EQUILIBRIUM
Quarterly Journal of Economics and Economic Policy
VOLUME 7 ISSUE 2, 2012
ISSN 1689-765X

Aldona Juozapavičienė, Agnė Montvidaitė*
Kaunas University of Technology, Lithuania

PECULIARITIES OF ECONOMICS RECOVERY AFTER WORLDWIDE ECONOMIC CRISIS IN 2008–2009

JEL Classification Codes: *G01*

Keywords: **e***conomic cycle indicators, Credit Default Swap (CDS), sovereign debt crisis, public finance in Lithuania*

Abstract: *Variation analysis of several main procyclic indicators (leading and coincident) was carried out in this article. The results of the analysis showed that the economies of Lithuania and the European Union are slowly recovering. The attempts of European countries to struggle against deep recession caused by the world economic crisis have led to a new - sovereign debt crisis. It manifested in increasing differences between government bond yields and premiums of Credit Default Swap (CDS) between PIIGS countries and other EU members, notably Germany. Accordingly to this, CDS was examined as the leading indicator of the economic cycle. During the period of the economic crisis, the government of Lithuania borrowed in international markets very expensively and the accumulated debt can become a heavy burden on the country's future economy. The situation of public finance in Lithuania was analyzed by adopting the mathematical model of Zamkov. The performed simulation showed that the debt of Lithuanian public sector will press the country for a long period of time.*

Date of Submission: February 28, 2011; date of acceptance: May 27, 2012
* Contact: e-mail: agne.montvidaite@gmail.com, Kaunas University of Technology K. Donelaičio St. 73, LT-44029 Kaunas, Lithuania

INTRODUCTION

The aim of the article is to reveal recovery peculiarities in EU countries by accentuating PIIGS and Lithuania, after analyzing the problems of the economics recovery after worldwide economical crisis in 2008–2009.
Seeking to implement the target of the article, the following tasks for the discussion have been set:

- To discuss the global economy after the global crisis in 2008–2009;
- To forecast business cycle trend of EU-27 and Lithuania by appealing to leading and coincident economic indicators;
- To analyze the problems of the PIIGS countries economic recovery;
- To examine the credit default swap (CDS) as an indicator of the economic cycle;
- To analyze the current situation of public finance in Lithuania, by adopting a mathematical model of Zamkov.

In order to fulfil these tasks, the following methods have been applied: the analysis of scientific literature, quantitative analysis of selected statistical data, and mathematical model of Zamkov.

MAJOR ECONOMIC DEVELOPMENT ISSUES FACED BY THE WORLD AFTER GLOBAL ECONOMIC CRISIS

One of the main issues of economic development nowadays is slow economic growth in advanced world economies, particularly in the United States of America and the European Union. Since the beginning of the recovery of largest world economy − USA, the growth rate of its GDP has been less than 3 %. It is bigger then long-lasting GDP growth potential (~2,5 %), but the USA recovered from the former big recessions with 6–8 % of growth rate of GDP. The unemployment rate has remained almost unchanged since the beginning of country's recovery (sharper change could be observed in January of 2011 – the unemployment rate decreased to 9 %). People can not borrow or do not want to borrow, because of the reduced value of their collateral, particularly – real estate. On the other hand, banks can not lend: clients do not meet the requirements and funds of the banks were exhausted by bad loans. Supposedly, the economics of United States would grow faster, than 2,5 % if consumers would start to borrow and spend money again (*Skolų akmuo po...* 2010, pp. 60–62). However, the state and the households are forced to reduce their debts.

By analyzing the current situation of the EU economics it can be seen that the prospects of economics growth in larger EU countries (except Germany)

are dull. Countries face problems with unemployment, the consumption does not show signs of intensification, the latter is necessary for sustained economic growth (Matuliauskas 2010a, pp. 78–79).

Another issue is transformation of the world's economy. The most advanced world economies must change over from domestic consumption to exports and countries with emerging economy must shift from exports to increased domestic consumption, but this movement is rather slow.

While stimulating the economy, the governments of EU grew large budget deficits. The government of the USA borrowed largely, and thus counterbalanced the objective of private-sector to cut its consumption and debts. China could contribute to faster growth of overall world economy by strengthening its currency. The more so, strengthening of yuan would help to cool its overheating economy. If US dollar weakened against the yuan, American goods would become cheaper than Chinese. In addition to this, American goods would become more attractive for the Chinese people because they would be cheaper. The economy of US could grow faster by increasing the exports (due to redistribution of demand). But China manipulates global trade and overall economy by policy of strongly devaluated yuan. This is equivalent to the use of export subsidies and customs duty at the same time. In other words, Chinese goods are artificially cheapened for foreigners, and the cost of goods from abroad is artificially being made up for Chinese. It should be noted that this is not a bilateral US − China problem. Because of the devaluated yuan policies the ones who suffer are not only advanced countries, but also Th. World, which cannot properly compete with Chinese goods (Kuodis 2010b, pp. 50–55).

However, the US solve the growing competitive challenges in the same manner as China – it devaluates US dollar. In November of 2010, the US Federal Reserve (FED) announced a decision to stimulate the economy with additional 600 billion US dollars for T-bonds purchasing (Jacikevičius 2010). The bonds will be purchased for the newly printed money in order to further reduce long-term interest rates (*Skolų akmuo po...* 2010, pp. 60–62). Thus, US dollar is being weakened, and in addition to this, the US national debt would be reduced. China and other countries would be forced to strengthen their exchange rates on purpose to control enormous inflation which could occur. It should be noted that weakening of US dollar in value compared to other currencies, hardly affects yuan, because its rate is being adjusted by China's Central Bank in consideration of exchange rate of US dollar and political will. When US dollar falls in respect of euro, yuan usually falls too. To European exporters, it means even more difficult business conditions in China, United States and other dollar-linked currency markets (*Sveikiname JAV finansų...* 2010, pp. 12–13).

