republic 0.7%, Portugal 0.9% and the Netherlands 1.3%.

Currently, there are over 3 countries which do not fulfil the criterion. Ireland, which is actually in deflation with -1.6%; Greece – 4.6%; and the UK – 3%; and interestingly Estonia, which joined the Eurozone just in 2011. The Czech Republic fulfils the criterion, it has an inflation of 1.6%.

B. Long-term interest rates developments

Graph No. 1: Long-term Interest Rates



^{IX} For more reading regarding the accession of the Czech Republic into the Eurozone see the following link: <http://www.zavedenieura.cz/cps/rde/xchg/euro/xsl/1003.html>

In the graph, you can clearly see the effect on the long-term interest rate in PIGS countries and the Czech Republic. While according to the Maastricht criteria the rate should not be higher than 2% of the EU average, Spain currently has over 9%, Ireland and Portugal attacking 6%. If those countries were in a position of joining the Eurozone, some would not have a chance, both from the current and the long-term points of view. At Europa.eu²² this criterion is specified: „The long-term interest rates of the Member State applying to introduce the euro are then compared to a reference value. This reference value is obtained by calculating the average of the long-term interest rates of the three best performing EU Member States in terms of price stability. In order to fulfil this criterion, the interest rate of the candidate Member State must not exceed the reference value by more than 2 %.“

For 2010, according to my own calculation, the reference value is equal to 2.85%, represented by Germany – 2.7%, Sweden – 2.9% and Denmark – 2.9%. Those who do not fulfil the criteria are: Portugal – 5.4%; Ireland – 5.7%; Greece – 9.1%; Hungary – 7.3% and many more. The Czech Republic is fine.

C. Government finances

This topic is divided into two parts, which basically say that the candidate country (a member State) must have sustainable government finances. In other words, the candidate's budgetary position must be without a deficit that is excessive in the following two ways²².

I. Public deficit issue

the ratio of the planned or actual government deficit to GDP should not exceed 3% of GDP.

TABLE 1: Public Deficits

Public Deficits, % of GDP										
YEAR	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Czech Republic	-5.6	-6.8	-6.6	-2.9	-3.6	-2.6	-0.7	-2.7	-5.9	-5.4
Estonia	0.3	0.9	2.2	1.6	1.6	3.2	2.9	-2.3	-2.1	-1.1
France	-1.6	-3.2	-4.1	-3.6	-3.0	-2.3	-2.7	-3.3	-7.6	-8.0
Germany	-2.8	-3.7	-4.0	-3.8	-3.3	-1.6	0.2	0.0	-3.1	-4.5
Greece	-4.4	-4.7	-5.6	-7.5	-5.1	-3.1	-3.7	-7.7	-13.6	-7.9
Ireland	0.9	-0.3	0.4	1.4	1.6	2.9	0.1	-7.3	-14.6	-17.7
Italy	-3.1	-3.0	-3.5	-3.6	-4.4	-3.3	-1.5	-2.7	-5.2	-5.1
Luxembourg	6.1	2.1	0.5	-1.1	0.0	1.4	3.6	2.9	-0.7	-3.8
Netherlands	-0.3	-2.1	-3.2	-1.8	-0.3	0.6	0.3	0.4	-5.0	-6.0
Portugal	-2.4	-1.0	0.0	-0.2	-2.5	-0.4	-2.8	-2.8	-9.3	-7.3
Slovak Republic	-6.5	-8.2	-2.8	-2.4	-2.8	-3.4	-1.9	-2.3	-6.8	-8.0
Spain	-0.7	-0.5	-0.2	-0.4	1.0	2.0	1.9	-4.1	-11.2	-9.3
United Kingdom	0.6	-2.0	-3.3	-3.4	-3.3	-2.6	-2.7	-4.9	-10.3	-10.2

Source: IMF

II. Public debt issue

the ratio of government debt to GDP should not exceed 60% of GDP.

TABLE 2: Government Debts

Government Debt, % of GDP										
YEAR	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Czech Republic	24.9	28.2	29.8	30.1	29.7	29.4	29.0	30.0	35.3	40.1
Estonia	4.8	5.7	5.6	5.0	4.6	4.4	3.7	4.6	7.1	8.1
France	56.9	58.8	62.9	64.9	66.4	63.7	63.8	67.5	78.1	84.2
Germany	58.8	60.4	63.9	65.7	68.0	67.6	64.9	66.3	73.5	75.3
Greece	103.7	101.7	97.4	98.6	100.0	97.1	95.6	99.2	115.2	130.2
Ireland	35.5	32.1	30.9	29.4	27.2	24.8	25.0	44.4	65.5	93.6
Italy	108.8	105.7	104.4	103.8	105.8	106.5	103.5	106.1	115.8	118.4
Luxembourg	6.3	6.3	6.2	6.3	6.1	6.5	6.7	13.7	16.5	20.1
Netherlands	50.7	50.5	52.0	52.4	51.8	47.4	45.5	58.2	61.8	66.0
Portugal	51.2	53.8	55.9	57.6	62.8	63.9	62.7	65.4	76.3	83.1
Slovak Republic	48.9	43.4	42.4	41.5	34.2	30.5	29.3	27.7	35.7	41.8
Spain	55.5	52.5	48.7	46.2	43.0	39.6	36.1	39.7	53.1	63.5
United Kingdom	37.7	37.2	38.5	40.2	42.1	43.1	43.9	52.1	68.5	76.7

Source: IMF

If we take the first condition, as for 2010 there would be almost no EU country fulfilling this criterion and the situation is no different in the previous year 2009. See TABLE 1, where gray background shows excess of the condition.

With regards to the second condition, we can basically sum up that all the major European economies have a government debt over 60%. The most uncomfortable situation is in Greece – 130% of GDP, and in Italy – 118%, according to data of the IMF. Experts say that Italy has at least a lot of accumulated assets while Greece has not.

If you take a look at TABLE 2 (the gray background shows excess of the condition), you can see that Greece and Italy are countries, whose government debts were over 60% even before the introduction of the euro. Interestingly, they joined the Eurozone straightaway.

D. Exchange rate developments

The Stability of exchange rate is explained followingly²²: “The European exchange rate mechanism (ERM II)^X is a mechanism covering rates of exchange between the euro and the currencies of Member States which have not adopted the euro. Its main objective is to stabilise European currency rates by avoiding excessive fluctuations between the value of the euro and those of national currencies. A Member State applying to introduce the euro must have participated in the European exchange rate mechanism for at least two years. In addition, it must not have experienced serious tensions in its currency rate during those two years”.

From what has been mentioned above, we can see that currently each analysed country does not fulfil the criteria at least in one out of the 4 conditions. If those indexes were not under control, the EU would probably face a problem as there is one ECB interest rate applied in EMU, but different outcomes.

To understand why the situation in Europe had been as it was described in the sections above, there will follow an assessment of the PIGS countries, followed by an assessment of the Czech Republic and Estonia.

The PIGS represent countries which were managing their public finance so badly which caused that the media and governments talked about the public debts as the most important issue to solve. It is assumed that the PIGS countries were heavily deepening their public debts in the past 10 years, and because the Czech Republic was often confronted with them, the next session will examine the reality.

Below in TABLE 3, we can see the different approaches towards ratings of countries, based on the long-term interest rates.

^X The purpose of ERM II is to maintain stable exchange rates between the euro and the participating national currencies so as to avoid excessive exchange rate fluctuations on the internal market

TABLE 3: Rating assessments of selected countries

	Portugal	Ireland	Greece	Spain	CZE	Estonia
Rating	A-	A-	BB+	AA	A	A
LT interest rate	5.4	5.4	9.09	4.25	3.88	N/A

Source: S&P's²³, ECB

If we take the statistics for assessment of the public debts and their effect on the interest rate in Europe, Estonia and Luxemburg could represent good management examples. Therefore, to compare those so called good and bad examples, Estonia was picked to be compared with the PIGS and the Czech Republic. Luxemburg was omitted due to its relatively small economy compared to the others.

TABLE 4: Long-term Interest Rates

	2005	2006	2007	2008	2009	2010
Portugal	3.44	3.91	4.42	4.52	4.21	5.4
Ireland	3.33	3.76	4.31	4.53	5.23	5.4
Greece	3.59	4.07	4.5	4.8	5.17	9.09
Spain	3.39	3.78	4.31	4.37	3.98	4.25
CZE	3.54	3.8	4.3	4.63	4.84	3.88
Estonia	N/A	N/A	N/A	N/A	N/A	N/A

Source: ECB

PLEASE NOTE: As Estonia has a very limited government debt, there is currently (28/2/2011) no suitable long-term government bonds available on the financial market²⁴.

4.6. World institutions which had a strategic role in coping with the crisis

Some impacts of the current crisis are taken very seriously and they gave birth to many new institutions fighting against repeated necessary interventions into economies.

IMF

The IMF²⁵ was established in 1945, as a reaction on the Great Depression, to oversee the international monetary system to ensure exchange rate stability and encourage

members to eliminate exchange restrictions that hinder trade. Originally it had 29 member countries, currently 187.

The IMF²⁶ works to foster global growth and economic stability. It provides policy advice and financing to members in economic difficulties and also works with developing nations to help them achieve macroeconomic stability and reduce poverty.

The IMF²⁷ explains its function as follows: “A core responsibility of the IMF is to provide loans to member countries experiencing actual or potential balance of payments problems. This financial assistance enables countries to rebuild their international reserves, stabilize their currencies, continue paying for imports, and restore conditions for strong economic growth, while undertaking policies to correct underlying problems. Unlike development banks, the IMF does not lend for specific projects.”

