THE INFLUENCE OF MACROECONOMIC TRENDS ON THE REPAYMENT OF LOANS BY HOUSEHOLDS: EVIDENCE FROM THE FEDERATION OF BOSNIA AND HERZEGOVINA AND POLICY RECCOMENDATIONS

Sanela Pašić, Adisa Omerbegović-Arapović

Abstract

This paper explores the influence of macroeconomic indicators, namely GDP growth, the Consumer Price Index and the unemployment rate on the quality of loan repayments by households in the banking market of the Federation of Bosnia and Herzegovina. Potential influence is observed over a period of fourteen years at the level of nonperforming household loans using regression analysis. The authors aim to determine whether macroeconomic forces actually influence loan repayment, and if so how and what can be done by banks to utilize this information in order to reduce future credit losses, and by the government to maintain the stability of the banking sector.

Key words: *influence of macroeconomic trends, nonperforming loans, Federation of Bosnia and Herzegovina*

JEL: *G210, P34.*

I INTRODUCTION

Credit risk management is the function most relevant to the safety of a bank's performance. Usually, the bulk of a bank's activities relate to lending and therefore the correctness of its credit decisions determines the bank's level of exposure to credit risk. Failure by the bank to make the correct credit decision can lead to the customer being placed in a position where he/she is unable to repay the granted finance. This can result in losses to the bank and trigger risks related to liquidity and the bank's ability to safeguard and repay its customer deposits.

Lending to private individuals (retail lending) was an attractive business for commercial banks in Central and Eastern Europe grew rapidly over the past two decades. Yet a reduction trend in otherwise historically lucrative margins in this business, coupled with the oversupply of retail products to households, has pushed commercial banks to seek ways to reduce costs in order to continue to operate this business, as pointed out by Berger and DeYoung (1997). Risk cost,

as a prominent item in the cost structure of commercial banks, is first on the agenda for reduction and therefore implies the need for improved retail risk management.

Furthermore, a slowdown in growth and recession in the CEE caused by the recent financial crisis have

Sanela Pašić
PhD Candidate
Senior Lecturer
Department of Economics
Sarajevo School of Science and Technology
E-mail: sanela.pasic@ssst.edu.ba

Adisa Omerbegović-Arapović, PhD
Associate Professor
Department of Economics
Sarajevo School of Science and Technology
E-mail: adisa.omerbegovic@ssst.edu.ba

had a strong effect on households and caused deterioration in private loan repayments, as pointed out by Barisitz (2011). According to the EBRD Transition Report for 2011, nearly one-third of households in CEE reported a decrease in wages and one-sixth reported job losses in 2011. According to the same EBRD report, a consequence of the economic crisis is that the percentage of nonperforming loans in the private individual portfolios of CEE banks has increased by eight times over the period 2008-2011. Thus, bank risk costs have increased rapidly, from 50 base points of interest earnings in 2008 to 350 in 2011. As confirmed by Price Water House research (2011), CEE banks traditionally have less knowledge and skills in terms of household/ private individual loan management than banks in other parts of the world. Therefore, in this environment, CEE banks are under stronger pressure to catch up with modern retail risk mitigation techniques.

Most of the factors that lead to a repayment failure relate directly to the customer: profile, gender, level of education, willingness to repay liabilities (Anderson, 2007; Kocenda and Vojtek, 2012; Mays, 2001). However, repayment failure can also be driven by the macroeconomic situation. Macroeconomic developments influence the repayment of private individual loans indirectly through factors such as job loss, inflation and increases in the cost of living.

The purpose of this paper is to explore the relationship between macroeconomic conditions and overall loan repayment tendencies by households. This relationship will be explored in terms of the Federation of Bosnia and Herzegovina banking market, where the share of nonperforming loans of households at the end 2014 stood at 527.9 million BAM. Share of nonperforming loans of households as part of total loans

varied within the range 2% and 12% over the period 2000 to 2014. Figure 1 below shows the development of nonperforming loans and total loans for households throughout this period. It appears that the presence of nonperforming loans was higher at the beginning and latter part of this period, which coincides with the negative economic cycle or recovery from the negative cycle (prior to 2000). Moreover, Figure 1 indicates a drop of NPL share took place in the period from 2005 to 2009, when total household loans had the biggest expansion (thus the share of nonperforming loans in total decreased in relative terms).

