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KEY FACTORS OF NON-PERFORMING LOANS IN BALTIC AND SCANDINAVIAN COUNTRIES: LESSONS LEARNED IN THE LAST DECADE

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Abstract. *A cross-country panel data regression was performed for non-performing loans (NPL) in Denmark, Estonia, Finland, Latvia, Lithuania and Sweden covering a period of years 1998-2014. The main objective was to determine the major factors that were driving the NPL in the selected countries. Also, we expected to draw the differences in the banking industry between emerging economies in the Baltic countries and Western economies in the Scandinavian region. The selected variables were banking industry-related (net interest margin, ROA, ROE) and macroeconomic variables (GDP growth, RE prices, Unemployment), of which the majority is included as the Financial Soundness Indicators by the IMF. Key findings of the research show that NPL in both regions were mostly dependent on GDP growth and Unemployment, whereas the banking industry variable ROA had a very moderate effect only on a country level. The research is contributing to a better understanding of financial stability in the banking industry during the last decade, and it may have possible implications for the macroprudential policy.*

Keywords: *non-performing loans, credit risk.*

1. Introduction

Non-performing loans (NPL) are widely analyzed in the context of the 2007-2008 global financial crises. During the financial turmoil period, the NPL to gross portfolio ratio reached 24% in Lithuania and 16% in Latvia, and it caused threat not only to certain banks but also to the whole banking system. In Estonia, the NPL ratio was around 5% the – country was not hit so badly by the "bad debt crises" as the other two Baltic countries were. In Denmark, the level of NPL jumped from 0.6% in 2006 to 4.6% in 2013, indicating the largest balance sheet problems among the Nordic countries. Sweden was the most resilient during the financial turmoil period – NPL had only doubled, while in Sweden, they jumped 8 times and almost 6 times in Denmark. Many policy makers, like the ECB and the World bank, have stressed that high ratios of NPL is a barrier for banking industry development and limits possibilities to serve business and individual investment and financial development needs.

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There are several reasons why different banks go bankrupt, but no doubts contingency in the assets portfolio and high rate of NPL have contributes to the critical situation of the liquidity of the bank. There were several banks facing problems in Nordic and Baltic region. In year 2008, Parex bank in Latvia, Roskilde Bank in Denmark those were overtaken by the state and owned by central banks after declaring the insolvency. Another large bank in Denmark was Amagerbanken that was declared insolvent and overtaken by the competitor's bank. In Lithuania, Snoras and Ūkio bankas have also stopped their banking activities. Finland and Sweden were heavily hit by the financial crises in late 1990s, surprisingly it turned out that there were no banks that defaulted after the 2008 global financial crises. There are several articles that take Swedish and Finnish government restructuring and recovery program in 1990s as an example for dealing with the banking crises. Despite recovery after severe banking crises in Sweden two decades ago, rising real estate prices and possible real estate bubbles put more grounds to capture effects of the assets market on the non-performing loans.

In the research part, we try to determine the major factors that were driving the NPL in the selected countries and highlight what are the similarities in the banking industry between emerging economies in Baltic countries and Western economies of Scandinavian/Nordic region. Based on finance literature and the belief that financial markets are more efficient in the Nordic countries, we expect that banking-related variables are more significant for the non-performing loans ratio than macrovariables in the Nordic countries than in the Baltic countries.

The paper is organized as follows: a review of the literature section, the data and descriptive analyses section, the methodology and finally results sections.

2. Literature Review

NPL is one of the asset's quality measurements used by the central banks and commercial banks. NPL includes distressed loans, defaulted loans and impaired loans. In accordance with the Basel II requirements, the ECB defines NPL as loans where principal and/or interest payments are overdue for more than 90 days, or interest was capitalized or refinanced by other agreement. In addition, it might be a situation when it becomes clear that the debtor is unlikely to fulfill its financial obligations without selling the collateral and, in this case, the overdue days are not important. There are some variations in the definitions across the countries and financial organizations, thus determining slightly different levels of NPL. Different tax rates for non-performing exposures (NPE) and loan write-offs create different strategies across countries on commercial banks level for NPL and NPE strategy.