Further, the same resource²⁷ explains when and under which condition a country can borrow from the IMF: „A member country may request IMF financial assistance if it has a balance of payments need - that is, if it cannot find sufficient financing on affordable terms to meet its net international payments while maintaining adequate reserve buffers going forward. An IMF loan provides a cushion that eases the adjustment policies and reforms that a country must make to correct its balance of payments problem and restore conditions for strong economic growth.”

A reverse bitter side of the IMF, and an outcome of the global financial and economic crisis, is an increasing pressure of world economies on its decision making. Particularly the US has been trying to decrease the number of European chairs in favour of themselves, since there are conflicts about new global regulations of bank capital. Moreover, the US is afraid of European stress on saving strategy, which might slow down the world economic recovery²⁸.

The EU rescue fund

Safety stabilization fund is a pot of money, whose purpose is to secure European countries against failure (bankruptcy). It was created by the EU in May 2010. From the total budget of €750 billion, €450 billion come from the Eurozone, €60 billion from the European Commission and the remaining €250 billion from the IMF. The EU rescue

fund will work until 2013, when it will be replaced by the *European Stability Mechanism*^{XVI} (ESM)⁶⁰.

The Financial Crisis Inquiry Commission

The US had sharp approach to the crisis and established this commission as part of the Fraud Enforcement and Recovery Act (Public Law 111-21)²⁹. It functions since May 2009, when it was passed by Congress and signed by the President.

The website of the commission explains²⁹: “The Financial Crisis Inquiry Commission was created to "examine the causes, domestic and global, of the current financial and economic crisis in the United States." This independent, 10-member panel was composed of private citizens with experience in areas such as housing, economics, finance, market regulation, banking and consumer protection. Six members of the Commission were appointed by the Democratic leadership of Congress and four by the Republican leadership. The Commission’s statutory instructions set out 22 specific topics for inquiry and called for the examination of the collapse of major financial institutions that failed or would have failed if not for the exceptional assistance from the government.” The commission is led by Mr. Phil Angelides.

The Institute of International Finance (IIF)

The IIF³⁰: „It is the world’s only global association of financial institutions. Created in 1983 in response to the international debt crisis, the IIF has evolved to meet the changing needs of the financial community. Members include most of the world’s largest commercial banks and investment banks, as well as a growing number of insurance companies and investment management firms. Among the Institute’s Associate members are multinational corporations, trading companies, export credit agencies, and multilateral agencies. Approximately half of the Institute’s members are European-based financial institutions, and representation from the leading financial institutions in emerging market countries is also increasing steadily. Today the Institute has more than 400 members headquartered in more than 70 countries“.

The IIF's main objectives are to³⁰:

- Provide high-quality, timely, and impartial analysis and research to our members on emerging markets and other central issues in global finance.
- Systematically identify, analyze, and shape regulatory, financial, and economic policy issues of relevance to our members globally or regionally.
- Develop and advance representative views and constructive proposals that influence the public debate on particular policy proposals, including those of multilateral agencies, and broad themes of common interest to participants in global financial markets.
- Work with policymakers, regulators, and multilateral organizations to strengthen the efficiency, transparency, stability and competitiveness of the global financial system, with an emphasis on voluntary market-based approaches to crisis prevention and management.
- Promote the development of sound financial systems, with an emphasis on emerging markets.
- Provide a network for members to exchange views and offer opportunities for effective dialogue among policymakers, regulators, and private sector financial institutions.
- Define, articulate, and disseminate best practices and industry standards in such areas as risk management and analysis, disclosure, corporate governance and regulatory compliance.
- Support education and training efforts of our members in priority areas.

Debt rating agencies

By setting a rating, an agency identifies its own degree of confidence or probability rate of a subject's ability to repay its liabilities. The probability rate plays principal role in setting market price and bonds earnings. The bigger the risks, the higher are the interest rates which investors demand. High yields then increase charges for maintaining a debt, which likely deepens a financial crisis and without a financial help it leads to withholding of debt repayment or even to a State bankruptcy¹⁰⁵.

Rating is a key identifier for investors. According to it, investors make decisions about whether to invest into securities or not. The higher the rating is, the lower the further financing of the particular company or State. Special attention is paid to governmental liabilities, which directly influence the state of the particular economy³¹. The most referred rating agencies are: Moody's, Standard & Poor's or Fitch.

According to Financial Times quoted by IDnes.cz³², financial regulators composed list of the most dangerous financial institutions which are sources of threat in the US and the EU. The financial regulators are representing the Board for Financial Stability which was created during the summit of G20. Companies which ended up on the list were American banks and European Insurance companies which due to their difficult structure and numbers of activities are hard to follow and regulate.

Rating agencies are often criticized for their part in the creation of financial crisis in the US. They are accused of misinterpreting the real picture of financial houses, but they are suspected of actually using wrong data, supplied by those financial houses³³. Financial houses acted this way to create an image of stability. An investigation of the following institutions took place: Goldman Sachs, Morgan Stanley, UBS, Citigroup, Credit Suisse, Deutsche Bank, Crédit Agricole and Merrill Lynch. Goldman Sachs had been sued already.

This theory supports outcomes of interviews (done by special board investigating the causes of the crisis) with former employees of Moody^{XI}. They claim that they were forced by the top management to transcribe higher ratings to risky bonds³⁴.

^{XI} Moody's is a corporation on global capital markets, providing credit ratings, research, tools and analysis that contribute to transparent and integrated financial markets.

5. Selected countries and the current crisis

In the previous section we concluded economical theories related to those sectors of economy affected by the crisis. In this section, we conclude and analyse important political and economical events in Europe, from summer 2009 until spring 2011.

Interestingly, media were heavily presenting every step of European governments from autumn 2008 as the financial and economic crisis started. But since start of 2011, there have been very little reporting which would referred to an economical development in relation to the crisis.

Reactions of western governments, as prevention from deep financial and economical crisis, were fast financial injections and various types of supports for regeneration of markets. But sudden increase of government expenses let the media remind the public about deepening of State deficits. Following public hysteria made government to reduce financial injections which opened more discussions. What is actually better?

The IMF came out with an idea how to accumulate resources needed in case of the future crisis, and which would cover future expenditures linked to potential damage of strategic financial institutions. IMF proposed new taxes for financial houses. They talked about fix tax and tax from gain and benefits. Those taxes should be issued specially for insurance companies, hedge funds and other financial houses where hazard with money of clients is higher and therefore the tax would increase along with the risk. The whole idea was an outcome of London's Summit G20, where members agreed that future security package should not be paid by tax payers³⁵.

During 2010, numbers of summits were held to find the best way out of the crises. But the only consensus was on cutting State deficits, which were causing the biggest danger. IMF was moving its world GDP prognoses according to development of governments' interventions and support into the economy, and a progress of GDP development of developing countries, especially China. Many experts believed in ongoing support in order to avoid W-shaped progress of GDP³⁶ in the US, which is likely to happen for those reasons:

- the US government found out that repayment of loans given to financial institutions was faster than expected

- but banks are not releasing more financial capital
- Central banks started to increase their interest rates³⁷

E.g. the Fed assumed that the worst situation was behind us by the start of 2010; therefore there was no need to give banks cheap money (in terms of lending with low interest rate). Question is whether it was a sign of better times in front of us, or hopes of how to avoid coming inflation.

When we look back, European governments (like Germany) started fighting the crisis by introducing e.g. *scrappage program*^{XII} and other actions to boost the economy even before it was necessary. Such fast and unelaborated decision just slightly increased the government expenditure without much help to the economy, because those who fulfilled the conditions would not be able to purchase new car, even discounted, and those who could, could not boost the economy in such small number. Fortunately, this program was not introduced in the Czech Republic.

We might agree that the EU intervention³⁸ into fiscal stimuli and budgetary help, in form of €200 billion package, reduced the impact of economic crisis. Experts found out that there would be at least heavier impact on GDP decline. But no outcomes of financial injections helped to handle other problems like deepening public deficits, slow down of economy or exchange rates. Instead, other artificial instruments were adopted to make e.g. the recovery of GDP faster, but without taking into account basic principles of economic functioning.

5.1. EU

The EU has unique role in the recent financial crisis. Using words of *José Manuel Barroso*^{XIII}, who tried to define the EU on press conference 2007: “the EU is not a super State (like the USA), and it is not an international organization (like NATO or the OECD). It is rather very special and unique organization, where countries are united and they decided to work together with some degree of cooperation or even integration”³⁹. From his statement, we can feel and understand why the EU has not been more radical

^{XII} A government budget program to promote the replacement of old vehicles with modern vehicles

^{XIII} José Manuel Barroso is a Portuguese politician and the current President of the European Commission, since 2004

(like the US, which nationalized many strategic industries) in coping with the crisis. The EU just cannot act that way.

Despite those legal obstructions, in September 2009, the EU managed to adopt an important package of draft legislation to significantly strengthen the supervision of the financial sector in Europe. This package is a beautiful example of the EU cooperation, which José Barroso talked about.

The aim of these enhanced cooperative arrangements is:⁴⁰

- To sustainably reinforce financial stability throughout the EU;
- to ensure that the same basic technical rules are applied and enforced consistently;
- to identify risks in the system at an early stage;
- and to be able to act together far more effectively in emergency situations and in resolving disagreements among supervisors.

The legislation will create:⁴⁰

- a new European Systemic Risk Board (ESRB) to detect risks to the financial system as a whole with a critical function to issue early risk warnings to be rapidly acted on.
- It will also set up a European System of Financial Supervisors (ESFS), composed of national supervisors
- and three new European Supervisory Authorities for the banking, securities and insurance and occupational pensions sectors. There will be:
 - a *European Banking Authority* (EBA),
 - a *European Insurance and Occupational Pensions Authority* (EIOPA),
 - and a *European Securities and Markets Authority* (ESMA).