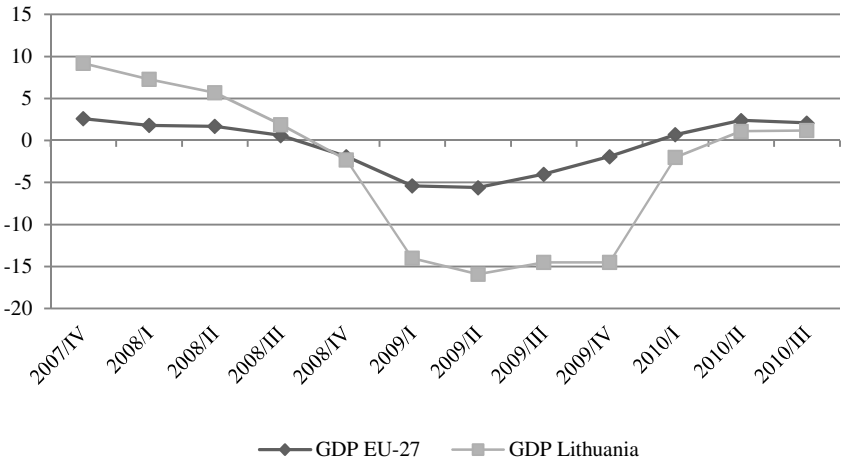
THE ANALYSIS OF CYCLICAL INDICATORS IN THE EUROPEAN UNION AND LITHUANIA

Several economic (business) cycle indicators (leading and coincident) will be displayed and analyzed practically by assessing/evaluating of their series movement variations in time. Those indicators reveal at which stage of the business cycle (peak, recession, through or expansion) the overall economy is at the moment and they are able to forecast what can be expected in the future of the aggregate economy.

Gross Domestic Product (GDP)

GDP is one of the most important indicators in the business cycle. It is considered to be an overall indicator of the economy's development (Eurostat 2009, p.18), with regard to timing, this indicator coincides with business cycle and indicates actual situation in economy.

Figure 1. Quarterly GDP in EU-27 and Lithuania, chain-linked volume, not seasonally adjusted in 2007 4th quarter – 2010 3rd quarter (change to the same quarter of the previous year (%))



Source: own calculations based on Eurostat (2011).

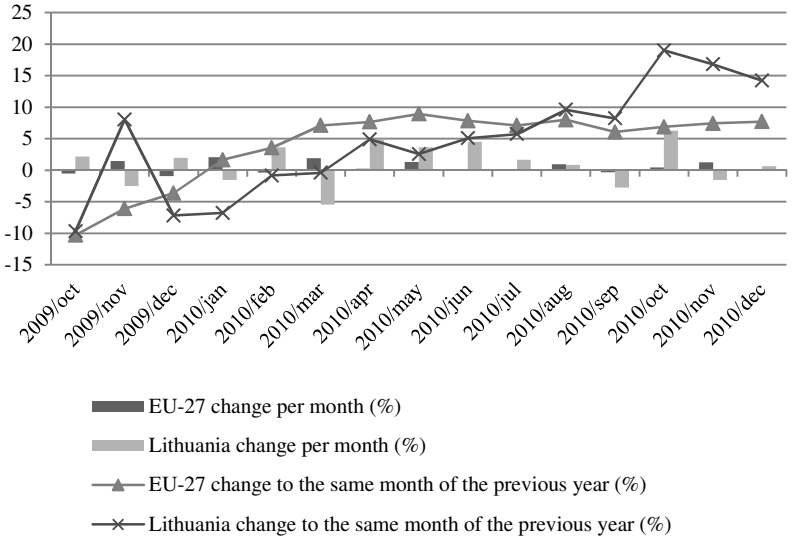
As it can be seen from figure above, sharp downturn of the economy in European Union started from the 4th quarter of 2007. The breakthrough was reached in the 2nd quarter of 2009 (including Lithuania's economy) and then the downfall rate of GDP started constantly to decrease. The economy of Lithuania, compared with other countries in the European Union, fell into drastic recession (GDP shrank by 15,9 % compared to the same quarter of previous year). In the 1st quarter of 2010 a positive change of GDP in EU-27 was fixed. Respectively, in Lithuania, a positive change was fixed in the 2nd quarter of 2010. A positive change in GDP showed that countries left the recession behind. In 2010 Lithuania's economy recovered rapidly due to the changes in export and reserves. On the other hand, internal demand still remains week. As Lithuania is country with an open economy, the economical perspectives of it highly depends on EU and United State of America.

Although the changes in GDP of EU-27 countries are positive, the present recovery of the economy is not steady/solid. The recent crisis contributed to the fast growth of general government deficit and debt ratio in EU countries by negatively effecting the growth of overall economy.

Industrial production

This is one of the most important indicators of economical activity. Its main advantage over other indicators is quick accessibility (e.g. comparing with GDP) (Eurostat 2009, p. 62). Starting with January of 2010 (change to the same month of the previous year) industrial production was growing gradually. In September of 2010 the growth of industrial production indicator (compared to previous month) was negative: firstly, due to euro strengthening against the dollar, as stronger euro damages price competitiveness outside the euro area countries; secondly, due to euro area governments' reduction of expenditures regarding excessive budget deficits. In March 2010 the index of industrial production in Lithuania was positive in comparison with the change in the same month of the previous year. In October 2010 this indicator grew by 19,02 percent, in comparison with the same period of the previous year. That reveals recovery of industrial production. And since this indicator is a component of GDP, it can be expected that while industrial production indicator is growing, GDP will grow as well. From figure 2., it can be concluded that EU–27 economy is recovering steadily.

Figure 2. Annual Industrial production (excluding construction) index change in EU-27 and Lithuania, for period 2009 October – 2010 December (change to the same month of the previous year (%), change per month (%) (Seasonally adjusted))



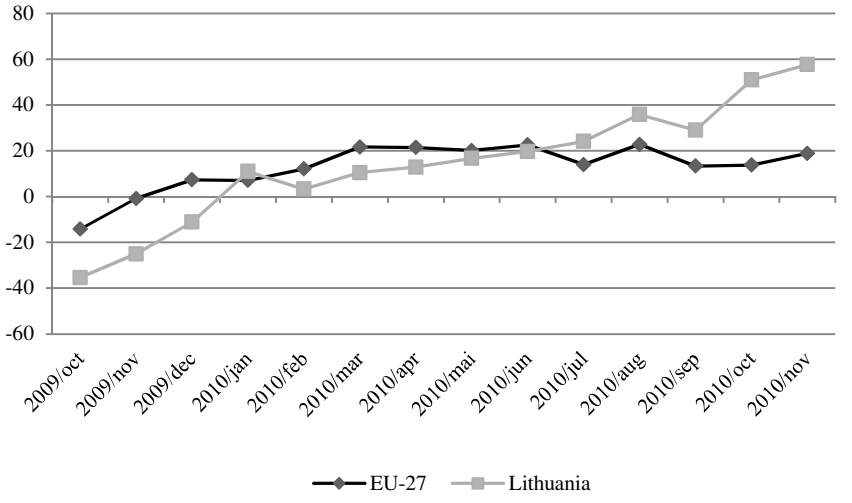
Source: own calculations based on Eurostat (2011).

