KEY DETERMINANTS
OF LITHUANIA'S SOVEREIGN CREDIT RATING

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Abstract. The topic concerning the determinants affecting sovereign credit ratings of a country became extremely relevant after the recent economic turbulence which brought relentless downgrades, especially for Central and Eastern European (CEE) countries in their sovereign credit ratings. In the face of economic downturn around the world, causing the reduced availability of global capital flows and the appetite for risk, it becomes essential for the countries to secure the high market grade ratings in order to be able to issue foreign debt to ensure the solvency of the country's finances and to pursue a sound economic growth.

The aim of the study was to elucidate the key determinants of the Lithuanian sovereign rating during the financial turbulence of 2008 and to explain their importance and dynamics through external borrowing costs of the country.

Key words: sovereign credit rating, borrowing costs, CEE financial turbulence, credit rating determinants

Introduction

In today's economic environment, countries are seeking the enhancement of nation's efficiency through more effective strategies. With numerous countries recovering from the general economic downturn – financial sector instability, balance of payments crisis or government insolvency issues – it becomes imperative to ensure the future stability of public and private finances in the country.

Under the Currency Board Arrangement (CBA), Lithuanian government is precluded from money financing of the deficit and faces a static constrain on its budget deficit[1]. While this does not rule out the stabilizing use of fiscal policy as a tool, it does imply the need for borrowing if the reserves are insufficient. Lithuanian government was reluctant to save during the recent economic boom due to the cuts of the possible gains and ran a consecutive budget deficit over the past years. Therefore, in the face of the economic decline, they encountered a shortage of funds and even greater fiscal misbalances, which created concerns in the global market in regard to the ability of Lithuanian government

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[1]   Daseking C., Ghosh A., Lane T., Thomas A. (2004). Lessons from the crisis in Argentina, IMF (p. 19).

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to repay the outstanding debts. This, in turn, resulted in a decrease of the long-term sovereign credit rating, which plays an important role in determining countries' access to international capital markets and the costs of borrowing (Reinhart, 2002).

The topic concerning the determinants effecting a country's sovereign credit rates became extremely relevant after the recent economic turbulence which brought relentless downgrades, especially for Central and Eastern European (CEE) countries in their sovereign credit ratings.

TABLE 1. **Lithuania's sovereign issuer default ratings for foreign currency**

Rating Agency	Rating scale	Date	Rating	Forecast
Standard&Poor's	Int. Scale (foreign curr.)			
	2009Q1	24.03.2009	BBB	Negative
	2007Q2	05.06.2007	A	Negative
	2006Q2	22.05.2006	A	Stable
Moody's Investors Service	Int. Scale (foreign curr)			
	2009Q3	28.09.2009	Baa1	Negative
	2009Q3	23.04.2009	A3	Negative
	2009Q1	10.02.2009	A2	Negative
	2006Q3	14.09.2006	A2	Stable
Fitch Ratings	Int. Scale (foreign curr.)			
	2009Q2	08.04.2009	BBB	Negative
	2008Q4	22.12.2008	BBB+	Negative
	2008Q3	03.10.2008	A-	Negative
	2007Q4	07.12.2007	A	Negative
	2006Q4	23.10.2006	A	Stable
	2004Q2	07.07.2004	A-	Positive
	2004Q1	28.01.2004	BBB+	Positive
	2003Q2	04.11.2003	BBB	Positive
	2002Q4	17.12.2002	BBB	Stable
	2002Q1	28.02.2002	BBB-	Positive
	2001Q2	16.05.2001	BBB-	Stable
	2000Q3	21.09.2000	BB+	Stable
	1997Q1	28.01.1997	BB+	-

Source: S&P, Moody's, Fitch, compiled by the author.

As one can see from Table 1, in the year 2008 the sovereign credit ratings of Lithuania were downgraded, and the outlook was negative (May 2009, Fitch Rating Agency). Here, the **question** arises: what are the key determinants of Lithuania's sovereign credit ratings?

Understanding of sovereign credit ratings

Following the rapid growth of the international debt of developing nations in the 1970s and the increasing number of debt rescheduling in the early 1980s, country's risk has become a topic of major concern for the international financial community. In step with this awareness, first available ratings of an individual country's creditworthiness were published internationally. The investors gained more information on risk specifics of a particular country. However, the governments, especially from developing and growing economies, did not recognize the importance of sovereign ratings.