The development of nonperforming loans will be shown in relation to the development of the macro economy over the same period in order to determine whether the increase in the share of nonperforming loans follows a pattern influenced by changes in the Gross Domestic Product, Consumer Price Index and the unemployment rate in BiH. The latter are presented in Figure 2.

By determining this relationship this paper aims to make a practical contribution to the banking sector in terms of credit risk and theory. Banks can use the findings of this research to define their future credit behavior based on macroeconomic market forecasts for future years.

This paper is structured in the following manner: section two contains a basic overview of risk associated with lending to households; section three provides a literature review; section four discusses the paper's methodology and data; section five and six provide the results and limitations of this research; section six provides policy recommendations; final conclusions are presented in section seven.

Figure 1: Development of loans and share of nonperforming loans
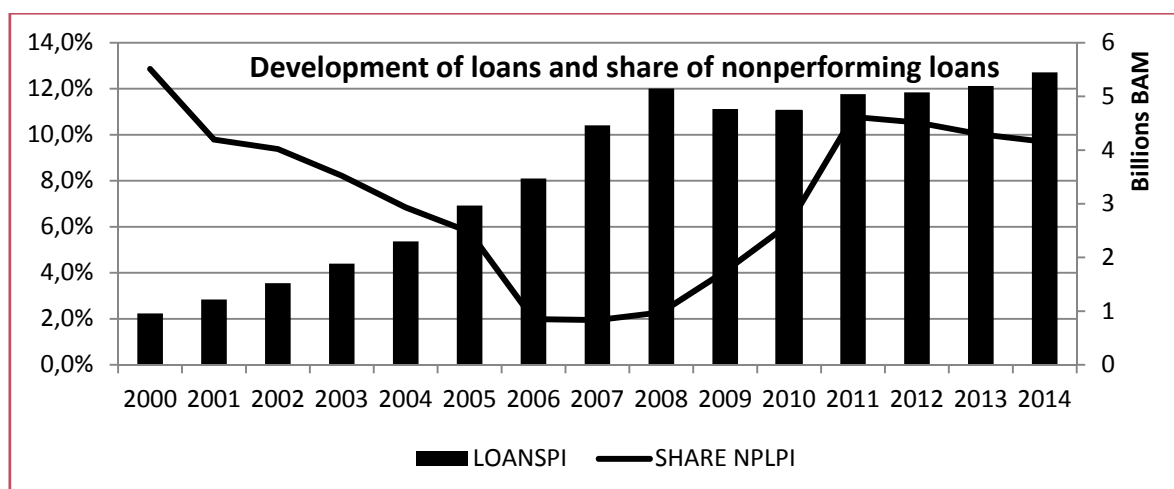
Source: Banking Agency Federation BiH