Industrial new orders

This indicator shows changes in demand for local products/manufactured goods and import. It measures trend of orders for industry manufacturers, which they receive from local and foreign clients. This indicator provides information about development of manufacturing in the future and the turnover of industry branches which constantly work under the orders. Industrial new order indicator is one of the leading indicators in economic cycle (Eurostat 2009, p. 65).

According to the graph (Figure 3), industrial new orders index is leading indicator: on December of 2009, the EU-27 was still in recession, but percentage change of this index was already positive. The same law applied to Lithuania, with one months' lagging. All in all, the percentage change of this indicator in 2010 compared to the year of 2009 was positive and still grows. So, it can be concluded that the economy of EU-27 and Lithuania will continue to grow.

Figure 3. Annual industrial new orders index change in EU-27 and Lithuania, not seasonally adjusted for period 2009 October–2010 November (change to the same month of the previous year (%))



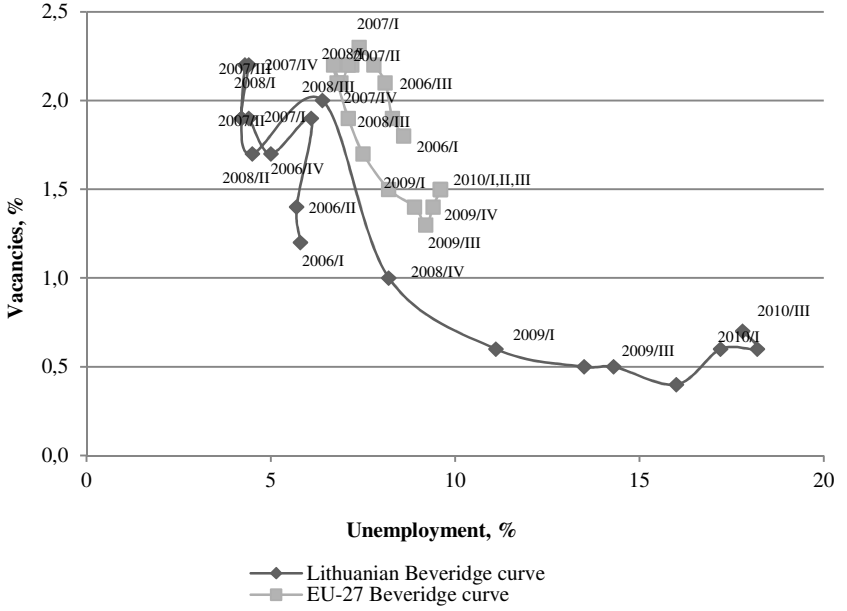
Source: own calculations based on Eurostat (2011).

Beveridge curve

It is a graphical representation of an empirical relationship between unemployment and the job vacancies. It serves as a representation of how efficient labor markets are in terms of matching unemployed workers to available job vacancies in the aggregate economy (Tasci (ed.) 2010). Beveridge curve can be considered as the leading indicator of the business cycle. In Lithuania, it was one of the first indicators reporting about forthcoming economic recession (Lithuanian Ministry of Finance, 2010a). The graph of Beveridge curve (figure 4.) examines the time period from the 1st quarter of 2006 till the 3rd quarter of 2010. The curve reveals that since the 1st quarter of 2006 until the 3rd quarter of 2007 the business cycle in Lithuania (accordingly, the 1st quarter of 2006 till the 1st quarter of 2008 in EU-27) was in the expansion phase, while starting from the 4th quarter of 2007 in Lithuania (accordingly the 2nd quarter of 2008 in EU-27) the expansion phase shifted to recession phase. The change of direction of Beveridge curve in the 3rd quarter of 2010 shows that business cycle returns to expansion phase in Lithuania. Meanwhile, the Beverige curve of EU-27 demonstrates that more vacancies started to appear from the 3rd quarter of 2009, but unemployment was

still growing. On 2010 (all three quarters) unemployment growth stabilized (9,6%), but vacant positions stopped growing also (1,5 %). This situation in labour market confirms that the recovery of overall economy is progressing slowly.

Figure 4. Beveridge curves of Lithuania and EU-27 from 1st quarter of 2006 until 3rd quarter of 2010