This step was more or less copy of the US example which established sort of financial control as well. The control should look after all financial products, which might be limited or forbidden for certain time, if the regulators find financial activities too risky or hedonistic.

The focus would be on financial products and derivatives^{XIV} and its control to prevent too dangerous risk which occurs due to visions of high gains. In the US, such steps have been done and Europe should cooperate from 2012⁴¹.

^{XIV} Financial instruments deduced from other actives. Originally used to cover fluctuations on markets, later used for risky operations which might gain huge profit without large investments

The new Authorities will take over all of the functions of those committees, and in addition have certain extra competences, including the following:⁴⁰

- Developing proposals for technical standards, respecting better regulation principles;
- Resolving cases of disagreement between national supervisors, where legislation requires them to co-operate or to agree ;
- Contributing to ensuring consistent application of technical Community rules (including through peer reviews);
- The European Securities and Markets Authority will exercise direct supervisory powers for Credit Rating Agencies;
- A coordination role in emergency situations.

Apart from this control, the EU announced firmer load tests for banks. The tests should be ready by May 2011, they should mainly figure out financial liquidity of 91 European banks and improve confidence on the market⁴².

As well as the IMF introduced the idea of taxation of financial houses, the EU came up with the similar strategy, which would accumulate up to €140 billion, and than fund would cover future causes of financial crises. Financial institutions would put aside money into special funds which would be used for potential salvation of themselves⁴³.

The EU argues that such steps are necessary in order to keep sort of justice among people who deposit financial savings, because as the findings showed, the EU tax payers had contributed over €3.9 billion already, money which could be used in State budgets, to rescue the European bank system. The EU criticized the huge bonuses issued to bankers, and agreed on controlling them⁴⁴.

State budget deficits were the most discussed topic in 2010. The entire unnecessary Keynesian attitude, during the time when creating deficits were contra productive or stupid, and it gave the EU an idea to control the Eurozone approach towards this issue. Some media stated “Time of charity ends”⁴⁵, the EU proposed that from autumn 2010, all EU countries having budget difficulty would be left to its destiny.

In addition, the European Commission announced to Eurozone countries to issue penalties for those, who would not follow its budget regulations. Basically, it is all

about following already set rules by the *Stability and Growth Pact*^{XV} (SGP), which were not strictly followed and its constraints penalized, that gave room to the PIGS to get out of control, and threaten the Eurozone. The EU suggested, and in October 2010⁴⁶, agreed on penalizing all Eurozone countries if their State deficit overruns 60% of GDP and budget deficit would be over 3% of GDP. Sanctions would be measured according to volume of the economy⁴⁷.

TABLE 5: General government gross debts and deficits

General government gross debts and deficits, % of GDP

		2010		2011		2012	
Czech Republic	non-Eurozone	40%	-5.4%	44%	-5.6%	48%	-5.2%
Estonia	Eurozone	8%	-1.1%	8%	-1.7%	11%	-3.2%
France	Eurozone	84%	-8.0%	88%	-6.0%	89%	-4.7%
Germany	Eurozone	75%	-4.5%	77%	-3.7%	77%	-3.0%
Greece	Eurozone	130%	-7.9%	139%	-7.3%	144%	-6.2%
Ireland	Eurozone	94%	-17.7%	102%	-11.2%	104%	-8.8%
Italy	Eurozone	118%	-5.1%	120%	-4.3%	120%	-3.6%
Netherlands	Eurozone	66%	-6.0%	69%	-5.1%	72%	-4.5%
Portugal	Eurozone	83%	-7.3%	87%	-5.2%	90%	-4.8%
Spain	Eurozone	63%	-9.3%	70%	-6.9%	75%	-6.3%
United Kingdom	non-Eurozone	77%	-10.2%	82%	-8.1%	85%	-6.4%

Note: year 2011 and 2012 are estimates

Source: International Monetary Fund, World Economic Outlook Database, October 2010

Just a glimpse on the GDP development, government deficits (see TABLE 5 above) or the unemployment rate (see TABLE 6 below) of the EU and the Eurozone countries shows that the condition of those economies is not good any more, and the estimates do not expect much improvement. Government deficits are out of control and far away from following Maastricht criteria⁴⁸. If the proposal (of issuing penalty for countries with government debt over 60% of GDP) would come true, it would probably mean another increase of debt for more than 9 countries from the EU (see TABLE 5).

Even the president of the Czech Republic, Václav Klaus, talks about bank bankrupt of Eurozone, in the sense of slowing down of GDP development since 1970's. Klaus noticed⁴⁹ decreasing year's average GDP of today's Eurozone countries from 3.4% in 1970's to today's 1.1%, which goes against world's trends.

^{XV} SGP - The intended to ensure that EU Member States maintain budget discipline in order to avoid excessive deficits.

TABLE 6: Unemployment rates

Unemployment rates, % of total labour force

		2010	2011	2012
Czech Republic	non-Eurozone	8%	8%	6%
Estonia	Eurozone	18%	16%	14%
France	Eurozone	10%	10%	9%
Germany	Eurozone	7%	7%	7%
Greece	Eurozone	12%	15%	15%
Ireland	Eurozone	14%	13%	12%
Italy	Eurozone	9%	9%	8%
Netherlands	Eurozone	4%	4%	4%
Portugal	Eurozone	11%	11%	12%
Spain	Eurozone	20%	19%	18%
United Kingdom	non-Eurozone	8%	7%	7%

Note: year 2011 and 2012 are estimates

Source: International Monetary Fund, World Economic Outlook Database, October 2010

The most recently, the EU talks about setting up special laws, which would function as a debt break, and the Czech Republic plans to create its own so called “financial constitution”⁵⁰. The EU plans to create what is called the *Eurozone stability mechanism*^{XVI} (ESM)⁵¹ which should be "brought into the European Union framework", rather being intergovernmental issue as it is now. The ESM’s main features will build on the existing ESFS⁵². The ESM would become an integrated part of the Lisbon Treaty, if ratified by member countries; it should come into effect in January 2013⁵³.

The EU feels that the crisis is not over yet, and that the current 3 year safety mechanism, worth of € 440 billion, would not be enough to cover all costs of more potential disaster. Small part of the fund has been used, but if other economies would need help (e.g. Portugal, Spain, Belgium, Italy), the experts would suggest to increase the fund⁵⁴.

^{XVI} The ESM is a crisis mechanism set up to safeguard financial stability in the euro area. The ESM will complement the new framework for reinforced economic surveillance in the EU. This new framework, which includes in particular a stronger focus on debt sustainability and more effective enforcement measures, focuses on prevention and will substantially reduce the probability of a crisis emerging in the future.

5.2. PIGS

PIGS is an abbreviation for European economies (Portugal, Ireland, Greece and Spain) hit by the crisis, which went into serious troubles due to weak management of public finance and previous deepening of government deficits. Obviously, bad economic conditions were not the only outcome of the crisis itself, but it had its impact in form of increasing government spending and therefore even bigger deepening of government deficits. The EU had to concentrate on improving economic conditions, so those countries would not get into more troubles due to deflation of country's rating, which would cause an outflow of investors and lowering of credibility.

At first, countries tried to loan funds from foreign investors, banks. Then, those who financed deficits were consequently worried about their cash flow, as their income side was likely about to reduce, as the debtors were unable to repay.

Therefore, in a situation when e.g. Ireland runs out of money, it will affect its creditors, the UK and Germany, and the same accounts for France, as a creditor of Spain and Portugal. So, if this scenario will start off, there are probably about to occur dominos effects across Europe⁵⁵.

5.2.1. Portugal

High government debts cause increasing unconfidence of investors, which causes increase of interest rate on government bonds, a common source of financing the government if there are not enough resources from taxation. Most recently, some countries found new way of covering their expenses, in form of financial injections from the IMF, the European Central Bank or the EU. It certainly has an effect on Euro currency but this is a common scenario for all PIGS countries⁵⁶.

Portugal does not belong among such mainstream economies like Greece or Ireland but it has its role in deepening the crisis as it has been a big debtor of Spain⁵⁷. Its problem lies rather in weak public finance than in bad bank conditions like in Ireland. However, Spain tried to push Portugal to ask for financial help from the EU Rescue fund for Eurozone⁵⁸. By the start of 2011, Portugal easily sold its bonds with only little increase on interest rate, which gave Portugal new energy to manage its problems itself, without any help⁵⁹.

Through Portuguese seek to avoid external financial help; the experts predict that it would be inevitable. Portugal might have reasonable long-term interest rate (see TABLE 4), but according to ČSOB analyst Jan Bureš⁶⁰, Portugal will have to loan more as many of its bonds will mature soon. In conjunction with current political and oil crisis in Near East (Libya, Egypt), Portugal will have to refinance its bonds, and investors will not likely to borrow due to uncertain future, therefore Portuguese interest rate on government bonds will probably increase. The only way out, to avoid interest rate over 7%, would be radical changes of financial system or if the situation in Near East would calm down.

5.2.2. Ireland

The problem of Ireland was slightly different from other PIGS countries. With the start of estate boom, Irish banks were purchasing loans from abroad to finance it. Unfortunately, with the arrival of financial and economical crisis, price of properties started to fall and banks ended up without financial resources⁶¹.

Irish problems deepened as the economy was remaining in recession stage⁶² and despite low ability to finance the financial market, Irish government increased its shares in 5 Irish banks so toxic actives worth of tens of million € could be transferred to the State *National Asset Management Agency*, which enables to enrich problem actives and let them work properly out of financial institutions⁶³.