The benefit of using NPL as a research object is that it is very easy to calculate and simple to compare between the different banks and countries. The other more specific asset quality ratio used in the risk management research is the Loss Given Default (LGD)

ratio. LGD describes to what extent NPL will actually imply a loss to the bank and how much of the assets are secured by collaterals. An estimation of LGD is based on different ratios for different types of collaterals and is very subjective to the market value or purchase price of the certain good. Loan Loss Provisions (LLP), Risk Weighted Assets (RWA), Loan-to-Value (LTV) ratios are usually the accompanying credit risk assessment models. However, there are no cross-country available data on LGD, LLP, RWA, LTV to perform cross-country panel data analyses. The most common data is NPL, and it is available within the International Financial Statistics (IFS), the International Monetary Fund (IMF) and the World Bank. Data on Capital Adequacy Ratios and Liquid Assets to Total Assets are also regulatory variables that are observed by the financial supervision institutions; consequently, the banks are always targeting to meet the minimum requirements. The variation of the Capital Adequacy and Liquid Assets variables are not as dynamic as for the NPL. However, if problems related to non-performing exposures are not solved quickly (not restructured or sold to asset management units/companies) by the commercial and central banks, then the NPL ratio is static and stable.

Beck et al. (2015) analyzed panel data of 75 countries and tried to capture the effect of the exchange rates mechanism (fixed/pegged/floating) for the NPL during the last decade. Research also included the traditional variables like GDP growth, interest rates and share prices. Their main findings tell that the traditional variable, namely GDP growth, was the main driver of NPL. Moreover, researchers claim that depreciation of the currency leads to higher rate of NPL when there is a high degree of borrowing in foreign currency. Makri et al. (2014) studied NPL in the euro zone countries for the period of 2000-2008. They have selected banking industry-specific and macroeconomic variables to explore the NPL ratio dynamics on the aggregate level. In their working paper, they have found a correlation between the majority of banking and macrovariables and NPL. Capital Ratio, ROE, Public Debt, GDP Growth and Unemployment were the most influential in the NPL index among the other factors during the precrises period.

There are several studies that focus on a particular country's NPL determinant and analyses. Cucinelli (2015) investigated 488 listed and unlisted Italian commercial banks during the 2007-2013 period and focused on how the NPL ratio and Loan Loss Provision ratios affected the new lending and supply of credit. His findings tell that during the "credit crunch" period, Italian banks, due to an increased credit risk and the deteriorated quality of the credit portfolio, stopped providing access credits. Zikovic et al. (2015) analyzed the drivers of NPL in Croatia between the Corporate and Private sector in the commercial banking industry. They have used a vector autoregressive (VAR) model to determine the short-term effects on the NPL ratio in Croatia by the explanatory variables (GDP Growth, Industrial Production Index, Unemployment, Interest Rates, Consumer and House Price Indexes, Average of Gross and Net Wages, Foreign Trade Coverage Ratio and Exchange Rate). They found that the NPL were moving in the same direction

as the GDP Growth and Industrial Production Index. Furthermore, Zikovic et al. (2015) noticed that unemployment had a negative effect for the corporate loans portfolio quality, explaining that an increase in unemployment rate hints for the companies to cut the production for the domestic market, and it decreases the sales and debt servicing abilities. Lakstutienė et al. (2011) depicted an interaction between the economic cycle and credit volumes in Lithuania's credit market. Their main findings, based on correlation analyses, were an identification of the turning points in credit and business cycle for the historical data set. Jasienė (2012) made a correlation analysis of household loans and macroeconomic variables (GDP Growth; Unemployment Rate, Gross Net Income, Interest Rates) for the ten years period starting from 2000.

Most of the researchers (Makri et al. (2014), Beck R, et al. (2015)) claim that studies on aggregate level contribute to better risk assessments in the banking industry. Although everybody agrees that stress tests of individual banks and country's banking system by the ECB and the IMF are much more accurate and comprehensive, the research of NPL dynamics, based on macrovariables, is valuable as an inexpensive alternative on the aggregate level. In addition, similar researches help to build low cost and simple early warning system for the central banks.

3. Methodology

3.1. Data used in analyses

The whole data used in the analyses could be described as unbalanced panel data for 6 countries (Denmark, Estonia, Finland, Latvia, Lithuania and Sweden) covering period of from year 1998 to 2014. The time period covers 16-17 years for all explanatory variables, except for the real estate prices index (REPI), which covers only 7 years from 2007 to 2014. The most complete data set is for Sweden and Denmark, but the number of data does not differ much in the case of the other countries (see Table No. 1).