Many emerging economies were benefiting from extensive inflows of direct and portfolio investments. However, since 1994, immense capital withdrawals by investors, triggered by concerns about possible imbalances, have aggravated severe financial crises in much of the Latin America, large parts of South East Asia, and some transition countries. The internationalization of financial markets has led many investors to invest according to certain credit-rating categories, thereby increasing the scope for contagion where market liquidity suddenly dries up for particular countries, leaving them with no other options than defaults (Larsen, 2001). (The recent example would be Iceland's default.) As credit ratings became a leading indicator for assessing country specific risk, a plethora of economists started investigating the structure of the ratings.

Credit ratings of a country incorporate a wide range of economic determinants and are perceived as a good predictor of a country's default. Therefore, they are widely used as risk indicators for the investors. Sovereign credit ratings play an important role in determining countries' access to international capital markets and the costs of borrowing (Reinhart, 2002), since the sovereign country ratings are an indicator of a likelihood that the borrower will default on the outstanding debts (Cosset, Roy, 1991).

Other researchers also underline that sovereign ratings are forward-looking assessments of capacity and willingness to honor entirely the existing and future obligations on time (Riley, Rawkins, McCormack, Piaz-Fredel). There is an important empirical evidence that long-term credit ratings are a considerable factor in promoting financial development in a country (Kim, Wu, 2007).

In order to determine an accurate assessment of a country's default risk, credit rating agencies, such as Moody's, S&P and Fitch, use a variety of economic indicators. According to the Sovereign Rating Methodology provided by Fitch ratings, these ratings are composed of qualitative and quantitative measures analyzed to assess the credit risk of the sovereign[2].

Previous studies have found sovereign ratings across countries to encapsulate a plethora of crucial factors of the country's debt history and macroeconomic strength such as the amount of outstanding debt, GDP, economic growth, inflation, fiscal balance and external balance (Cantor, Parket, 1996; Afonso, 2003; Mora, 2006; Kim, Wu, 2007).

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[2]   D. Riley, P. Rawkins, J. McCormack, T. Piaz-Fredel, Sovereign rating methodology, Fitch Ratings (p. 1).

The Fitch Rating agency's *Sovereign rating methodology (*S&P and Moody use similar criteria) places sovereign rating components into broader groups. They encompass all of the above-mentioned factors adding also other qualitative factors[3]. Nevertheless, some of the factors, such as structural features, do not change as robustly as others in the course of economic downturns. Therefore, this research will mainly focus on the quantitative key risk factors and will determine their significance during the economic downturn in Lithuania.

Key sovereign rating determinants applicable to Lithuania

As it becomes apparent from a wide range of indicators used to assess the economic conditions, the capability and willingness of a country to service its debts, some of the factors might be more relevant than others when taking into account diverse economic conditions and differentiation among the countries' specifics. In the statements on rating criteria, Moody, Fitch and Standard, and Poor list numerous economic, social, and political factors that underlie their sovereign credit ratings.

Identifying a relationship between their criteria and actual ratings is difficult, partly because some of the criteria are not quantifiable. Moreover, the agencies provide little guidance as to the relative weights they assign to each factor. Even as regards the quantifiable factors, it is difficult to determine their relative weight assigned by Moody, Fitch and Standard, and Poor, because the agencies rely on such a large number of criteria (Cantor, Packer, 1996).

Analysis of the scientific literature showed many variables possibly affecting the borrowing costs. However, several main variables were extensively mentioned in the analyzed literature. Therefore, eight quantitative variables were selected for empirical testing in order to uncover the combination that has a highest effect on the perception of Lithuania's ability to service its debts: GDP growth, fiscal balance, external balance (current account deficit, CAD), external debt servicing costs, net foreign assets, short-term external debt, foreign direct investment (FDI) and inflation. The measurement units, definitions and the sources for the variables are summarized in Table 2.

Methods

The research of determinants of the deteriorating country's sovereign credit ratings and increasing external borrowing costs, particularly visible during the 2008 economic downturn, has been concluded while performing multiple regression analysis with the use of the ANOVA model and a time series of data to assess the determinants and their significance to Lithuania's sovereign credit ratings and borrowing costs during the analyzed period.