Graph No. 2: % Contribution of loans to Ireland from foreign banks of total €536 billion



Further Irish, debt is more problem of private sector, rather that the public. As per the graph¹⁰³ above, Irish public debt is not a problem, in comparison to debt of Irish banks and private companies. There we can see likely the reason for taking guarantee for Irish

banks deposits by the government. Probably at the beginning of the crisis, the government was sure about its ability to support the financial houses, because of relatively low debt.

The contradiction of one of the highest European government debt, lack of reforms, the financial crisis and the increasing unconfidence of investors caused, that during the fall of 2010, Ireland was facing huge difficulties regarding its budget deficit and governments debt. Due to the named factors, Ireland was caught in a debt trap, which causes an increase of the price of loans which was about 9% higher than in Germany⁶⁴. Therefore Ireland started to negotiate with the Eurozone and the IMF about a financial help to support its markets. At that time, media was speculating about a support worth of between €45 and €120 billion, which should be pumped up in the economy during following 4 years⁶⁵. Finally, Ireland authorized acceptance of €85 billion financial help from the IMF and the EU, with year loan interest 5.8%. €35 billion would be used to support financial system, and the remaining amount would be for used for management of the debt for following 3 years⁶⁶. Among this, the deal included Irish increase of shares in *Allied Irish Bank (AIB)*, as there was strong connection between AIB and estate developers, which appeared to be exterminatory⁶⁷.

In the meantime, rating agency *Standard & Poor's* announced lowering of Irish rating by 2 grades, thanks to the settled loan and Irish promise of higher budget responsibility⁶⁸, other agencies, like Moody's, followed with lowering the rating.

Pavel Kohout noticed⁶⁹, that the only prevention, of Irish type bankruptcy, is elimination of loan bubbles appearance. He believes, that the main risk factor, was bad monetary policy, and as long as it was in control of the Irish Central Bank, no such bubble occurred.

5.2.3. Greece

For number of years, Greek economy was accumulating its government debt and at start 2010 it started to recognize its handicaps in form of Debt Trap. Accordingly, it was shocking when it was discovered that the official numbers supplied by Greece

government were found to be manipulated and that the debt was higher than Greece claimed, even since 2006⁷⁰.

Events which occurred in Greece gave some difficult times to the EU and ECB. The ECB which should be politically independent was at last once (depends on the interpretation) forced to follow the EU instructions which led to many mutual disagreements. E.g., the EU proposed to create its own monetary fund for the Eurozone, as a variance of IMF⁷¹.

The whole problem occurred after many years of no interest and monitoring of Greece. All at once, a huge State deficit showed up and all public, experts, news started running crazy like bolt horses.

There were long discussions about who should help Greece financially. The EU, the ECB, the Eurozone, the IMF, or the World Bank?

The spirit of Greek and Europe financial markets was unsurprisingly not helping the whole situation, and therefore in order to calm down investors low confidence, the EU came with a proposal to provide €500 billion financial injection in case that other EU member would be infected⁷². Germany for instance, promised to contribute with an approximate amount between €123 and €148 billion⁷³. This plan eventually worked out, and straight after the proposal markets went up over 3%. Later, the Eurozone ministers of finance agreed on the way how to create the safety package. The EU would collect from the Eurozone €11.4 billion, IMF would supply €6.5 billion, and the European commission would contribute approximately with €1.6 billion⁷⁴. So far, only theoretical sums, no money transfers were involved.

Moreover, the IMF promised to firm Greece up with an amount up to €250 billion, additional to €30 billion, which had been already sent to Greece⁷², and which was a part of €110 billion package – bridge loan, where Eurozone contributed with €80 billion. If the proposed package would be really used, the financial help would be even bigger (using the present exchange rate) than the *EESA*^{XVII}.

^{XVII} The Emergency Economic Stabilization Act of 2008 - commonly referred to as a bailout of the U.S. financial system, is a law enacted in response to the subprime mortgage crisis authorizing the United States Secretary of the Treasury to spend up to US\$700 billion to purchase distressed assets.

What goes against common intelligence is the fact that Greece, which would be lent this amount, would get it from countries which would have to lend the money for themselves first, and then to redistribute it to Greece, because countries like Portugal or Slovakia would not have any reserves⁷⁵.

Interestingly such stretch forming increased interest in Greece bonds, which were sold for €1.2 billion⁷⁶.

To fight with the debt, and in order to reach the €10 billion support, Greece enounced zero tolerance to tax evasion, decreased wages, and pensions, and increased taxes. Moreover, there were rumours about Greek tendency to sell some of the State assets, like historical heritage or island, to fight the debt even more⁷⁷.

In addition to this problem, it gave great advantage to Euro-sceptics to show EU's weak potential, wrong strategic development, and incorrect EURO adoption into the economy⁷⁸.

At the end, the €110 billion financial support was agreed, and Greece was given longer period of repaying it (7 years) and lower interest by 1% to average 4.2%⁷⁹. It might seem as favourable act by the EU, but only if Ireland (which was given a loan from the EU as well) would be treated the same. Despite Irish try to have common conditions for repaying their loan, it did not get them, which created some bad atmosphere among European diplomats.

5.2.4. Spain

Not only the Czech Republic has noticed that its State deficit has gone too far, but with comparison to Spain, which has been facing the 3rd highest debt in Eurozone, we were just fine. Spain had to introduce the highest budget cuts since 1970's, and State employees would have to accept the fact that their wage would be cut by 5% and by 15% to ministers. The plan was to reduce State deficit from 11% in 2009 to approximately 3% in 2013. Common step was agreed by the G20, under the pressure of German chancellor Angela Merkel, that their deficits would by cut by half by 2013, and their finances would be stabilised by 2016. Banks would increase its capital and tighten regulation¹⁹.

The reason for those steps was to maintain the confidence in investing into the country for foreign investors, which were unwilling to purchase State bonds, due to decrease of rating from AAA to AA+⁸⁰. Moreover, the unemployment rate had gone up and by spring 2010 every 5th Spanish was unemployed, and spirit between the public was predicting huge protest against the cuts⁸¹.

Despite Spain reduction of expenditure side, it introduced policy which planned to invest into the industry, which should increase its share of GDP in the long-run⁸². Further, there were reports, which calculated possible amount needed to cover all bank losses caused by the crisis. The scenario, which was created by the Moody's Investor Service, estimated need for additional capital between €17 billion (in good case) and €306 billion (in the worst case)⁸³.

Fortunately, by start of 2011, Spain managed to sell all its bonds which provided postponement of a need for acute financial help which would finance Spanish government debt. Despite warnings of analysts, Interest rate on the bonds did not increased more than 1%, compare to previous years, to 4.5%⁵⁹.

5.3. The Czech Republic

Even our island, which was supposed to miss the crisis, was affected more than most of managers expected³². The negative picture of the economic impact might be represented by the number of private and firm bankruptcies in the Czech Republic, as the media presented⁸⁴. The information says that there was a threefold increase in these bankruptcies. Furthermore, the Czech Capital Information Agency (ČEKIA)⁸⁵ came up with information about an increasing bankruptcy risk of Czech companies. According to their information, every ordinary 5th and every 3rd agriculture company is facing a bankruptcy risk.

However, despite the fact that Czech shares recorded its bottom in March 2009 and after two strong waves it had come back to the value from October 2008 before the fall of Lehman Brothers⁸⁶. Those who invested in shares in February 2009 might make a fortune.

Despite the Czech Republic was not really hit by the financial crisis, nonetheless the Czech National Bank has built up bank load tests – scenarios of a possible impact on

Czech banks in case of domestic or foreign economical problems. The Czech National Bank report stated, those load tests showed up that Czech financial sector was sufficient enough to face negative shocks⁸⁷.

By the spring 2010, new signs of improvements occurred in form of increasing number of purchase orders and higher customer spending⁸⁸ and even though there were continuous decrease of real estate development activities (mainly by Irish companies⁸⁹), the Czech Republic scored as the most stable country in the Central and East Europe region. According to research of *Merril Lynch* and *Bank of America*⁹⁰, the Czech Republic is the least vulnerable to external imbalance in the mentioned region. The findings were based on an assessment of countries willingness into reforms, budget stability, and volume of the external debt. The high score means that the CZE should not have a problem to retain financing on foreign markets which was reflected in long-term interest rates and value of government bonds (there are rated as the least risky).

The relation of the Czech Republic to the complex EU debt approach (strategy) is rather complicated, due to the fact that we are not in the Eurozone. Nonetheless, we would take a part in negotiation about the ESM as a monitor, but Miroslav Kalousek^{XVIII} does not recommend participating in it, because of a high demand for contribution into the fund. According to him, the Czech Republic would have to put into the fund up to € 7 billion, within the next 3 years⁹¹.

5.4. USA

The USA has been maintaining its position as the global economic leader for several years. But currently it wasn't far away from being overtaken by China, which uncrowned Japanese second place in summer 2010. According to experts from *Goldman Sachs* and other institutions, China, having the constant GDP growth as it was in the summer 2010, would catch up with the US in 2025⁹².

The *Troubled Assets Relief Program* (TARP) package was accepted in October 2008 and the US government earmarked \$700 billion to stop disaster in form of imminent crash of financial system. Most of the money was supposed to be used as a loan to

^{XVIII} Miroslav Kalousek – currently the Czech minister of finance

banking houses, their stabilization and recapitalization. Surprisingly, with regards to the speed of repaying instalments, financial institutions would not need as much of a financial help as was predicted, and if they are right, the US government would save as much as one third of considered amount⁹³. If conditions would remain the same for the next years, then the US government may focus on a creation of new jobs for US people. Nevertheless the banks are doing so well, the US president hopes for more help in an invigoration of the economy by those institutions, as he believes they own the public this service since they are responsible for the start up of the crisis. But on the other hand, the experts warn against such a government pressure, because it is exactly what engineered the crisis as the government was putting more pressure on banks to release more finance even to the less wealthy clients⁹⁴.