Figure 2: Development of macro trends versus share of NPLs
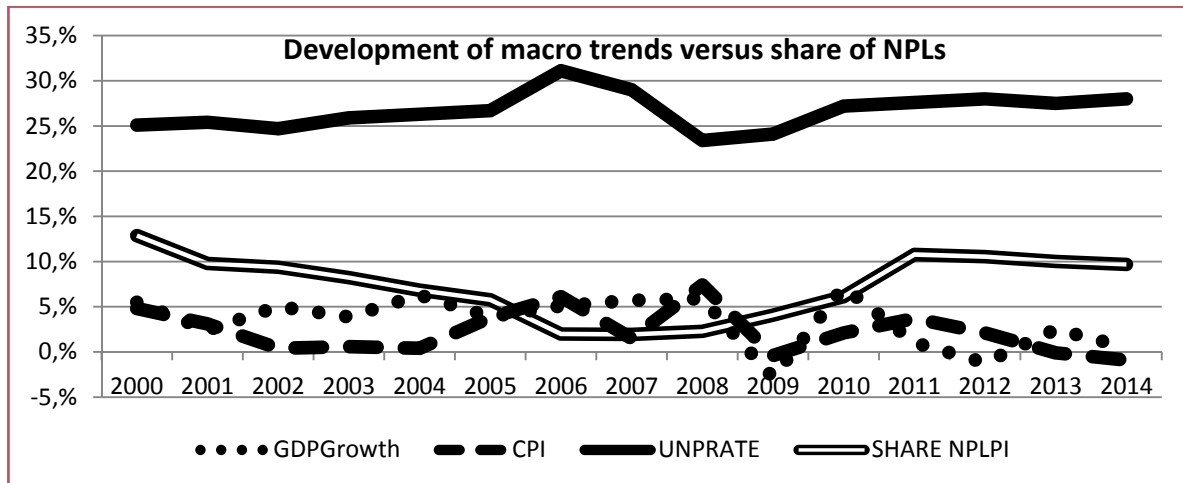
Source: Banking Agency Federation BiH and Raiffeisen Research

II MANAGING THE RISKS OF LENDING TO HOUSEHOLDS

When lending to retail customers, the bank aims to supply its customers with the funds necessary for their private consumption. These customers have a lack of funds because their current consumption or investment needs exceed their current earnings. They require financing from a bank and are ready to pay a price in the form of interest or fees in order to obtain such financing. On the other hand, the bank aims to place funds obtained from its depositors, parties who have a surplus supply of money, often from private individual savings. Within this transaction the bank aims to earn profit from the difference in margins e.g., the difference between the cost of funding and the rate of placement. Banks typically provide lending products such as consumer or mortgage loans and credit and debit cards. New products arise as financial markets develop, yet those mentioned above are the core products around which the bulk of the business revolves.

Various internal and external factors related to the customer can cause problems with the repayment of a loan. What does a bank analyze when approving loans?

Internal factors are factors specific or internal to the customer, as suggested by Avery (2004). They depend on his/her primary repayment capacity, including the size and stability of personal income, customer reliability (track record and history of servicing obligations, education and personal characteristics such as age and gender) and the purpose of the loan.

External factors are factors that are nonspecific to the customer. These relate to the environment in which a customer lives and works. These factors can cause deterioration in performance or influence internal risk factors such as a deterioration in employer status (Are the high risks of bankruptcy or recession in an industry potential causes of job loss?) or the risk of increased inflation (Is the expected inflation going to cause the customer's available income to fall below the loan capacity level?).

Movements in the macroeconomic environment can usually be observed through a number of factors. Those most relevant to a private individual's borrowing constraints are movement in GDP, the rate of unemployment, the exchange rate, the consumer price index and interest rates. When approaching a bank in order to gain approval a customer will usually be employed and have sufficiently low living costs compared to income to be able to cover the loan annuity. For this reason it does not make sense to investigate the direct influence of macroeconomic trends by regressing factors such as GDP and CPI together with customer features in order to determine the likelihood of repayment failure. However, after the loan is approved and during its maturity, which for consumer loans in BiH usually range from two to ten years, the macroeconomic situation can affect the customer. If the macroeconomic situation worsens then the customer may be exposed to the risk of job loss or wage reduction and an increased cost of living. These factors can lead to a suspension of repayment or cause the customer to default. In other words, this loan would change from regular payment and performance to what the banks refer to as a nonperforming loan. This implies that it would be prudent to observe macroeconomic trends over a certain period in relation to the portfolio of individual loans already approved, rather than

during the application process itself, as suggested by Nkusu (2011).