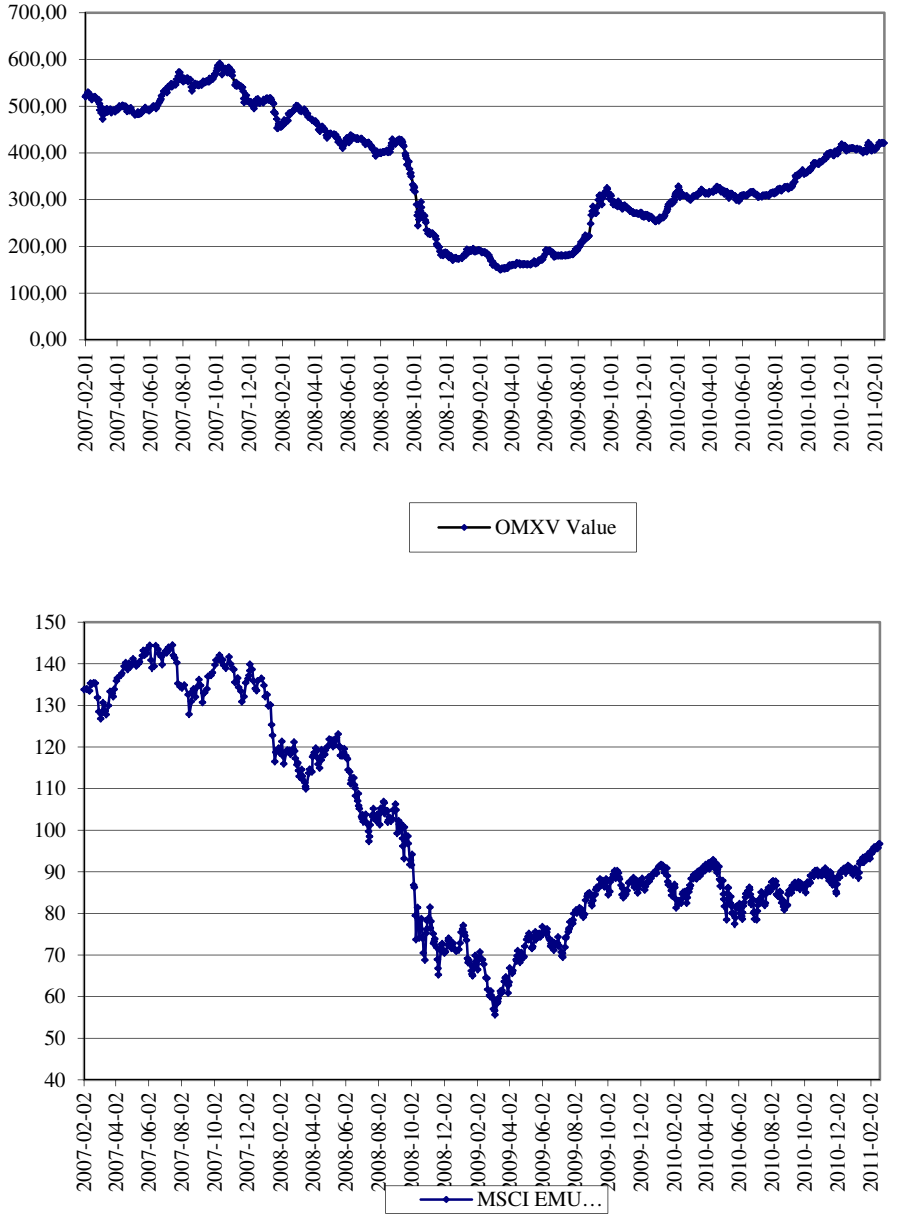


Source : compiled by the authors based on Eurostat (2011) and Lithuanian Department of Statistics (2010).

Stock quotes

The stock market is perhaps the most sensitive part of the economy in advance giving signals about what is waiting for the whole organism of the economy in the future. In other words, before a recession of the economy, a downturn firstly appears in the stock market and on the contrary, the price of the stock begins to rise before overall economy starts to recover.

Figure 5. Values of OMXV and MSCI EMU (European Economic and Monetary Union) indices for period 2007.02–2011.02



Source: compiled by the authors based on NASDAQ OMX Baltic (2011) and Bloomberg (2011).

The graph (figure 5.) confirms the proposition given above. The values of indices of OMVX and MSCI EMU started their steep downturns in the 3rd quarter of 2007, before the start of crisis in the 3rd quarter of 2008. Stock values (both of OMVX and MSCI EMU) started their recovery on March of 2009, while overall European economy was still moving to a breakthrough. Since then till now, stock markets have demonstrated gradual recovery both in Lithuania and Europe. OMXV is still shrunken by 21,85 %, respectively MSCI EMU – 29,13 % (comparing changes in values (%) over four years period (2007.02–20011.02)). The growth of stock market reflects the expectations of investors that overall economy will grow. The graph of MSCI EMU value displays downfall on the 15th of April until 25th of May, when the threat of the debt crisis emerged in one of the euro area countries – Greece, but investors became more optimistic after euro zone leaders agreed a rescue package for Greece, which includes IMF involvement. More serious problems may rise due to fiscal problems of PIIGS countries and then might swing not only the stock market, but also overall economic recovery of EU.

PROBLEM ANALYSIS OF PIIGS COUNTRIES ECONOMIC RECOVERY

The efforts of the EU countries to struggle against deep recession, caused by the global financial crisis, have led to a new – sovereign debt crisis. This crisis was largely influenced by the fiscal stimulus packages of EU governments aimed at mitigating the economic impact of the crisis, particularly by preventing massive layoffs. For example, Germany and France strongly stimulated their economies. Fiscal stimulus expenditures of Germany were 81 billion euros during years of 2009 and 2010, while the expenditures of France constituted 26 billion euros (Khan 2010). In 2009, general government debts and budget deficits jumped up all over euro area, particularly in PIIGS countries (Table 1).

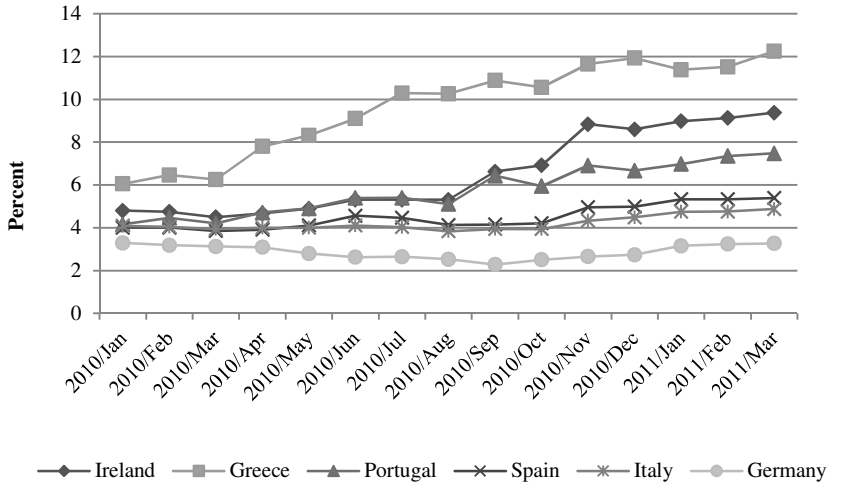
The concerns about growing levels of government's deficits and debts all over the world, along with the deterioration of government's debts in Europe caused panic in financial markets. In the beginning of 2010 the Greek crisis or, in other words, sovereign debt crisis arose. Other PIIGS countries dangerously approached that limit as well. This led to a confidence crisis, which asserted in growing differences between bond yields and premiums of credit default swaps (CDS) between PIIGS countries and other EU members, notably Germany.