The American minister of finance nearly lost his job due to his incapability to cope with the crisis. Even though the TARP package was not used all, because there was a little demand, the US president announced to support the economy by investing into the US infrastructure. He proposed to invest up to \$50 billion into reconstruction of roads, railways and runways, and to firm up research and development by companies through tax reliefs, which would outlet up to \$100 billion in following 10 years⁹⁵.

First sign of better times came in October 2009, one year after the burst out of the financial crisis. The American economy marked a growth of 3.5% and technically it went out of the recession in June 2009⁹⁶. According to the *National Bureau of Economic Research* (NBER)⁹⁷, the recession lasted for 18 months and it was the longest one since WW2. Nevertheless the US economy was not recovering as fast as it was expected⁹⁸, the representatives hope that the worst is behind.

On December 11 2009, the US House of Representatives approved a draft of an act for regulation of the financial markets. This act is understood as the biggest change since 1930's and it covers a work which started in autumn 2008. The impact should be on creation of the Consultation body which would be responsible for controlling of system risk, rating agencies (since they are accused of playing the biggest role on the financial crisis) and hedge funds which might be source of troubles in the future. The group should compact professionals from various authorities, e.g. Consumer Financial Protection Agency (CFPA) and Fed⁹⁹.

5.4.1. Reform of the Wall Street

Because there were heavy debates about the Wall Street responsibility for the current crisis, the US government decided to take the action by creation a reform. By January 2001, the White House¹⁰⁰ proposed *Financial Crisis Responsibility Fee*, a program which was created in order to recover every dollar invested in TARP. The fee will be in place for 10 years, or longer if not repaid. Detailed information is available at www.whitehouse.com.

The president introduced it followingly: “My commitment is to recover every single dime the American people are owed. And my determination to achieve this goal is only heightened when I see reports of massive profits and obscene bonuses at the very firms who owe their continued existence to the American people – who have not been made whole, and who continue to face real hardship in this recession. That’s why I’m proposing a Financial Crisis Responsibility Fee to be imposed on major financial firms until the American people are fully compensated for the extraordinary assistance they provided to Wall Street.”

It was definitely a revolutionary step which gave more authority to the US government, approved by the senate in May 2010, signed by the president in July 2010.

Very controversial step from the US government came in November 2010¹⁰¹, when the *Fed* announced to buy back government bonds in total sum of \$600 billion. This action should inject new money into the economy and therefore cheapen loans - seigniorage. On the other hand it is criticized that the US would in fact just print out new money, which is against the new system of free courses and the US actually did not deny it.

6. Econometric modelling

In this section, we would like to show that there is an occurrence of the crowding out effect in all PIGS countries and in the Czech Republic, while in Estonia crowding out effect will not be detected. The related theory is explained in the heading 4.4.

For the detection of the crowding out effect, we use econometric modelling; the outcomes will be demonstrated, explained and evaluated. For the matrix calculation we use Microsoft EXCEL and its functions. To see the matrix calculation steps, see the supplements in the heading 8. Annex.

In the model, we work with one dependent variable – **long-term interest rate** (in %); and 3 independent variables which should explain the dependant variable. The independent variables are – **Current account balance** (% of GDP), **General government gross debt** (% of GDP) and **central bank interest rate** (in %). At the end, the hypothesis (which was introduced at the beginning of this thesis) will be assessed. If the hypothesis is to be confirmed, at least two independent variables (except the unit variable x_1) should have a significant effect on the dependent variable in majority of the studied countries.

Each country has a table of the economic data attached, representing the most recent development of the particular country.

Finally, we try to estimate the future long-term interest rate behaviour based on estimated data from the IMF, as per TABLE 7 on the next page. The IMF estimates the economical development for 5 years ahead.

TABLE 7: Values used for calculation of the future long-term interest rates developments

Values used for calculation of the future long-term interest rates developments							
		value	2011	2012	2013	2014	2015
Portugal	x ₂	% of GDP	-9.17	-8.98	-8.39	-8.23	-8.41
	x ₃	% of GDP	87.09	89.96	91.57	94.79	97.80
	x ₄	%	0.25	0.25	0.25	0.25	0.25
Ireland	x ₂	% of GDP	-1.13	-1.17	-1.23	-1.23	-1.24
	x ₃	% of GDP	101.68	104.00	104.71	104.69	104.49
	x ₄	%	0.25	0.25	0.25	0.25	0.25
Greece	x ₂	% of GDP	-7.75	-6.85	-5.97	-5.09	-4.03
	x ₃	% of GDP	139.35	143.58	143.99	139.37	133.89
	x ₄	%	0.25	0.25	0.25	0.25	0.25
Spain	x ₂	% of GDP	-4.75	-4.55	-4.30	-4.24	-4.29
	x ₃	% of GDP	70.22	75.05	78.58	80.60	81.99
	x ₄	%	0.25	0.25	0.25	0.25	0.25
CZE	x ₂	% of GDP	-0.59	-0.62	-0.59	-0.50	-0.27
	x ₃	% of GDP	44.43	47.88	51.12	54.12	56.91
	x ₄	%	0.75	0.75	0.75	0.75	0.75

Source: x₂ and x₃ IMF, x₄ expected behaviour based on own assumptions

x₂ – Current account balance; x₃ – General government gross debt; x₄ – Central bank basic interest rate

Portugal

Portugal has made a good progress since joining the EU. Despite the current problems which put Portugal among the indebtedest European countries, Portugal is a beautiful country with the economical development above the EU average until 2001. Since then it has been fighting with its long-term interest rate development, which has been increasing since 2005 again. In addition, Portugal strongly refuses any financial help from the IMF and the EU, which according to experts is necessary. Apparently, it wants to avoid being in position like Greece. See long-term interest rates development in TABLE 4.

For more information about Portugal see the heading 5.2.1.

TABLE 8: Development of Portuguese economy

Development of Portuguese economy

Year	Central Bank interest rate	GDP, constant prices	Inflation, average consumer prices	General government net lending/borrowing	Current account balance	General government gross debt
	%	% change	% change	% of GDP	% of GDP	% of GDP
1999	2.00	4.1	2.2	-0.9	-8.2	49.6
2000	3.75	3.9	2.8	-1.1	-9.8	48.5
2001	2.25	2.0	4.4	-2.4	-9.5	51.2
2002	1.75	0.7	3.7	-1.0	-7.7	53.8
2003	1.00	-0.9	3.3	0.0	-5.8	55.9
2004	1.00	1.6	2.5	-0.2	-7.2	57.6
2005	1.25	0.8	2.1	-2.5	-9.1	62.8
2006	2.50	1.4	3.0	-0.4	-9.6	63.9
2007	3.00	2.4	2.4	-2.8	-9.0	62.7
2008	2.00	0.0	2.7	-2.8	-11.6	65.4
2009	0.25	-2.6	-0.9	-9.3	-10.0	76.3
2010	0.25	1.1	0.9	-7.3	-10.0	83.1

Source: Eurostat¹⁰² and IMF¹⁰⁴

PLEASE NOTE: Matrix calculations are available in annex

We prepared matrixes from previously mentioned variables (no lagged variables), from which no correlation was detected.

From the matrix multiplication of the above mentioned variables, we obtained the following equation which explains relations between the variables:

$$y_t = 4.24 - 0.12x_{2t} - 0.01x_{3t} + 0.06x_{4t} + u_{1t}; \text{ the error term ranges from } -1.1 \text{ to } 1.1.$$

The *Coefficient of determination* (R^2), which shows how many percent of the dependent variable is explained by the analysed relationship, was unable to calculate, due to negative numbers.

To find the significance of exogenous variables we used the following values:

Number of observations: 12

Number of explanatory variables: 4

Degrees of freedom: 8

t-tab. value ($\alpha=0,1$): 1.8595

From those we found out that:

x_1 – Unit variable: **significant**

x_2 – current account: **insignificant**

x_3 – government debt: **insignificant**

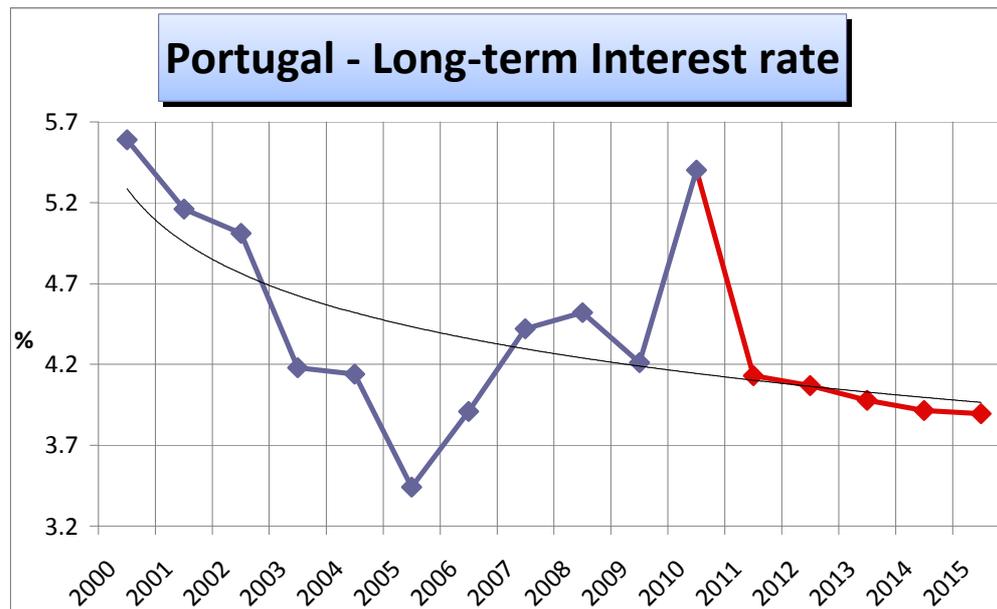
x_4 – basic interest rate: ... **insignificant**

Therefore the hypothesis is **NOT CONFIRMED**.