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3   D. Riley, P. Rawkins, J. McCormack, T. Piaz-Fredel, Sovereign rating methodology, Fitch Ratings (p. 4).

TABLE 2. **Description of variables**

Variable	Definition	Units	Data sources
GDP growth	Average quarterly real GDP growth on a year-over-year basis, 2003–2009	Percent	Bank of Lithuania; Department of Statistics (Lithuania)
Fiscal balance	Average quarterly central government budget balance relative to GDP, 2003–2009	Percent	Bank of Lithuania
External balance (CAD)	Average quarterly current account balance relative to GDP, 2003–2009	Percent	Bank of Lithuania; Eurostat
External debt servicing costs	Gross external debt servicing costs relative to GDP, 2003–2009	Percent	Bank of Lithuania
Net foreign assets (NFA)	Net foreign assets quarter on quarter change	Percent	Bank of Lithuania
Short-term external debt	Short-term gross external debt on a remaining maturity basis is the amount of debt liabilities maturing in the coming year. Specifically, it covers not only short-term gross external debt but also the part of long-term debt, liabilities that are due for payment within one year or less to GDP	Percent	Department of Statistics (Lithuania)
Foreign direct investment (FDI)	Quarterly FDI relative to GDP, 2003–2009	Percent	Bank of Lithuania
Inflation	CPI average quarterly rate compared to the same quarter a year before	Percent	Department of Statistics (Lithuania)
Other variables			
Spreads	Lithuanian Eurobond (maturity 2013) relative to German Bunds[a] (3–8 year maturity) quarterly averages, 2003–2009	Percent	Cbonds, Bank of Lithuania, Bloomberg, Deutsche BundesBank

[a] In the term structure of interest rates used, there are estimates derived from the observed yields to maturity of coupon bonds.

Source: Author's compilation.

The following regression equation was used:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \ldots + \beta_n X_n + \varepsilon_i,$$

where Y is the dependent variable,

β_1 is the coefficient of the first predictor (X_1),

β_2 is the coefficient of the second predictor (X_2),

β_n is the coefficient of the nth predictor (X_3),

ε_i is the difference between the predicted and the observed value of Y for the ith subject.

Using this multiple regression equation in the ANOVA model, the author tried to find a linear combination of the predictors that highly correlate with the dependent variable, i.e.

to find the key determinants of the external Lithuanian borrowing costs. The regression equation for this research was formulated as follows:

$$Spreads = \beta_0 + \beta_1 GDP + \beta_2 Fb + \beta_3 CAD + \beta_3 EDSC + \beta_3 NFA + \beta_3 StED + \beta_3 FDI + \beta_n I + \varepsilon_i,$$

where *Spreads* is a dependent variable and *GDP, FB* (Fiscal Balance), *CAD, EDSC* (External Debt Servicing Costs), *NFA, StED* (Short-term External Debt) and *I* (Inflation) are predictors.

Due to the limited variation in the credit ratings of Lithuania, shown in Table 1, another indicator had to be used as a dependent variable to better represent the sample size and predictability for the multiple regression model. Erb, Harvey and Viskanta (1999) have found a high correlation between the country credit ratings and soveireign bond yeild spreads[4]. Therefore, the spreads between long-term Lithuanian Eurobonds, denominated in Euro, and a risk-free asset – German Bunds – were chosen as a dependent variable, thus eliminating the risk not associated with a particular country. The yield spreads show Lithuania's risk premium for long-term borrowing in the international markets. Long-term securities, with maturities not closer than three years, were selected to avoid short-term fluctuations in the interest rate of the bonds. The quarterly averages of the effective yield to maturity (YTM) on Lithuanian Eurobonds denominated in Euro with the maturity date of year 2013, traded in the OTC market, were compared with the German Bunds – risk-free assets – in order to determine the spreads. The author used the term structure of interest rates on the listed German federal securities (method by Svensson), by residual maturity of 3–9 years (quarterly averages, 3 years to maturity for 2009, 4 for 2008, 5 for 2007, etc.). They were calculated using the interest rates on (notional) zero-coupon bonds without a default risk; the estimates are based on the prices of the Federal German bonds, 5-year Federal notes and Federal Treasury notes with residual maturities of at least 3 months; the procedure is described in more detail in the definitions of the Statistical Supplement Capital Market Statistics[5]. The interest rates are estimated using the non-linear parametric approach.