Table 1. Debt and surplus/deficit % of GDP of PIIGS countries

Year	Ireland	Greece	Portugal	Spain	Italy	Ireland	Greece	Portugal	Spain	Italy
	Debt % of GDP					Surplus(+)/Deficit (-) % of GDP				
2006	24,8	106,1	63,9	39,6	106,6	2,9	-5,7	-4,1	2	-3,4
2007	25	105	62,7	36,1	103,6	0	-6,4	-2,8	1,9	-1,5
2008	44,3	110,3	65,3	39,8	106,3	-7,3	-9,4	-2,9	-4,2	-2,7
2009	65,5	126,8	76,1	53,2	116	-14,4	-15,5	-9,3	-11,1	-5,3

Source: compiled by the authors based on Eurostat (2010a) and Eurostat (2010b).

Figure 6. Government bond 10 year yield of PIIGS and Germany during period January of 2010 – March of 2011 (%)



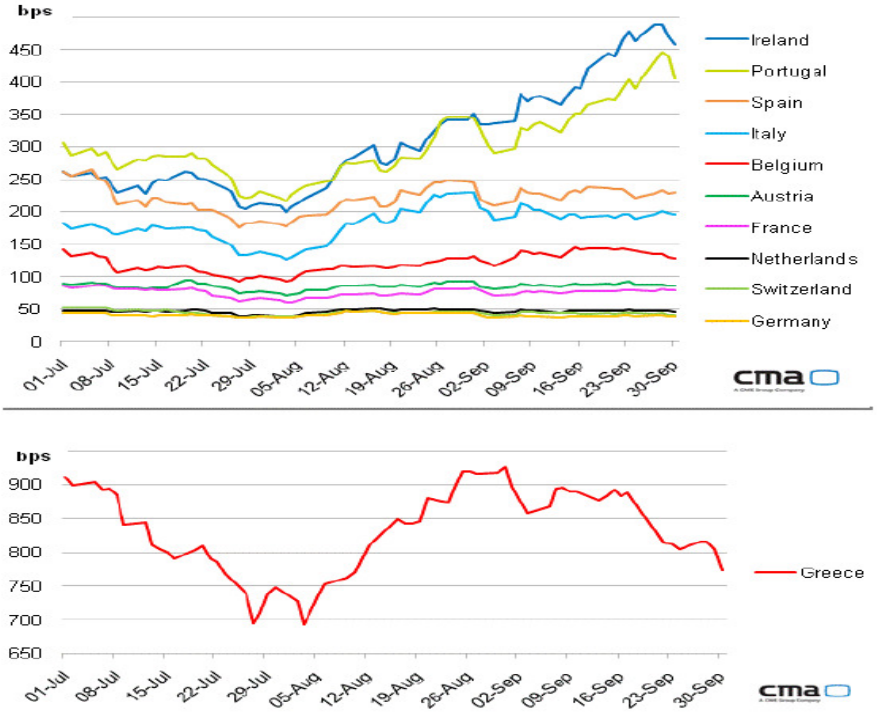
Source: own calculations based on Trading economics (2011).

As it is shown in the Figure 6, Greek government bond rates increases each month and already exceeded the boundary of 12 %. Financial markets distrust of this country is growing despite granted loan from specially established stabilization fund of 750 billion euros. In November of 2010, large increase in government's bond interest rate was observable in all PIIGS countries. It was influenced by sovereign debt crisis which started in Ireland. The country's bond yield was 6,92 % in October of 2010 and in November it

rose to 8,84 %. One can watch the growing gap of government's bond yield between Germany and PIIGS countries.

Figure 7 represents changes in 5-year CDS (Credit Default Swap) premiums during 3rd quarter of 2010 in Western Europe (including PIIGS countries). Greece, Ireland and Portugal distinguish for values of CDS premiums. According to CMA calculated rating sovereign debts of those three countries belong to world's top 10 most risky sovereign debts.

Figure 7. Changes in 5-year CDS premiums (bps) during 3rd quarter of 2010 in Western Europe



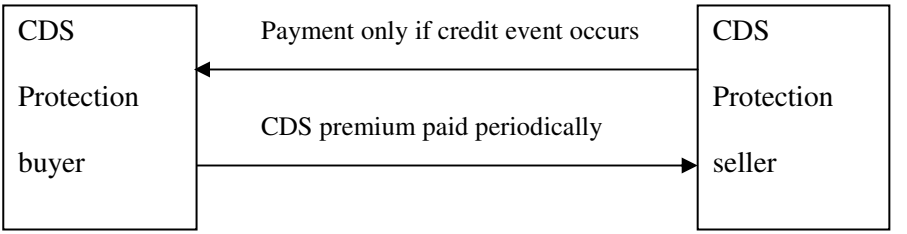
Source: CMA (2010).

CREDIT DEFAULT SWAPS (CDSs), AS A MEASURE OF CREDIT COUNTERPARTY RISK

CDS (*Credit Default Swap*) is one of the leading indicator, which is often attributed to barometers for the pricing of risk and is increasingly having an

impact on the financing costs of corporations and governments (European central bank 2009, p.7). CDS is a credit derivative instrument (Figure 8.). A CDS contract is made between two market participants when protection (hedging) buyer (or, risk seller) pays periodic fees, so-called premium, to protect the seller (or, risk buyer) in exchange for the opportunity to receive one payment if the third unit would default or other credit event case would occur. Other credit events might be: bankruptcy, failure to pay, debt restructuring, repudiation/moratorium, obligation acceleration or obligation default .

Figure 8. Simplified scheme of CDS contract



Source: compiled by the authors.

CDSs are used by investors for the purposes of hedging, arbitrage or for speculative purposes.

During a finansial crisis CDS contract is used as the leading indicator, because it‘s spread (premium) is used as aggregate indicator of credit risk (European Central Bank 2009, p. 65).