If we use the estimated equation and apply the data from TABLE 7, we will get a prediction of the long-term interest rate development for the selected country, as per the graph below.

The **blue line** shows the real historical development, the **red line** shows the estimated behaviour based on the calculated equation. The **black line** represents a logarithmic trend line. The results take account of the *average error term*, which is **-0.013**.

Graph No. 3: Prediction of Portuguese long-term interest rate



Ireland

Ireland is a curious case because of its recent history in which Ireland scored as the Celtic Tiger. And despite the fact that Ireland had received the €85 billion financial help in autumn 2010, according to Hans-Werner Sinn^{XIX103}, it wasn't bankrupting because Irish GDP per capita (in constant prices) was by €10,000 higher than the German's one (IMF 28/2/2011- GDP per capita 2009: Germany € 26,531; Ireland € 37,303⁰⁴).

From the table below, we can see Irish good economical progress until 2007. From 2000 to following 7 years, the **GDP growth** was high and stable, the **inflation** stable, Ireland had balance its **lending/borrowing** portfolio, and the **public debt** was

^{XIX} Hans-Werner Sinn is chair of IFO institute, a research group unique in Europe in the area of economic research. It combines the theoretically oriented economic research of the university with the empirical work of a leading Economic research institute and places this combination in an international environment.

decreasing. The described tendency changed with the start of the current crisis in 2007. The most shocking is the growth of the government debt, which over doubled in the last 3 years.

For more information about Ireland see the heading 5.2.2.

TABLE 9: Development of Irish economy

Development of Irish economy						
Year	Central Bank interest rate	GDP, constant prices	Inflation, average consumer prices	General government net lending/borrowing	Current account balance	General government gross debt
	%	% change	% change	% of GDP	% of GDP	% of GDP
1999	2.00	10.9	2.5	2.4	0.3	48.5
2000	3.75	9.7	5.3	4.8	-0.4	37.8
2001	2.25	5.7	4.0	0.9	-0.6	35.5
2002	1.75	6.5	4.7	-0.3	-1.0	32.1
2003	1.00	4.4	4.0	0.4	0.0	30.9
2004	1.00	4.6	2.3	1.4	-0.6	29.4
2005	1.25	6.0	2.2	1.6	-3.5	27.2
2006	2.50	5.3	2.7	2.9	-3.6	24.8
2007	3.00	5.6	2.9	0.1	-5.3	25.0
2008	2.00	-3.5	3.1	-7.3	-5.2	44.4
2009	0.25	-7.6	-1.7	-14.6	-3.0	65.5
2010	0.25	-0.3	-1.6	-17.7	-2.7	93.6

Source: Eurostat¹⁰² and IMF¹⁰⁴

PLEASE NOTE: Matrix calculations are available in annex

From previously mentioned variables (no lagged variables), we prepared matrixes from which no correlation was detected.

From the matrix multiplication of the above mentioned variables, we obtained the following equation which explains the relations between the variables:

$$y_t = 2.68 + 0.11x_{2t} + 0.04x_{3t} + 0.38x_{4t} + u_{1t}; \text{ the error term ranges from } -0.5 \text{ to } 0.6.$$

The *Coefficient of determination* (R^2), which shows how many percent of the dependent variable is explained by the analysed relationship, equals to **67.3%**.

To find the significance of the exogenous variables we used the following values:

Number of observations: 12

Number of explanatory variables: 4

Degrees of freedom: 8

t-tab. value ($\alpha=0,1$): 1.8595

From those we found out that:

x_1 – Unit variable:..... **significant**

x_2 – current account:..... **insignificant**

x_3 – government debt:..... **significant**

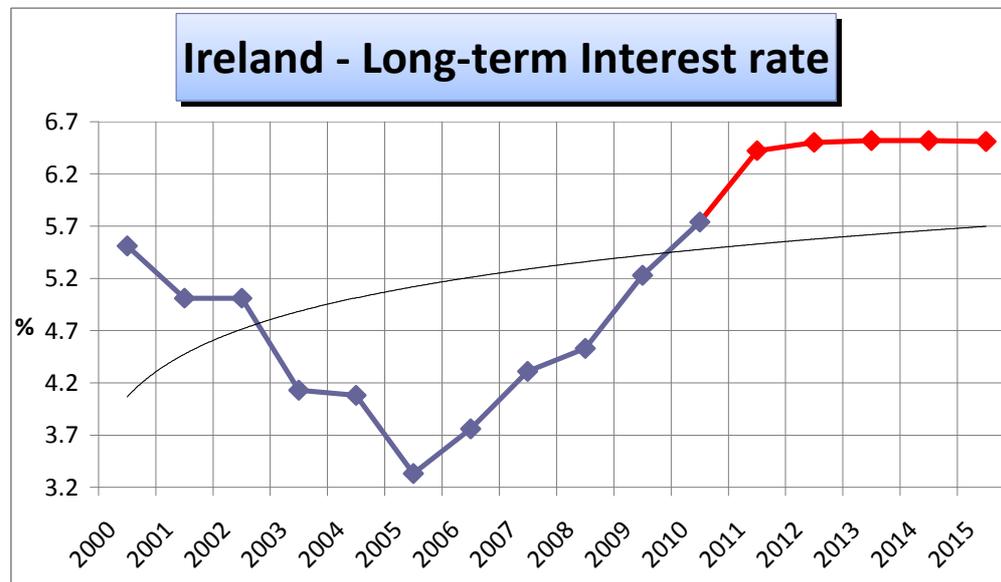
x_4 – basic interest rate: ... *significant*

Therefore the hypothesis is **CONFIRMED**.

If we use the estimated equation and apply the data from TABLE 7, we will get a prediction of the long-term interest rate development for the selected country, as per the graph below.

The **blue line** shows the real historical development, the **red line** shows the estimated behaviour based on the calculated equation. The **black line** represents a logarithmic trend line. The results take account of the *average error term*, which is **0.048**.

Graph No. 4: Prediction of Irish long-term interest rate



Greece

Greece had repeatedly received financial assistance and a lot was done to avoid its possible bankruptcy and the likely domino effect in other linked economies in Eurozone and in the rest of Europe. It received a € 110 billion financial assistance which resulted in recalculation of current loan, and longer time for repayment of the debt⁹⁰. Of course it had an effect on the long-term interest rate, which rose by almost 4% in one year (see TABLE 4).

By March 2011, rating agencies and other experts started to predict an inevitable controlled bankruptcy of Greece so its rating decreased to almost speculative level¹⁰⁵. This step was a copy of the markets' notion, and it probably brought more troubles for

Greece, as there would be higher outflow of investors, and therefore likely the expected bankruptcy.

Cia.gov explains¹⁰⁶ that due to the fact that Greece is one main beneficiary of EU aid, equal to about 3.3% of annual GDP, it is under a vigorous pressure by the EU and other interest groups. „Therefore the government has adopted a medium-term austerity program that includes cutting government spending, reducing the size of the public sector, decreasing tax evasion, reforming the health care and pension systems, and improving competitiveness through structural reforms to the labour and product markets“.

For more information about Greece see the heading 5.2.3.

TABLE 10: Development of Greek economy

Development of Greek economy

Year	Central Bank interest rate	GDP, constant prices	Inflation, average consumer prices	General government net lending/borrowing	Current account balance	General government gross debt
	%	% change	% change	% of GDP	% of GDP	% of GDP
1999	2.00	3.4	2.2	-3.1	-5.3	102.5
2000	3.75	4.5	2.9	-3.7	-7.7	103.4
2001	2.25	4.2	3.7	-4.4	-7.2	103.7
2002	1.75	3.4	3.9	-4.7	-6.5	101.7
2003	1.00	5.9	3.4	-5.6	-6.6	97.4
2004	1.00	4.6	3.0	-7.5	-5.8	98.6
2005	1.25	2.2	3.5	-5.1	-7.3	100.0
2006	2.50	4.5	3.3	-3.1	-11.3	97.1
2007	3.00	4.5	3.0	-3.7	-14.4	95.6
2008	2.00	2.0	4.2	-7.7	-14.6	99.2
2009	0.25	-2.0	1.4	-13.6	-11.2	115.2
2010	0.25	-4.0	4.6	-7.9	-10.8	130.2

Source: Eurostat¹⁰² and IMF¹⁰⁴

PLEASE NOTE: Matrix calculations are available in annex

We prepared matrixes from the previously mentioned variables (no lagged variables), from which no correlation was detected.

From the matrix multiplication of the above mentioned variables, we obtained the following equation which explains relations between the variables:

$$y_t = -12.49 + 0.07x_{2t} + 0.17x_{3t} + 0.61x_{4t} + u_{1t}; \text{ the error term ranges from } -0.9 \text{ to } 0.9.$$

The *Coefficient of determination* (R^2), which shows how many percent of the dependent variable is explained by the analysed relationship, equals to **78.2%**.