In the past banks in the Federation of BiH have focused solely on a customer's internal factors when deciding on a loan. A limited analysis of employer risks was occasionally performed at the individual loan level; however, banks never analyzed the macroeconomic indicators of influence for their household's loan portfolios. The legislation did not oblige the banks to factor future macroeconomic changes into their credit policy or to conduct stress testing. As a result, the banks were completely neglecting the effect of a macroeconomic downturn to the households' loan portfolio performance when approving loans. Not only did they ignore the potential threats, but they increased their offer of loans to households through cheaper products, in higher amounts and with more flexible conditions throughout the crisis period. For example, the highest consumer loan amount offered in 2008 was 10,000 BAM, whereas in 2014 it was 60,000 BAM. This behavior of the banks is further visible when observing the total level of household indebtedness in the Federation compared to indebtedness in the EU over the crisis period. According to FBIH statistics, the European Central Bank (ECB) and Eurostat, the average indebtedness of a Federation citizen in 2014 was 2.74 times his/her salary, while the same ratio for the EU was 1.40.. Figure 3 below also shows that while EU average indebtedness stagnated during the crisis period (even dropping since 2011) indebtedness in the Federation continued to grow significantly.

This paper will try to determine the influence of macroeconomic factors by comparing overall macroeconomic changes in the market with the level of nonperforming loans in the banking sector. Furthermore,

since it is clear that this influence was neglected as the share of nonperforming loans increased, this paper will, where possible, draw conclusions on its influence. Banks can use this to improve their loan approval process, reduce their share of nonperforming loans and increase stability in the banking sector.

III LITERATURE REVIEW

The literature review of this subject is split into two groups. The first covers a number of authors who have researched the impact of macroeconomic indicators on the development of nonperforming loans, while the second covers authors that have researched the opposite phenomenon: the impact nonperforming loans have on the economy. Given the fact that this research study is seeking answers for the banking sector, and that it therefore aims at obtaining conclusions in order to improve NPL reduction I banks, it focuses on the first group. Research in this group is either generic or multi-country/country-specific. This section provides an overview of the most recent studies in order to support the relevance attached to macroeconomic factors in this paper.

Generic and Multi-country Research

Bech, Jakubik and Piloiu (2013) researched data from seventy-five countries in order to determine the relationship between macroeconomic indicators and the level of nonperforming loans. They concluded that negative GDP growth has a strong impact on increases in nonperforming loans. They also established

Figure 3: Comparison of personal debt in crisis
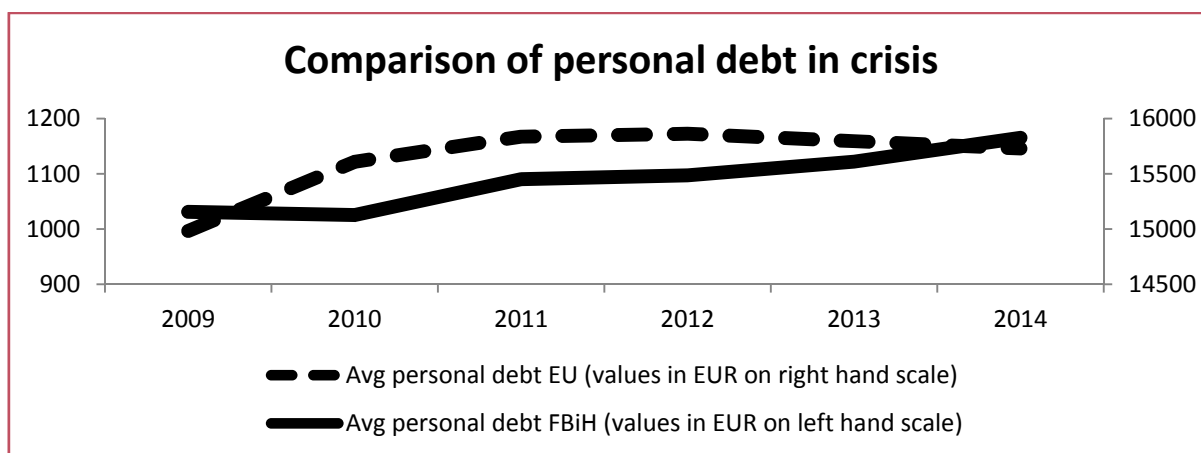
Source: Statistical Agency for BiH and EuroStat

that a decline in stock prices has a statistically significant impact on the growth of nonperforming loans, but only in the countries where the stock market is fairly large. They also claim that in those CEE countries where capital markets are undeveloped movement in the exchange rate had an impact on the level of nonperforming loans.