CDS spread (premium) – annual amount, which protection buyer pays to the protect the seller during overall period of the contract. The spread is expressed in basis points (1 bp = 0,01%) of the agreed notional amount.

A higher spread on CDS (when other conditions and maturity of CDS are equal) implies that the risk of default is higher. Generally, the spread of CDS is determined by using assumptions of market‘s participants about probabilities of subject default. In other words, CDS spread reflects expectations of credit protection buyer and seller about the difference between fixed rate premium payments and present value of settlement which should be made if a credit event would materialize (European Central Bank 2009, p. 65).

It is worth to notice the doubts expressed by the Committee of European Securities Regulators (CESR) (2008) concerning CDS market value as an indicator of risk and funding costs, as the liquidity in the CDS markets began

to dry up too when markets come under increasing strain due to financial turmoil .

Turner review (2009) also raise proposition that CDS prices "systematically understate risk in the upswing and overstate it in the downswing" and "thus making the extensive use of CDS prices to assess the fair value of illiquid underlying bonds potentially procyclical and making overall CDS spreads poor indicators of risk".

In the middle of March 2009, a widening of CDS spreads in several EU countries was noticed, as credit risk shifted from financial sector to several EU Member States due to largely prosecuted national rescue packages in the last quarter of 2008 (European central bank 2009, p.68).

According to Shino and Takahashi (2010), changes in sovereign CDS premiums not necessarily reflect the real fiscal situation of a country accurately, as CDS premiums sensitively react to speculative actions of investors, especially when market has low liquidity. It is emphasized that even the willingness to invest in sovereign risk transactions of small number of investors influences the price dynamics more than actual fiscal situation in the individual country. Thus, as soon as investors become aware of the county's sovereign risk, sovereign CDS premium increases. The impact of increased premium may spread to other countries, though there are no significant changes in fiscal situation of those countries.

Shino and Takahashi (2010) studies have revealed that:

- The countries, in which the amount of outstanding sovereign CDS is at low level (Japan, United States and Great Britain) are more exposed to speculative attacks, thus the rate of CDS premium may not accurately reflect the country's default probability;
- It is more likely that premiums of CDS reflect the fiscal policy of continental Europe countries (Greece, Spain, Italy, Portugal, etc.) and emerging economies, where CDS market liquidity is quite high.

PECULIARITIES OF LITHUANIAN BORROWING DURING THE ECONOMIC CRISIS AND ITS IMPACT ON RECOVERY

As Lithuania is a country of small and open economy, its economical perspectives highly depends on the EU and US economies.

The Lithuanian economy was put into disorder due to two factors:

- Constructions and real estate bubble exploded in the Baltic States during 2007–2008
- Markets of surrounding countries closed regarding to financial crisis.

Sudden shrinkage of the export markets, made Lithuanian goods (as well as other Baltic countries) uncompetitive in respect to prices. The comparative share of the export of Baltic countries into foreign markets has decreased as compared with domestic producers and competitors from third-countries. The currency board in Estonia and Lithuania, as well as the exchange rate regime has prevented the national currency devaluation, which was used by other Central and Eastern European countries (Poland, Belarus, Russia, and Ukraine). Credit famine complicated situation of companies in the Baltic countries as they lost their physical access to credit resources or they became very expensive. Instead of external (currency) devaluation, internal devaluation was chosen as an alternative (Nausėda 2010, pp. 24–26).

In 2008, when economic crisis started in the country, it was forced to begin intense borrowing. As it is seen in (Table 2.) the debt of general government was growing during all the analyzed period (2004–2010 years). The debt of general government was growing particularly fast during years of 2009 and 2010. Lithuania was indebted to creditors more than 36,5 billion litas in the end of 2010.

Table 2. National debt of Lithuania according to sectors in year period 2004–2010

Position	**31 Dec 2004**	**31 Dec 2005**	**31 Dec 2006**	**31 Dec 2007**	**31 Dec 2008**	**31 Dec 2009**	**31 Dec 2010**
	LTL, million						
GENERAL GOVERNMENT DEBT	**12162,0**	**13309,8**	**14938,7**	**16698,0**	**17374,8**	**27104,9**	**36588,1**
Central government debt	11816,8	12735,4	14236,0	15800,6	16052,4	25660,9	34129,7
Debt social security funds	289,1	189,3	147,5	23,8	85,9	3010,0	
Local government debt	520,7	555,6	730,56	986,0	1318,5	1448,5	
Consolidation	464,6	170,5	175,4	112,4	82,0	3014,4	

Source: Compiled by the authors, based on the data of Lithuanian Ministry of Finance (2004-2010).

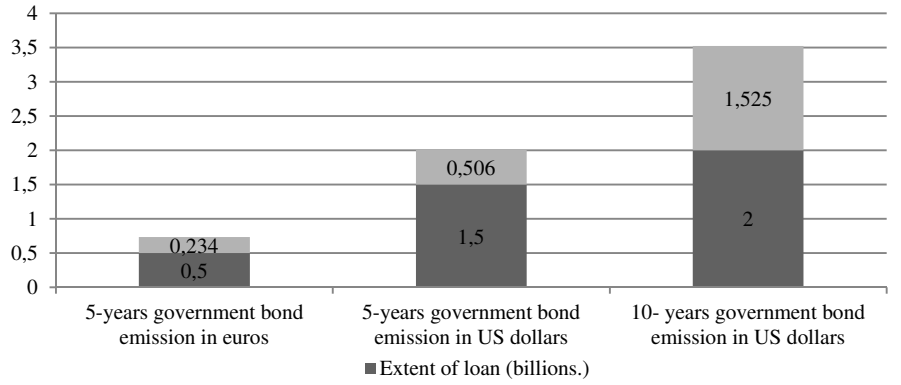
Large amount of the money was borrowed in foreign markets, by three emissions of government bonds. Two of them were issued in 2009 (firstly 500 million euro was borrowed, with annual interest rate of 9,735 %, secondly 1,5 billion US dollars was borrowed, with annual interest rate of 6, 75 %). In the beginning of 2010 the government borrowed 2 billion US dollars (the biggest bond emission in the history of Lithuania), due to twice

longer redemption date (of those government securities) the bond yield was 7, 625 % (Matuliauskas 2010b, pp. 78–79).