Variables were selected for the specific countries in two geographical areas – the Baltic and Nordic countries, except for Norway. Norway was not selected, because it does not belong to the European Union and there were no available data in the sources to make the data comparable. When compared to other recent research, like Beck et al. (2015), we have not selected to capture the effect of the stock market to NPL due to the low stock market capitalization in the Baltic countries and dominance of commercial banks' lending in the Baltic region as compared with the Nordic states. While selecting the variables, we assumed that an increase in exports due to positive exchange

TABLE No. 1. **Number of observations for all variables per country**

Country name	Number of observations
Sweden	187
Denmark	184
Finland	180
Lithuania	184
Latvia	178
Estonia	180

Source: summary made by the authors.

rate changes will contribute to larger GDP growth changes. Thus, we did not include exchange rate changes in the analyses, because four out of the six analyzed countries (Estonia, Latvia, Lithuania and Finland) were pegged or had adopted the euro during the analyzed period.

TABLE No. 2. **List of variables**

Abbreviation	Name of the variable	Data source	Expected sign
ROA	Return on Assets	IMF	-
ROE	Return on Equity	IMF	-
NIM	Net Interest Margin	IMF	+
GDP	Growth of Real Gross Domestic Product	IMF	-
HDI	Households Disposable Income	OECD	-
HICP	Harmonized Index for Consumer Prices	Eurostat	+/-
UNEMP	Unemployment Rate	IMF	+
IRST	Short Term Interest Rates	Eurostat	+
REPI	Real Estate Prices Index	BIS	+/-

Source: Prepared by the authors.

The variables were grouped based on their origin: the first group consists of banking related variables – the Return on Assets, Return on Equity and Net Interest Margin variables; the second group consists of macroeconomy-related variables – Real Gross Domestic Product, Households' Disposable Income, the Harmonized Index for Consumer Prices, the Unemployment Rate, Short the Term Interest Rates and the Real Estate Prices Index (see Table No. 2). When compared to other recent research, like Beck et al. (2015), we have not selected to capture the effect of the stock market to NPL due to low stock market capitalization in the Baltic countries and the dominance of commercial banks' lending in the Baltic region as compared with the Nordic states. The non-performing loans to gross loans ratio (NPL) is expected to be dependent on the variables for the following assumptions.

- Return on Assets – we expect these to be negatively correlated with NPL as a decrease in earnings occurs when loans are written off or provisions are formed. According to Makri et al. (2014), highly profitable banks have fewer motives and do not want to be engaged in any risky banking business. On the other hand, Cai and Huang (2014) claimed that there is no adverse relationship between the NPL and Return on Assets.
- The Return on Equity Variable is another profitability ratio used in the banking industry from the equity used for the business point of view. It is expected to be negatively correlated with NPL. According to Karapetyan (2016), the return on equity has elements of risk-taking behavior that higher returns will result in a higher

rate of NPL. However, according to the current Basel II framework, all high-risk loans will demand provisions that eventually will reduce the earnings and the ROE.

- The Net Interest Margin – an increase in the net interest margin could lead to larger earnings from the credit portfolio for a bank. For a household, a higher net interest margin will result in lower income from deposits or higher burden on financial obligation service; consequently, it will hinder debt servicing abilities and is expected to increase the NPL.
- Gross Domestic Product – it highlights the effects of the business cycle to the economy and households. It is expected to be negatively correlated with the growths of GDP.
- The Household Disposable Income is expected to be negatively correlated to the NPL ratio, because a decrease of the revenues will hinder the households' abilities to serve financial debts. Overall, the household disposable income illustrates abilities of the households to serve financial debts.
- The Harmonized Index for Consumer Prices – a controversial variable that both can have positive and negative effect for the NPL ratio.
- Unemployment is expected to be positively correlated to the NPL, because households face temporary financial difficulties when their source of income is lost. In addition, companies reduce the production lines for local consumption when there are fewer households able to purchase their goods.
- An Increase in Short Term Interest Rates will worsen companies' and especially households' abilities to serve the debts, as most of the mortgages are with floating interest margin, fixed to some short-term interest rates base. Thus, it is expected positive relation between short term interest rates and NPL ratio.
- The Real Estate Prices Index is a controversial ratio, because the moderate development of the RE market is a positive sign of the economy and provides stability and excess credit possibilities for the banks in terms of the collateralization. However, when the RE market development is very fast and instable, changes in the RE could be positively related to higher risks the bank is involved in and may thus result in an increase of the NPL ratio.