The yield spreads of long-term Lithuanian Eurobonds as compared to risk-free assets issued in the foreign market player showed a significant spread increase starting from the third quarter of 2008.

This increase in the Lithuania's borrowing costs was triggered by the extended deterioration of credit ratings. The increased return on investment into Lithuanian bonds demanded by foreign markets is shown in Graph 1.

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[4]   Erb, Harvey, Viskanta, 1999. New perspectives on emerging market bonds: looking beyond the current crisis. Journal of Portfolio Management, Vol. 25, No. 2, 83–92.
[5]   Deutsche BundesBank, Statistical Supplement Capital Market Statistics.

Yield spreads
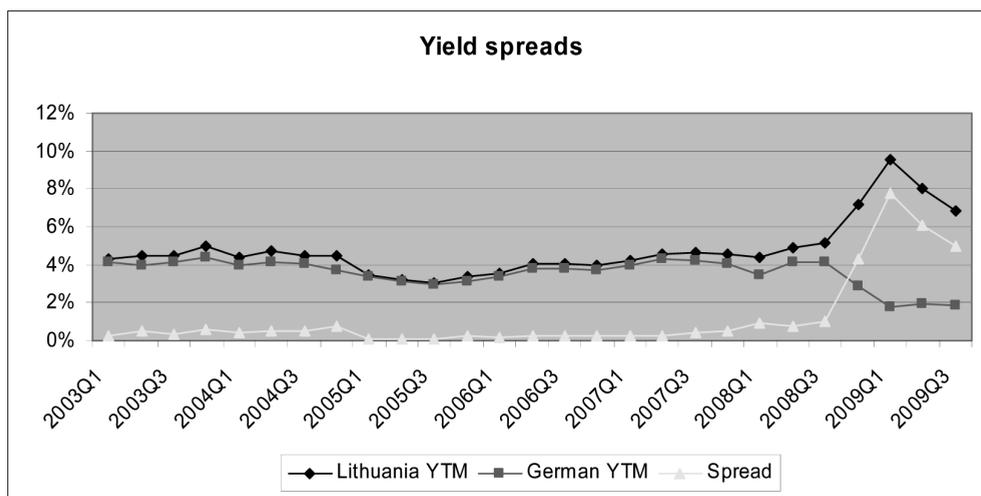
GRAPH 1. **Lithuanian Eurobonds against risk-free asset for the period 2004–2009**

Source: Cbonds, Deutsche BundesBank, author's compilation.

As is seen in Graph 1, slight variations started to occur as soon as in the third quarter of 2007, since in the second quarter of the same year the S&P agency put a negative outlook for Lithuania.

During the second half of 2008, the risk-free asset prices reduced dramatically due to an overall economic turbulence in the world and the reduction of the European Central Bank (ECB) rates in order to stimulate economic activity across countries[6].

Nevertheless, Lithuanian borrowing costs more than doubled in less than a year, peaking in the first quarter of 2009; later the investors started to regain confidence, and the gap started to narrow down, however, much slower than it grew and still keeping the spread close to 5% in the third quarter of 2009.

Quantifying the relationship

A Pearson correlation (2-tailed) was performed on the variables to uncover their relationship with the dependent variable. The results showed a most significant negative correlation (at a 0.05 level) of GDP with the dependent variable; it reached -.936. The GDP indicates the potential tax-base of the borrowing country, the national recourses of the government to repay the debt. The significant GDP "dive" in 2008 signaled the rating agencies and investors about the ongoing distress in the country; therefore, the borrowing costs leaped. However, since almost all ratios of the selected independent variables were measured against GDP, the author secluded the GDP growth from the regression model to

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[6]   European Central Bank, http://www.ecb.int/stats/money/yc/html/index.en.html

avoid the negative interaction effects and to gain a better understanding of the situation. Nevertheless, GDP growth is well represented in other variables.