In the beginning of 2009, when the economy of Lithuania felt drastic decline CDS premium reached 827 bps (8,27 %), meanwhile in the second half of 2009 after the government increased VAT, cut budget's expenditures and successfully borrowed money in the international markets, the premiums of CDS has declined. Declining in CDS premium (which reflects declining in country's default risk), is a positive thing, due to the fact, that when CDS premium declines, the interest rates for the government bonds decline as well (Krakauskas 2010).

Only Latvia was able to borrow more expensively than Lithuania (according to CMA global sovereign debt credit risk reports Latvia was in the top 5 most risky sovereigns during 2nd-4th quarters of 2009), but country asked for support package from IMF. Latvia borrowed 4–5 times more chaply than Lithuania.

Figure 9. Lithuanian government's bond emission in years of 2009 and 2010



Source: own calculations based on Matuliauskas (2010c).

As the graph (Figure 9) shows, Lithuania during 5-year period will have to pay 0,234 billion of interest for the issued 5-year government bonds emission of half billion euros in June of 2009 and 0,506 billion of interest for the issued 5-years government bonds emission of 1,5 billion US dollars in October of 2009. For 10-year government bond emission in US dollars Lithuania will pay slightly more than 1,5 billion US dollars of interest during 10-year period.

Thus, Lithuania has borrowed very expensively and the accumulated debt can become a heavy burden for the country's economy.

Below, the mathematical model of Zamkov (1997) is represented.

The model is based on several assumptions:

– The value of the nominal GDP grows in the constant annual rate (%), where Y_t – value of the nominal GDP, p – constant annual rate (%).
– The total budget deficit (payment in percentage due to the national debt and the main debt) every year makes a certain percentage of GDP (q (%)), where H_t – total budget deficit. Thus:

$$\frac{H_t}{Y_t} = \frac{q}{100} = const. \tag{1}$$

Assuming that Y_0 – initial level of GDP, then nominal GDP (Y_t) in years t will be equal:

$$Y_t = Y_0\left(1+\frac{p}{100}\right)^t. \tag{2}$$

Then, with reference to *(1)* and *(2)* formulas, total budget deficit (H_t) in years t will be equal:

$$H_t = \frac{Y_t q}{100} = \frac{Y_0 q}{100}\left(1+\frac{p}{100}\right)^t. \tag{3}$$

– The national debt (in nominal value) to the accumulated sum of the budget deficits until the year t (year t is included), where D_t - national debt in nominal value. If D_0 is the initial value of national debt, the relation between national debt (D_t) and GDP (Y_t) will be equal:

$$d_t = \frac{D_t}{Y_t} = \frac{D_0}{Y_0\left(1+\frac{p}{100}\right)^t} + \frac{q\left(1+\frac{p}{100}\right)\left(\left(1+\frac{p}{100}\right)^t - 1\right)}{p\left(1+\frac{p}{100}\right)^t}. \tag{4}$$

According to the Lithuanian Ministry of Finance (2010b), the Lithuanian government debt will increase to 41 % in 2012. For this reason, our objective is to reduce the initial debt level (41 %) to the desired debt level. Accordingly to this, we have to calculate the value of budget deficit (% of GDP), when other parameters such as the forecasted GDP growth (%) and number of years (needed to achieve fiscal index) are known. For this reason formula (4) will be adopted.

As it can be seen from (Table 3), when the government of the country wants to reduce overall debt in a few years, it must have a budget surplus (the value in the table with a minus sign), while the state which wants to maintain the same level of debt, for example, 41% when GDP growth is 3%, deficit of general government should not be exceed in value of 1.19%.

Table 3. Calculation of possible budget deficit (% from GDP)

Initial debt level, %GDP	Desired debt level, % GDP	Number of years	Forecasted GDP growth, %	Budget deficit, % GDP
41	41	1	2	0,80
41	41	2	2	0,80
41	41	3	3	1,19
41	41	5	4	1,58
41	41	10	3	1,19
41	41	1	5	1,95
41	41	2	5	1,95
41	41	3	5	1,95
41	41	1	10	3,73
41	40,5	1	1	-0,09
41	40,5	2	1	0,15
41	40,5	2	3	0,94
41	40,5	2	5	1,70
41	40	1	3	0,19
41	40	1	5	0,95
41	40	1	7	1,68
41	38	3	4	0,54
41	36	3	4	-0,16
41	35	3	4	-0,50
41	33	3	4	-1,19
41	38	4	4	0,78
41	36	4	4	0,25
41	33	4	4	-0,54

Table 3 Continued

Initial debt level, %GDP	Desired debt level, % GDP	Number of years	Forecasted GDP growth, %	Budget deficit, % GDP
41	38	4	5	1,15
41	33	4	5	-0,20
41	36	5	1	-0,61
41	36	5	2	-0,24
41	36	5	3	0,13
41	36	5	5	0,85
41	32	5	3	-0,71
41	32	5	7	0,63
41	25	10	2	-0,94
41	25	10	4	-0,32
41	25	10	6	0,27
41	25	10	5	-0,02

Source: compiled by the authors.

The performed simulation showed that the debt of the Lithuanian public sector will press country over the years: for example, with a view to reduce debt from 41% to 25%, assuming that the annual GDP growth will be 5% , and with a balanced budget (0.02% of government surplus), the desired level of debt will be met only after a ten-year period. But it should be noted that it is rather difficult to maintain a constant 5% annual GDP growth and respectively difficult (or, impossible) to maintain a balanced budget during a ten – year period.

CONCLUSIONS

After severe worldwide economic crisis in 2008–2009, many countries around the world are struggling against slow economic recovery (growth), large budget deficits and sovereign debts.

Slow worldwide economic recovery is related to slow economic growth in advanced world economies, particularly in the United States of America and the European Union and too slowly undergoing transformation (advanced economies must change over from domestic consumption to exports and countries with emerging economy must act contrary, but the process is very slow). The manifestation of currency wars aggravates EU export conditions in US dollar linked markets.