3.2. Methodology Framework

Collected panel data describe the NPL across time, geographical regions and individual countries. We have used the multiple linear regression (forward stepwise) method to estimate the variance of selected variables in time perspective. The forward stepwise method is recommended for larger number of variables that are tested in the regression equation. To find region-specific effects, we broke the data into two parts – in the first part of the analyses, we split the sample by region and examined the Nordic and Baltic countries separately. Afterwards, in the second part, we examined the effects of pooled

data of all countries. The multiple linear regression model can be described as the following:

$$NPL_{it} = a_0 + a_i B_{i,t} + a_i M_{i,t} + \varepsilon_{i,t} \quad (1)$$

Where NPL stands for all non-performing loans compared to gross loan portfolio; a_0 – stands for the constant in the regression equation. B – banking industry related explanatory independent variables; M – macroeconomy linked exogenous variables; *i* - denotes the number of analyzed countries and *t* – represents the number of years used in analyses; ε – error term for the equation. Similar methods of the arguments were used by Brunka (2014), Beck et al. (2015), Makri et al. (2014); in addition, they employed a generalized method of moments (GMM) in their analyses that contained effects of lagged variables. Fatih (2012) used a dynamic panel data estimation for the NPL for the Turkish commercial banks and included a lagged dependent variable as an independent variable together with other variables. The purpose of using the multiple linear regression model is to identify the strength of banking and the macroeconomy-linked effect of the independent variables on a dependent variable NPL. A linear relationship between the dependent variable and the independent variables holds on several assumptions:

- Regression residuals must be normally distributed;
- The residuals are homoscedastic (variance of the error term is constant across sample);
- There is no multicollinearity (independent variables are not correlated).

If assumptions are violated, then coficients and confidence intervals of the regression model are imprecice and misleading; thus, tests for stationarity, autocorrelation and residuals analyses are needed. There is also a requirement for a time series to meet the Durbin-Watson (DW) criteria, to be covariance stationary. The Durbin-Watson (DW) statistic is used to find auto-correlation that is present, when residual terms are showing serial correlation. The Durbin-Watson (DW) value that is smaller than 2 indicates positive correlation and problems within the residuals. In the regression model we have estimated Durbin-Watson statistics and could not reject the hypotheses for all data sample, for Nordic region, however, rejected for the Baltic countries.

4. Empirical Results

4.1. Descriptive statistics of the variables

When we group data into Nordic and Baltic region, we get very interesting results in descriptive statistics of the variables. The variance of NPL ratios in Baltic and Scandinavia countries was very different: both the peak and slowdown periods were different and the reasons behind the differences are interesting for the deeper analyses. Even though the NPL of Baltic countries in year 2014 reached a level of 4.7% (compared to total assets of the commercial banks), still, it was almost twice larger if compared with the three Scandinavian countries, where average NPL ratio was 2.5% (see FIG. No.1).

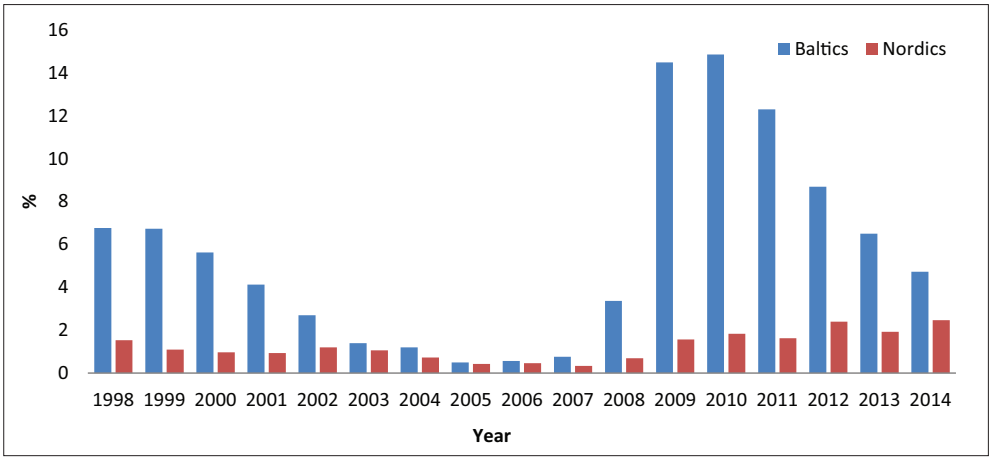

FIG. No. 1. **Non-performing loans in Baltic and Nordic regions, % of total assets**

Source: Prepared by the authors.