To find the significance of the exogenous variables we used the following values:

Number of observations: 12

Number of explanatory variables: 8

Degrees of freedom: 4

t-tab. value ($\alpha=0,1$): 1.8595

From those we found out that:

x_1 – Unit variable:..... **significant**

x_2 – current account:..... **insignificant**

x_3 – government debt:..... **significant**

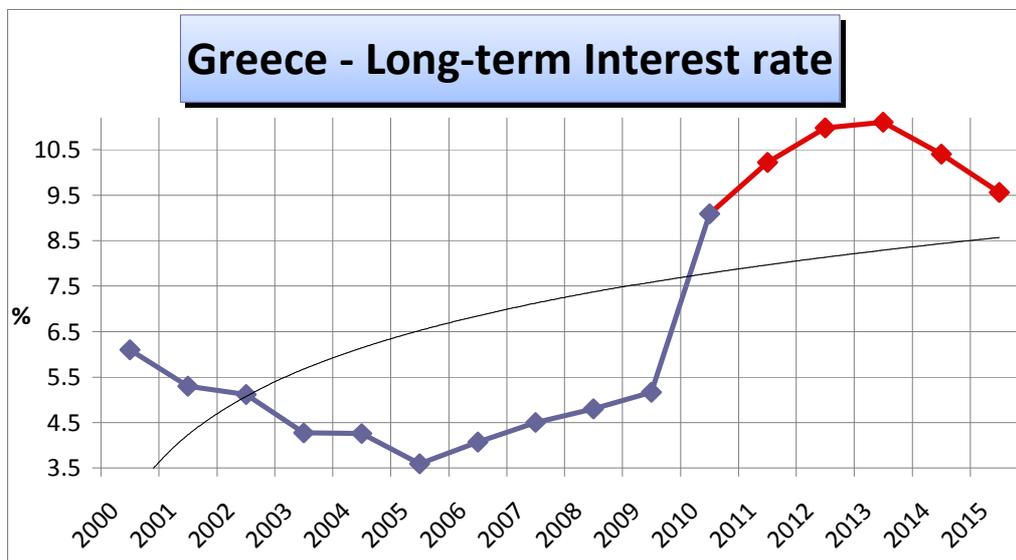
x_4 – basic interest rate: ... **significant**

Therefore the hypothesis is **CONFIRMED**.

If we use the estimated equation and apply the data from TABLE 7, we will get a prediction of the long-term interest rate development for the selected country, as per the graph below.

The **blue line** shows the real historical development, the **red line** shows the estimated behaviour based on the calculated equation. The **black line** represents a logarithmic trend line. The results take account of the average error term, which is **-0.08**.

Graph No. 5: Prediction of Greek long-term interest rate



Spain

According to cia.gov¹⁰⁷, Spain is currently the 12th largest world economy. Before 2007, it was one of the leading European economies with GDP growth above the EU average.

Currently, Spain is fighting with the recession, very high unemployment rate (see TABLE 6, p. - 33 -) and increasing government debt, which rose almost twice in the last 3 years. The main thread would be a fall of Portugal economy, which would bring some more troubles to finance the Spanish debt.

For more information about Spain, see the heading 5.2.4.

TABLE 11: Development of Spanish economy

Development of Spanish economy						
Year	Central Bank interest rate	GDP, constant prices	Inflation, average consumer prices	General government net lending/borrowing	Current account balance	General government gross debt
	%	% change	% change	% of GDP	% of GDP	% of GDP
1999	2.00	4.7	2.2	-1.4	-2.9	62.3
2000	3.75	5.1	3.5	-1.0	-4.0	59.3
2001	2.25	3.6	2.8	-0.7	-3.9	55.5
2002	1.75	2.7	3.6	-0.5	-3.3	52.5
2003	1.00	3.1	3.1	-0.2	-3.5	48.7
2004	1.00	3.3	3.1	-0.4	-5.3	46.2
2005	1.25	3.6	3.4	1.0	-7.4	43.0
2006	2.50	4.0	3.6	2.0	-9.0	39.6
2007	3.00	3.6	2.8	1.9	-10.0	36.1
2008	2.00	0.9	4.1	-4.1	-9.7	39.7
2009	0.25	-3.7	-0.2	-11.2	-5.5	53.1
2010	0.25	-0.3	1.5	-9.3	-5.2	63.5

Source: Eurostat¹⁰² and IMF¹⁰⁴

PLEASE NOTE: Matrix calculations are available in annex

We prepared matrixes from the previously mentioned variables (no lagged variables). There was found a correlation between x_2 and x_3 . Therefore we prepared 1st differences of x_2 , the number of the time series was reduced to 11, and the correlation was eliminated.

From the matrix multiplication of the above mentioned variables, we obtained the following equation which explains the relations between the variables:

$$y_t = 1.37 - 0.09x_{2t} + 0.05x_{3t} + 0.46x_{4t} + u_{1t}; \text{ the error term ranges from } -0.4 \text{ to } 0.3.$$

The *Coefficient of determination* (R^2), which shows how many percent of the dependent variable is explained by the analysed relationship, equals to **70.8%**.

To find the significance of the exogenous variables we used the following values:

Number of observations: **11**

Number of explanatory variables: **4**

Degrees of freedom: **7**

t-tab. value ($\alpha=0,1$): **1.8946**

From those we found out that:

x_1 – Unit variable: **significant**

x_2 – current account: **insignificant**

x_3 – government debt: **significant**

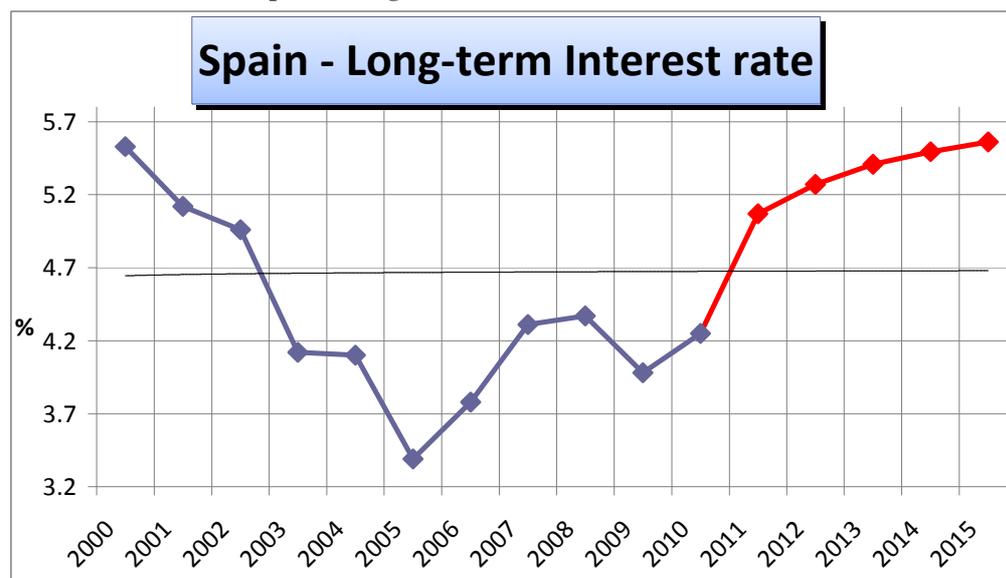
x_4 – basic interest rate: .. **significant**

Therefore the hypothesis is **CONFIRMED**.

If we use the estimated equation and apply the data from TABLE 7, we will get a prediction of the long-term interest rate development for the selected country, as per the graph below.

The **blue line** shows the real historical development, the **red line** shows the estimated behaviour based on the calculated equation. The **black line** represents a logarithmic trend line. The results take account of *average error term*, which is **0.0**.

Graph No. 6: Prediction of Spanish long-term interest rate



The Czech Republic

The Czech Republic is hopefully experiencing improvement of the economy. There is an increasing number of available positions on the labour market; business people report an increase of their revenues, as the consumption has been attacking historical records again.

Currently, the Czech Republic has been applying more of the right hand economical approach and number of reforms has been accepted regarding the taxation, healthcare, social reforms, in order to free up the economy.

Cia.gov¹⁰⁸ sees current problems of the Czech Republic in a corruption, population aging or in a creation of suitable pension and healthcare system. The issues regarding the healthcare gave some difficult times to the current government.

Many believe that the increasing government debt is actually the main problem to solve for the government. If we take a look at the data table below (see TABLE 12) and compare it with the other selected countries, from that basic comparison we can assess that the media is probably reporting about the situation worse than it is.

For more information about the Czech Republic see the heading 5.3.

PLEASE NOTE: For matrix calculation, we prepared interest rate data, extracted from the CNB's historical development of the REPO rates. There is year average interest rate, based on own calculation and source from the CNB¹⁰⁹.

TABLE 12: Development of Czech economy

Development of Czech economy						
Year	Central Bank interest rate	GDP, constant prices	Inflation, average consumer prices	General government net lending/borrowing	Current account balance	General government gross debt
	%	% change	% change	% of GDP	% of GDP	% of GDP
1999	6.69	1.3	2.1	-3.7	-2.4	16.4
2000	5.25	3.6	3.8	-3.7	-4.7	18.5
2001	5.00	2.5	4.7	-5.6	-5.3	24.9
2002	3.65	1.9	1.9	-6.8	-5.7	28.2
2003	2.25	3.6	0.1	-6.6	-6.3	29.8
2004	2.38	4.5	2.8	-2.9	-5.3	30.1
2005	2.00	6.3	1.8	-3.6	-1.3	29.7
2006	2.38	6.8	2.5	-2.6	-2.5	29.4
2007	3.13	6.1	2.9	-0.7	-3.3	29.0
2008	3.06	2.5	6.3	-2.7	-0.6	30.0
2009	1.38	-4.1	1.0	-5.9	-1.1	35.3
2010	0.75	2.0	1.6	-5.4	-1.2	40.1

Source: Eurostat¹⁰² and IMF¹⁰⁴

PLEASE NOTE: Matrix calculations are available in annex

We prepared matrixes from the previously mentioned variables (no lagged variables). There was found a correlation between x_3 and x_4 . Therefore we prepared 1st differences of x_3 , number of the time series was kept to 11, and the correlation was eliminated. In

this case we could not prepare more than 11 observations, because there is no data for the long-term interest rate before 2000.