Net foreign assets and the fiscal budget also confirmed a significant (0.05) level of a negative correlation with the Lithuanian borrowing cost – respectively -.722 and -.792. The growing fiscal misbalances as compared with the GDP show a decreasing ability of the central government to finance its domestic and foreign debt, which in turn creates a perceived risk level for investors, causing the debt costs to go up for the country. This variable can also serve as a proxy for the level of political stability and other important factors signaling the unwillingness of the country to service its debt in time. Together with the decreasing GDP, a roaring fiscal budget deficit might have triggered even a stronger reaction of credit-rating agencies. The decreasing tax-base of the country, together with the fiscal financing needs, created a huge financing gap which could be covered only by external borrowing. In addition, financial instability in the country and extensive fairs of currency devaluation in the neighboring Latvia were escalated, and the market feared that investors would be unwilling to purchase a new Lithuanian debt which would force the country into IMF borrowing or devaluation.

CAD and short-term external debt were defined as positively correlated with the dependent variable. However, FDI, external debt servicing costs and inflation did not confirm a strong correlation with the Lithuanian borrowing costs. External debt servicing costs with a very high value (.774) and FDI with the value of .314 also showed a very little significance of the model; therefore, it had to be removed to improve the predictability. The low significance of the external debt servicing costs could be explained by the high portion of the debt being issued to the banking sector by the parent banks. Therefore, investors anticipated that the debt would be rolled over without creating instability in the financial sector. This confidence was boosted after the statement issued by the Sveriges Riksbank in the financial stability report of 2008[7], causing this variable to lose significance.

The significance of the inflation variable also did not meet the criteria (less than .05)[8]. The inflation variable might point to structural problems in the government's finances. When the government appears unable or unwilling to control the stability of the growing economy via contraction or expansion policies, this might create concerns to investors. However, Lithuania is a developing country with the high growth rates in the past few years; therefore, inflation could be partially explained by the GDP growth as well as by the robust growth in oil prices right before the economic crisis. The oil price growth, although causing difficulties in the country's economic activity, does not indicate a political instability in the country.

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[7]   Sveriges Riksbank, Financial Stability Report, 2008, No. 1.
[8]   Andy Field (2000), Discovering Statistics using SPSS for Windows, p. 150.

The insignificant variables were eliminated from the regression module. The new model explained 81% of the yield spreads' variation with only four independent variables. The model still showed a low value for errors (std. error of estimate .008), and the Durbin–Watson test scored 1.946, showing an insignificant correlation between the residuals. The value of F, reaching 27.720 at the significance level of less than $p < 0.001$, convinced the author that there was less than .1% of chance that the prediction of yield spreads was accidental, confirming the sufficiency of the sample.

The CAD, fiscal balance, short-term debt and NFA were most significant in determining Lithuania's credit rating deterioration. This is shown in Table 3.

TABLE 3. **Significance of four independent variables**

Coefficients[a]					
	Unstandardized coefficients		Standardized coefficients		
Model	B	Std. error	Beta	t	Sig.
(Constant)	-.043	.018		-2.429	.024
Fiscal balance	-.341	.051	-.645	-6.711	.000
CAD	.207	.044	.514	4.740	**.000**
NFA	-.007	.003	-.246	-2.399	**.026**
Short-term debt	.066	.019	.319	3.520	**.002**
[a.] Dependent variable: Spreads.					

Source: author's compilation.

Interaction effects

Even though the GDP was not considered in the regression analysis due to its low significance in the model, as stressed earlier, it is the base unit for calculating many of the independent variables. The GDP showed a high correlation with the dependent variable, yield spreads; therefore, the author decided to consider the interaction effects between the key determinants of the Lithuanian external borrowing costs, taking into account GDP fluctuations and their effect on the dependent variable.

GDP growth can be perceived as a negative variable when considering the current account balance, since the growth of the economy signals to households about their future income increase; it fosters consumption, and the CA gap increases. The diminishing GDP growth would signal the opposite, and the CA gap would decrease as it happened in Lithuania in 2008; the 11.6% gap was replaced by a slight surplus in 2009. This effect might have been strengthened by a smaller fall in GDP in the European Union and by the reduced demand in the country, thus making Lithuanian exports prevail over imports. Therefore, in the course of recession, the dramatic decrease in GDP had a positive effect on rebalancing the current account in Lithuania. This is especially relevant in the countries such as Lithuania where the government is precluded to fiscal policies, since the monetary policy is constrained by the Currency Board Agreement.