What is also observed in the dynamics of the NPL across the 6 countries in two regions, is that the Baltic countries, after the extremely hard financial turmoil period in 2008-2009, were gradually reducing the NPL ratio, while, in the Nordic countries, the NPL ratio jumped two times in Sweden and three times in Finland in the year 2014. For Sweden, one of the main reasons was that the central bank expressed its concern over the possible inflated collateral value in the private credit market and demanded a more risk-aware credit policy from the commercial banks.

4.2. Empirical results of the estimations

While performing multiple linear regressions based on ordinary least squares and forward stepwise method, the worst suitable variables were removed in every stage to get the most suitable model. The calculations were split into three parts – in the first part covering all the data, then, only the Nordic countries, and finally including the Baltic countries. Using pooled data of all countries, model suitability was measured by adjusted R square was 64% (see Table No. 4). Unemployment was the most influential factor in the equation (0.60) and was found with a positive sign. The other powerful predictor was the growth of GDP, where a coefficient value was (-0.37). Therefore, model results suggest that decrease in GDP growth leads to increase in NPL ratio and also the same direction of changes by Unemployment and NPL figures. In this modeling process of ordinary least squares model, after five sampling attempts, suggested two significant variables and the intercept (see Table No. 8). Moreover, a banking variable, such as the return on assets (ROA), lost its significance after model three. In the first three models, the return on assets (ROA) depicted a negative relationship to the NPL, meaning that this banking profitability variable came to be closely connected to assets' quality. Findings

are following the results of previous researches on NPL subject. Other studies find similar positive relationship between NPL and unemployment.

TABLE No. 4. **Results of Multiple linear regression models for different data sets (dependent variable: NPL)**

Data set / Variables	Multiple linear regression model (forward stepwise)		
	All countries	**Nordic countries**	**Baltic countries**
Constant	-1.636* (0.983)	5.739*** (1.661)	-6.493* (0.091)
ROA		-2.214*** (0.493)	-2.318** **(**0.861**)**
ROE			0.281** (0.130)
NIM		0.664	-1.852** (0.737)
HICP		-0.382	0.356
GDP	-0.368*** (0.023)		
UNEMP	0.600*** (0.103)		1.398*** (0.240)
HDI		-0.216	
REPI		-0.027** (0.012)	
R-squared	**0.637**	**0.393**	**0.692**
Std.Error of estimate	2.87	1.093	3.752
Durbin-Watson		2.498	0.764

* denotes a 10% significance level;
** denotes a 5% significance level and
*** denotes a 1% significance level. Standard errors of the estimate are in parenthesis.

Source: Author's calculation.

In the second stage of analyses, the sample was split into two different regions – Baltic and Nordic. The purpose was to find the differences and similarities between the two closely related regions. The most visible change was that the growth of the gross domestic product (GDP) was not a significant variable for any of the two regions. The return on assets ratio (ROA) was negatively related and a significant variable for both equations in Nordic (-2.2) and Baltic (-2.3) countries. Changes in real estate prices index (REPI) were significant for the NPL in Nordic, but were not at all relevant in Baltic countries. Also, the return on equity (ROE) and net interest margin (NIM) changes were significant only for the Baltic countries. Unexpectedly, the model did not include the NIM or ROE variables as significant ones. Unemployment was a two times stronger factor of NPL in the Baltic countries (1.3) compared to a sample of all countries (0.6), meaning that job losses quickly and strongly reduce the abilities of households and businesses to serve financial debts in the Baltic countries. It indicates that less spear funds or savings are available in Latvia, Estonia and Lithuania for the financial debt service after job losses, and that households are two times more vulnerable in different regions.

Even though the regression of pooled Baltic countries had larger explanatory power in terms of R-squared results, the predictive power of the Baltic countries model was lesser because of the high standard error of the estimates (3.7) as compared to the Nordic countries, where standard error was relatively lower (1.0).