From the matrix multiplication of the above mentioned variables, we obtained the following equation which explains relations between the variables:

$$y_t = 2.69 + 0.01x_{2t} - 0.16x_{3t} + 0.61x_{4t} + u_{1t}; \text{ the error term ranges from } -0.5 \text{ to } 0.8.$$

The *Coefficient of determination* (R^2), which shows how many percent of the dependent variable is explained by the analysed relationship, equals to **73.1%**.

To find the significance of the exogenous variables we used following values:

Number of observations: **11**

Number of explanatory variables: **4**

Degrees of freedom: **7**

t-tab. value ($\alpha=0,1$): **1.8946**

From those we found out that:

x_1 – Unit variable: **significant**

x_2 – current account: **insignificant**

x_3 – government debt: **significant**

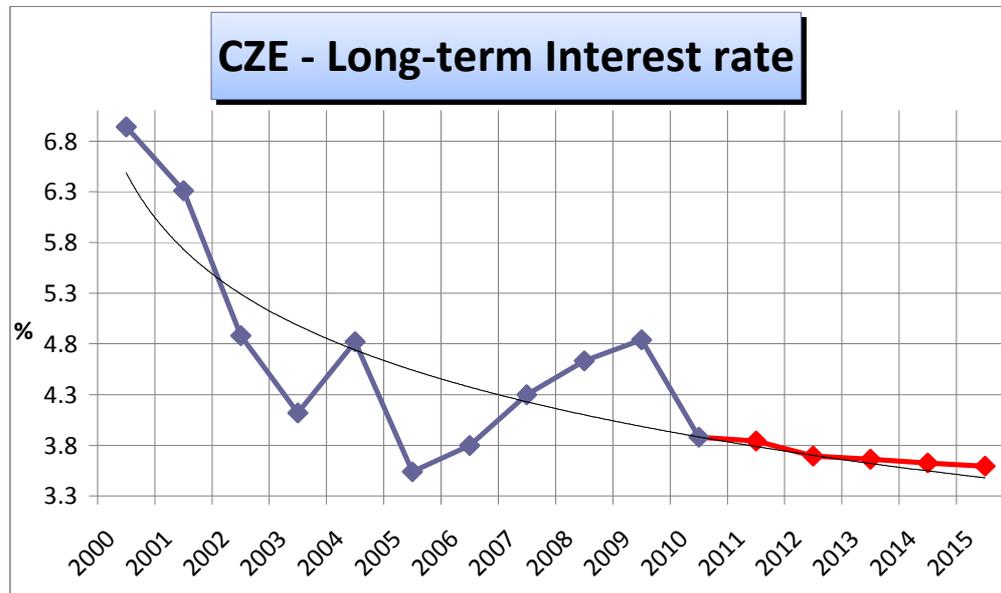
x_4 – basic interest rate: .. **significant**

Therefore the hypothesis is **CONFIRMED**.

If we use the estimated equation and apply the data from TABLE 7, we will get a prediction of the long-term interest rate development for the selected country, as per the graph below.

The **blue line** shows the real historical development, the **red line** shows the estimated behaviour based on the calculated equation. The **black line** represents a logarithmic trend line. The results take account of the *average error term*, which is **0.0**.

Graph No. 7: Prediction of Czech long-term interest rate



Estonia

Estonia is currently the last joining member of the Eurozone. The reasoning for accession of the Euro currency market was often discussed among the experts, because of the presently unpredictable future, as there were rumours about a near extinction or creation of a new currency. Joining the Eurozone at the present time was considered rather a risky action.

Taking in consideration relatively a low public debt, we can assume that Estonia should not have difficulties to cope with the crisis. In addition, the economy is rather dependent on the condition of Russian and Scandinavian economies which invested in Estonia.

On the other hand, the debt rose twice in the last 3 years, which is as much as for Ireland or Spain, and its economical growth dropped significantly in 2008, which led the country into a deep recession. The cia.gov states:¹¹⁰ „Tallinn's priority has been to sustain high growth rates - on average 8% per year from 2003 to 2007. Estonia's economy slowed down markedly and fell sharply into recession in mid-2008, primarily as a result of an investment and consumption slump following the bursting of the real estate market bubble“.

There we can see common progress like in Ireland, where a burst of the real estate bubble took its victims, in form of a high unemployment rate.

Both the drop of GDP growth and the increase of the public debt are clearly visible in the table below.

TABLE 13: Development of Estonian economy

Development of Estonian economy						
Year	Central Bank interest rate	GDP, constant prices	Inflation, average consumer prices	General government net lending/borrowing	Current account balance	General government gross debt
	%	% change	% change	% of GDP	% of GDP	% of GDP
1999	3.25	-0.3	3.3	-4.2	-4.3	6.0
2000	4.45	10.0	4.0	-0.9	-5.4	5.1
2001	2.70	7.5	5.8	0.3	-5.2	4.8
2002	3.07	7.9	3.6	0.9	-10.6	5.7
2003	2.17	7.6	1.3	2.2	-11.3	5.6
2004	2.25	7.2	3.0	1.6	-11.3	5.0
2005	2.32	9.4	4.1	1.6	-10.0	4.6
2006	3.59	10.6	4.4	3.2	-15.3	4.4
2007	6.53	6.9	6.6	2.9	-17.2	3.7
2008	6.69	-5.1	10.4	-2.3	-9.7	4.6
2009	3.40	-13.9	-0.1	-2.1	4.5	7.1
2010	0.93	1.8	2.5	-1.1	4.2	8.1

Source: Eurostat¹⁰² and IMF¹⁰⁴

In the case of Estonia, we could not apply our econometrical model and calculate the dependence between the variables, because Estonia has no long-term interest rate issued. Therefore, if we assume that in case of no long-term interest rate there is no crowding out effect as well, this leads to the conclusion that our hypothesis is **CONFIRMED**.

6.1. Evaluation of outcomes

From the econometrical outcome we can generally state that we confirmed the crowding out effect theory occurrence and for 5 out of 6 countries (apart from Portugal). The dependence between variables is always explained by over 70%, which is quite a good result.

On the other hand, our assumption that, apart from the **government debt** and **interest rates**, there is a significant dependence of the **current account balance** on the long-term interest rate, was not confirmed at all.

In the case of Portugal, the theory was not confirmed and results show no significant relation. We tried to find out why. The data used does not show any peculiarity. None of

the numbers seem to be specific for its low or high value; there is no specific decrease or increase in the time series.

If we take off the consideration of politics, and we take the statistics for granted, with the use of IMF data, it seems that there is no reason to panic. Nevertheless we observe a trend of the long-term interest rate increasing in Ireland, Greece and Spain, but it should have a tendency to stabilize in the next 3 years. On the other hand, the Czech Republic and Portugal have a decreasing tendency of long-term interest rate development, but we have to consider the outcomes of Portugal's matrix calculation, which is not satisfactory.

Therefore, the next question is what will happen if there is a higher increase of debts for the PIGS countries than the IMF assumes? So far, we believe that the situation as predicted can be handled.

Some prominent economic experts do not see the future (2011 onwards) of economic development in Europe and the rest of the world catastrophically as well.

For example, according to Jean-Claude Trichet^{XX111}, Development of European economy was forecasted as gradual growth with a threat of inflation. He stated: "Our monetary analysis confirms that inflation pressures are under control in the mid-term horizon". This statement would support our outcomes of stabilisation of long-term interest rates.

The IMF concludes¹¹² that there is a higher economical recovery that expected, but with the increasing debt difficulties which deepen financial risks.

^{XX} Jean-Claude Trichet, the CEO of ECB

7. Conclusion

The current situation in Europe is very uncomfortable from both the economic and the political point of view.

If we took the current economic situation as it is, and analysed it strictly according to the theories, we would learn that it is probably just a matter of time before some European country bankrupts (most probably Greece), followed by others (Portugal, Spain, Ireland, Italy, Belgium), which would likely cause a domino effect and we would experience fall of the western world.

(Un)fortunately, there are political issues behind with popular Keynesian policy, which has been heavily applied since the WWII. Personally, I believe that increasing global business interest is responsible for what is happening now. My thoughts are supported by Frédéric Lordon¹¹³, who sees the difference between the current and the previous crises not in its development, but in the rapidity and global character.

But if such situation happens on a small scale, the impacts on particular subject (a person or a company) take stage without taking into consideration those affected. Take the NHL crisis as an example – before the bobble burst, players were taking unrealistically high salaries, because clubs wanted to hire the best players. Because there was a price war, salary caps were introduced, in order to improve the situation for the less wealthy clubs. The final solution preceded a one year break of the NHL, and a decrease of associated business.

With the scale of public interest politicians tend to do anything to keep the situation stable and working. I totally agree with opinions of president Václav Klaus, who views the Eurozone as a dead scheme whom the EU would not let fall.

In my opinion, the same will apply to the European debt crisis. The EU will do all it can to keep the rock pushing uphill, as long as diplomats and/or politicians believe it is possible to avoid a first State bankruptcy, which would set off a new crisis roundabout. They will rather wait to let the markets settle for while, and then make step by step improvements. The EU needs to survive this crisis in order to keep its face, and prepare ground for a deeper integration of Europe.

I deeply understand the reasons for keeping situation stable and I do not wish to experience bankruptcy consequences of any European country. But if hedonism in

combination with profit chasing were responsible for the start of the current crisis, the next responsible factor will be political credibility, vanity and stubbornness.

It took the United States over 200 years of continual development to become what it is now. It would only make sense that the EU will have to go through a similar development despite all the diplomatic negotiation and summits.

Nevertheless, if my matrix calculation is correct, and the future will depend mainly on what the long-term interest rates from which the governments finance their deficits will be, there is probably no extreme scenario to be worried about.

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