The performed practical analysis of economic cycle procyclical indicators (leading and coincident), such as GDP, industrial production, industrial new orders, Beveridge curve and stock quates revealed that the economy in EU and Lithuania is slowly recovering.

The efforts of EU countries to struggle against deep recession, caused by the global financial crisis, have evoked sovereign debt crisis. This led to a confidence crisis, which asserted in growing differences between bond yields and premiums of credit default swaps (CDS) between PIIGS countries and other EU members, notably Germany.

Doubts about CDS premium as an indicator of risk when liquidity in the CDS markets began to dry up were raised. Shino and Takahashi studies have revealed that CDS premiums reflect the fiscal policy of continental Europe countries and emerging economies, as CDS market liquidity is pretty high there.

Lithuania during the crisis period borrowed very expensively and the accumulated debt can become a heavy burden for the country's economy. A simulation of Zamkov mathematical model has revealed that it will be very difficult to reduce the level of the country's debt, which grew enormously during period of crisis.

LITERATURE

Bloomberg (2011), *MSCI EURO*, http://www.bloomberg.com/apps/quote?ticker=MSER:IND

CMA (2010), *Global sovereign credit risk report 3rd quarter of 2010.* http://www.cmavision.com/images/uploads/docs/CMA_Global_Sovereign_Credit_Risk_Report_Q3_2010.pdf

European Central Bank (2009), *Credit Default Swaps and Counterparty Risks*, http://www.ecb.int/pub/pdf/other/creditdefaultswapsandcounterpartyrisk2009en.pdf

Eurostat (2009), *Principal European Economic Indicators A statistical guide,* http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-81-08-398/EN/KS-81-08-398-EN.PDF

Eurostat (2010a), *Information note on Greek fiscal data*, http://epp.eurostat.ec.europa.eu/portal/page/portal/government_finance_statistics/documents/Report_EDP%20GR%20-%20final.pdf

Eurostat (2010b), *Second notification of government deficit and debt figures for 2009*, http://epp.eurostat.ec.europa.eu/cache/ITY_PUBLIC/2-22102010-AP/EN/2-22102010-AP-EN.PDF

Eurostat. (2011), *Selected Principal European Indicators,* http://epp.eurostat.ec.europa.eu/portal/page/portal/euroindicators/peeis

Jacikevičius A. (2010), *JAV paskelbė ekonomikos skatinimo planą,* http://www.delfi.lt/news/economy/stock/jav-paskelbe-ekonomikos-skatinimo plana.d?id=38188493

Khan A. (2010), *EU debt crisis: the latest chapter in the Global Economic Crisis,* http://www.khilafah.com/index.php/analysis/europe/8990-eu-debt-crisis-the-latest-chapter-in-the-global-economic-crisis

Krakauskas T. (2010), *Lietuvos valstybės rizika yra žemiausiam taške per paskutinius metus*, http://teigiamai.blogspot.com/2010/01/lietuvos-valstybes-rizika-yra.html

Kuodis R. (2010), *Juanio problema ir pasaulio ekonomikos gelbėjimas*, „Valstybė“,Vol. 40, No. 8.

Lithuanian Department of Statistics (2010), *Gyventojai ir socialinė statistika,* http://db1.stat.gov.lt/statbank/default.asp?w=1440

Lithuanian Ministry of Finance (2004-2010), *National debt of Lithuania according to sectors*, http://www.finmin.lt/web/finmin/search

Lithuanian Ministry of Finance (2010a), *Duomenys rodo ankstyvą atsigavimą Lietuvos darbo rinkoje*, http://www.finmin.lt/web/finmin/pranesimai_spaudai?erp_item=naujiena_001507

Lithuanian Ministry of Finance (2010b), *Finansų Ministerijos 2010 metų sutrumpintas strateginis veiklos planas*, http://www.lrv.lt/bylos/ strateginis/strateginiai-planai/FM.pdf

Matuliauskas A. (2010a), *Dvigubo smūgio baimė*, „IQ“, Vol. 6, No.6.

Matuliauskas A. (2010b), *Įklimpę iki kaklo*, „IQ“, Vol.1, No.1.

Matuliauskas A. (2010c), *Obligacijų emisija: pasiskolinti buvo galima ir pigiau?* http://www.diena.lt/dienrastis/ekonomika/obligaciju-emisija-pasiskolinti-buvo-galima-ir-pigiau-262051

NASDAQ OMX Baltic (2011), *Baltic Market Indexes,* http://www.nasdaqomxbaltic.com/market/?pg=charts&lang=en&idx_main%5b%5d=OMXV&add_index=OMXBBPI&add_equity=LT0000128266&period=3years&start_d=24&start_m=11&start_y=2009&end_d=24&end_m=11&end_y=2010

Nausėda G. (2010), *Viešuosius finansus stabilizavome*, „Valstybė“, Vol. 37, No. 5.

Shino J., Takahashi K. (2010), *Sovereign Credit Default Swaps: Market Developments and Factors behind Price Changes,* http://www.boj.or.jp/en/research/wps_rev/rev_2010/data/rev10e02.pdf

Skolų akmuo po kaklu (2010), „IQ“, Vol.7, No. 7.

Sveikiname JAV finansų strategus su pergale (2010), „Valstybė“, Vol. 43, No. 11.

Tasci M., Lindner J. (2010), *Has the Beveridge Curve shifted?*, http://www.clevelandfed.org/research/trends/2010/0810/02labmar.cfm

The Committee of European Securities regulators (CESR). (2008), *Transparency of corporate bond, structured finance product and credit derivatives markets,* http://www.cesr-eu.org/data/document/08_1014.pdf

The Turner Review (2009), *A regulatory response to the global banking crisis,* http://www.fsa.gov.uk/pubs/other/turner_review.pdf

Trading Economics (2011), *Germany Government bond 10 year yield,* http://www.tradingeconomics.com/Economics/Government-Bond-Yield.aspx?Symbol=DEM

Замков О.О. (1997), *Бюджетный дефицит, государственный долг и экономический рост*, „Вестник Московского Университета”, Сер. 6, No. 2.

FINANCIAL MARKETS AND FINANCE MANAGEMENT

EQUILIBRIUM

Quarterly Journal of Economics and Economic Policy