However, the problems evoked by the decrease in GDP should not be excluded. A substantial fall of domestic production and consumption causes a rise of unemployment and of the needs for fiscal expenditures to cover the increased number of social security and unemployment payments. In addition, during recession, according to the prevailing Keynesian approach, government ought to use expansionary policies in order to support the economy of the country; however, the Lithuanian government was constrained by the lack of finances to be able to follow the road of expansionary policies.

Despite the insufficient finances of the government, the financing sector in Lithuania is highly subsidized by parent bank debt from Sweden; therefore short-term external debt levels became a core issue in Lithuania during the financial turbulence of 2008. Due to the reduced availability of global capital flows in the world during the 2008 economic downturn, Lithuania, together with other CEE countries, found it hard to refinance or rollover the maturing debt of the country. According to the Fitch credit rating agency, the level of maturing debt in Lithuania was quite high, and this might have created difficulties for Lithuania in financing the maturing debt in 2009 due to financial instability of the markets[9]. Nevertheless, the Financial Stability Report (2008) of Sveriges Riksbank identified that the main Swedish banks were able to finance possible looses in the Baltic States[10]. This gave confidence to investors and stabilized the Lithuanian financial sector. Therefore, the highest importance remained to be the fiscal balance, since it constitutes one of the major parts of GDP.

Nevertheless, we should not forget NFA: this is the only independent variable that was not calculated using GDP as a base unit, but rather the quarter-on-quarter growth. However, its strong impact on borrowing costs and interaction effect with other key determinants could be explained by its indicative power of the country's indebtedness level and its relationship with the current account; so the NFA could be perceived the accumulation of past current account surpluses.

After analyzing the theory and performing an analytical research, as well as considering the interaction effects between the key determinants, the author has concluded that the best way for Lithuania to ensure stabile credit ratings and low external borrowing costs is to pursue sustainable fiscal policies, since other determinants require an active monetary policy. In addition, the other key determinants have a tendency to level each other out through interaction effects. For instance, GDP is a negative variable, its decrease would discourage consumption and the CA gap would close; over time, CA will result in NFA accumulation, and sustainable fiscal balance would lessen the concerns about short-term debt repayments.

Lithuania's fiscal policy has been vastly pro-cyclical in the past few years when during the economic boom period tax cuts and government spending were increasing.

[9]   Int. Special Report (May 2009). External Financing Risks in Central and Eastern Europe, Fitch Ratings, (p. 13).
[10]   Financial Stability Report, Sveriges Riksbank, 2008, No. 1.

Policy makers further pursued tax incentives to the boom-related industries, in this way supporting overheating industries and augmenting the fiscal deficit. Once the economic growth stopped and turned to negative, the newly elected government, in the face of the pending collapse of public finances, was strained to further exacerbate the economic downturn in order to prevent the default (Kuodis, Ramanauskas 2009). This issue needs to be addressed to avoid a similar economic distress in future.

Conclusions

The aim of this study was to elucidate the key determinants of the Lithuanian sovereign rating during the financial turbulence of 2008 and to explain their importance and dynamics through the external borrowing costs of the country.

The author has considered the factors used by credit rating agencies for determining the country's sovereign credit rating. In addition, other scientific literature available on the subject was overviewed, and eight variables (GDP, Fiscal Balance, CAD, External Debt Servicing Costs, NFA, Short-Term External Debt and Inflation) that could have a significant impact on Lithuania's credit ratings and external borrowing costs were distinguished.

In the analytical part of this research, using the multiple regression model, four of the mentioned variables (Fiscal Balance, CAD, NFA and Short-term debt) showed a significant predicting power of Lithuania's external borrowing costs.

The above analysis has demonstrated that three out of four key determinants, although not correlating, are very interrelated and have a common base unit, GDP, through which their effects on each other can be explained and tendencies seen. The fourth variable (NFA) is highly related to CA as over time CA will result in NFA accumulation.

The author suggests that under the Currency Board Arrangement (CBA), the Lithuanian government is precluded from monetary policies[11]. Therefore, the highest significance should be placed on Fiscal Balance in order to ensure stabile credit ratings and low external borrowing costs.

Pursuing contraction policies over economic booms and saving funds for future economic balancing would enable the government to follow expansionary policies during economic downs, thus decreasing the scope of the recession in the country and ensuring its faster recovery. A great example would be Estonia which had sufficient funds for keeping economy afloat instead of taxing its citizens and the private sector and thus fostering shadow economics and adding to the overall economic downturn.

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