Conclusions

Real GDP growth, Unemployment and ROA were variables mostly affecting the NPL to the total gross loans ratio in the Baltic and Nordic regions. Findings are following the results of previous researches on the NPL subject. Macrovariables, such as Unemployment, real GDP growth are more able to explain the upcoming swings in the quality of the assets portfolio. Banking related variables (ROA, ROE, NIM) were found to be weak explanatory variables for the NPL. Macrovariables, like the Real Estate Price Index, Short Term Interest Rates, Households Disposable Income, Harmonized Index for Consumer Prices, were not at all significant variables in the model for the panel data analyzed.

The Baltic countries, due to their active distressed assets management policy by the commercial and central banks, have managed to cope with the NPL very well as compared to other troubled economies in EU. However, the Baltic countries faced huge swings in the NPL as compared to the Nordic countries and, in the future, they need to manage credit risk better in order to strengthen the resilience on possible banking turbulences. Non-performing loans were not affected by interest-related variable (NIM or IRST); thus the central bank's ability to mitigate the risk of NPL by regulating interest rates is limited. The decrease of the ROA ratio was proven to be significant for the increase of NPL. Commercial banks should strive for a higher ROA not by accepting higher credit risk, but by implementing a prudent and sound credit policy. Overall, the traditional macrovariables stand as more reliable predictors of the NPL levels when compared with bank activity-related specific variables.

Every central bank should have its policy for monitoring and controlling the level of NPL. An early warning system should be in place when a macrovariable, such as GDP, contracts, or when unemployment is rising. Upon noticing negative macrotrends, a stricter macroprudential policy could be implemented, limiting the access to the credit market by increasing down payments, or decreasing the maximum duration of new credits, or requiring more collateral over the credit. A benchmark for NPL levels could be set on country levels, based on regional specifics. Targets for the annual decrease of NPL could help the troubled economies to step out the banking crises. Relevant and timely provisioning and a write-off of NPL should be in place and under control of the central bank. It could help to cure the balance sheet of the commercial banks and allow borrowing for the healthy businesses and households.

Future studies could cover more countries and geographical regions, because, based on the variation of variables, there are many similarities within the geographical region. Moreover, a research with time lag analyses would bring more understanding about the relationship between the NPL and the business cycle.

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TABLE No. 5. **Descriptive statistics of the variables**

Variables	NPL	ROA	ROE	NIM	GDP	HICP	UNEMP	HDI	IRST	REPI
Mean	3.43	0.78	13.90	2.31	2.97	2.73	9.22	3.00	3.45	101
Standard Error	0.49	0.20	1.17	0.16	0.48	0.25	0.36	0.54	0.28	3.91
Median	1.25	0.94	14.45	1.79	3.01	2.10	8.40	2.70	3.07	97
Mode	0.60	1.39	10.89	1.27	0.82	1.30	7.60	#N/A	0.21	#N/A
Standard Deviation	4.93	2.01	11.75	1.60	4.85	2.56	3.62	5.43	2.81	34
Sample Variance	24.31	4.04	138.09	2.55	23.50	6.57	13.10	29.45	7.88	1,161
Kurtosis	5.57	34.51	1.33	5.51	3.71	6.73	(0.34)	4.00	3.42	1.35
Skewness	2.36	(4.86)	(0.62)	1.99	(1.38)	2.20	0.66	(0.27)	1.58	0.85
Range	23.90	18.95	62.35	9.67	26.71	16.50	15.30	39.34	13.66	166
Minimum	0.10	(14.58)	(19.93)	0.28	(14.81)	(1.20)	3.40	(16.55)	0.21	37
Maximum	24.00	4.37	42.42	9.95	11.90	15.30	18.70	22.79	13.87	204

Source: Prepared by the authors.

TABLE No. 6. **Pair wise correlation matrix between the variables**

Variables	NPL	ROA	ROE	NIM	GDP	HICP	UNEMP	HDI	IRST	REPI
NPL	1.00									
ROA	-0.52*	1.00								
ROE	-0.55*	0.79*	1.00							
NIM	0.17	0.23*	0.08	1.00						
GDP	-0.28*	0.76*	0.62*	0.35*	1.00					
HICP	-0.04	0.19	0.14	0.28*	0.05	1.00				
UNEMP	0.77*	-0.39*	-0.54*	0.35*	-0.15	-0.22	1.00			
HDI	-0.39*	0.37*	0.43*	0.20	0.39*	0.26*	-0.48*	1.00		
IRST	0.13	-0.32*	-0.13	0.44*	-0.22	0.48*	0.02	0.02	1.00	
REPI	-0.14	0.23*	0.11	0.10	0.19	0.62*	-0.27*	0.43*	0.14	1.00

* Denotes correlations significant at a <0.05 level. Source: Author's calculation.

TABLE No. 7. **Stationary testing by t-statistics**

Variables	N	t-statistics	p-value	Variables	N	t-statistics	p-value
NPL	102	7.02932	0.000000	**HICP**	102	10.74233	0.000000
ROA	102	3.90842	0.000168	**UNEMP**	102	25.71091	0.000000
ROE	101	11.88743	0.000000	**HDI**	100	5.52709	0.000000
NIM	102	14.57480	0.000000	**IRST**	101	12.35569	0.000000
GDP	102	6.18552	0.000000	**REPI**	76	25.86481	0.000000

Significant within p<0.05 Source: Authors calculations;

TABLE No. 8. **Multiple linear regressions: calculation steps for all countries and data (forward stepwise method)**

Models/ Variables	1	2	3	4	5
Intercept	2.79943	2.17677	2.30637	-1.3818	-1.6361* (0.9832)
ROA	-1.66450** (0.67941)	-0.94792 ** (0.41766)	-0.87562** (0.41012)	-0.1717 (0.1661)	
ROE	0.06199				
NIM	-0.42934				
GDP	-0.06924*** (0.03891)	-0.11602*** (0.04225)	-0.1392*** (0.03617)	-0.3399*** (0.0244)	**-0.3679*** (0.0232)**
HICP	0.26592	0.14499			
UNEMP	0.46862** (0.19286)	0.52027*** (0.14658)	0.49063*** (0.14300)	0.5789*** (0.1053)	**0.6007*** (0.1032)**
HDI	-0.08399				
IRST	-0.29600				
REPI	-0.02017	-0.02789** (0.01310)	-0.02325 * (0.01212)		
R-squared	0.7495	0.7386	0.7391	0.6374	0.6371

Standard errors of the estimate are in parenthesis. * denotes a 10% significance level; ** denotes a 5% significance level and *** denotes a 1% significance level.

Source: Author's calculation.

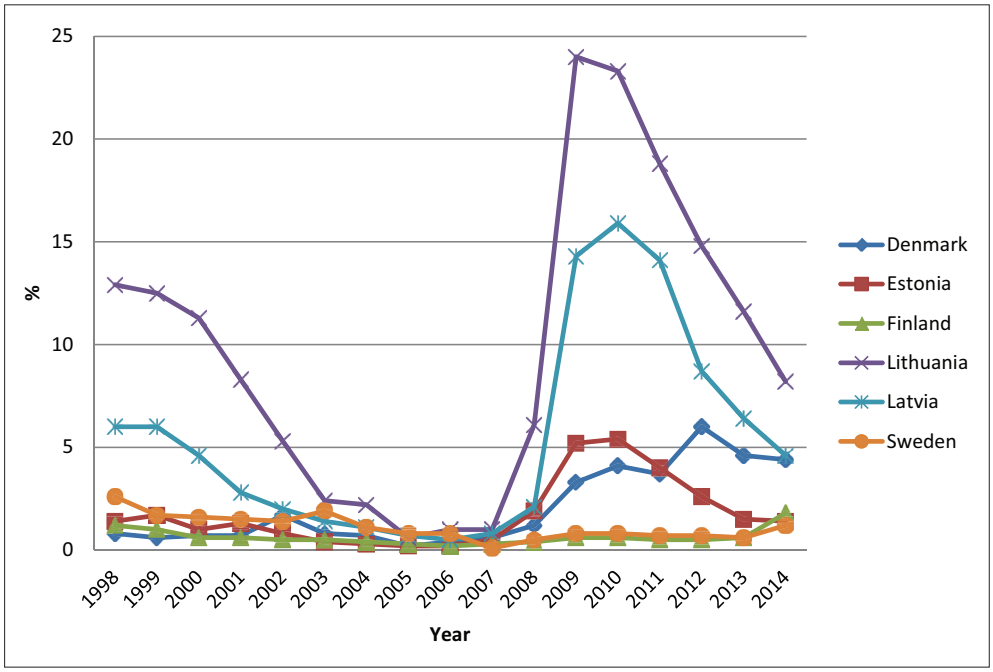

FIG. No. 2. **Dynamics of the non-performing loan to assets ratio in the Baltic and Nordic countries, 1998-2014**

Source: Based on data from the BIS.