Nir Klein (2013) conducted dynamic panel analysis into ten of the largest banks in sixteen countries of the CESEE over the period 1998-2013. He concluded that increases in nonperforming loans were triggered by the unemployment rate, increased inflation and currency depreciation.

Moinescu (2012) researched data on CEE countries from 2003 to 2011. He concluded, amongst other things, that the variables with the strongest impact on increases in nonperforming loans were drops in GDP and an increase in the output gap. Interest rates, inflation and exchange rates also showed statistical relevance, but only had a small impact.

Glen and Valez (2011) analyzed data from the major developing countries (which at that time represented 85% of the developed world GDP) for the period 1996 to 2008. They tested the relationship between impaired loans, as proxy for nonperforming loans, and the macro economy, and concluded that the main driver of nonperforming loans was GDP. They also concluded that interest rates only had a second order effect.

These are some of the latest studies on this topic, yet earlier studies also provide evidence to support the same conclusions. Earlier studies claim that one or more of the following factors have a strong impact on nonperforming loans: GDP, the unemployment rate, the exchange rate and inflation. This evidence can be found in studies such as Espinoza and Prasad (2010), Dash (2010), Pesola (2005), Drehnam (2005), Fofack (2005), Boss (2002), Rajan and Dhal (2003), Shu (2002) and Arpa (2001).

Country Specific Research

Baholli, Dika and Xhabija (2015) analyzed the relationship between macroeconomic trends and the level of nonperforming loans in Albania and Italy over the period from 2007 to 2014. They concluded that positive GDP growth leads to a decrease in nonperforming loans; more specifically a 1% increase in GDP leads to a decrease of 1.42% and 1.32% in nonperforming loans in Albania and Italy, respectively. Furthermore, they found that increased interest rates and credit within the economy also lead to an increase in nonperforming loans.

Milens (2013) researched Lithuania and the EU countries, comparing nonperforming loans and six macroeconomic indicators in all of them. He claims that a tight dependency exists between nonperforming loans and macroeconomic downturns caused by the reduced ability of debtors to service their debts.

Festic and Beko (2008) analyzed the same topic in Hungary and Poland during the period from 1995 to 2006. In Hungary, they claimed that growth in GDP, increases in savings and increases in real wages had the strongest impact on decreases in nonperforming loans. They confirmed the same influence of GDP in Poland, but claimed that increased savings resulted in an increase in nonperforming loans, while other factors did not show a strong impact.

Similar evidence is to be found in the paper of Louzis, Voouldis and Metaxas (2010), who examined the Greek banking sector and claimed a strong link between the expansion of nonperforming loans and GDP, the unemployment rate and interest rates. When analyzing the Italian banking sector, Quagliariello (2007) confirmed that the expansion of nonperforming loans is strongly affected by business cycles within the economy. Furthermore, research conducted by Salas and Saurina (2002) as well as Baboucek and Jancar (2005) into the Spanish and Czech banking sectors, respectively, showed the strongest link between growth in GDP and the expansion of nonperforming loans.

IV METHODOLOGY AND DATA

To determine the relationship between private individual loan repayments and macroeconomic trends a regression methodology was used, as in the research mentioned in the previous section. Regression takes dependent variables and determines their effect on an independent variable. The dependent variables in this model will be factors reflecting the macroeconomic situation:

– GDP growth,
– Consumer Price Index, and
– Unemployment rate in the Federation.

These three variables were the most frequently used variables in the research conducted by other authors, both for generic and country specific research. The literature review showed that other researchers used additional dependent variables, such as stock market prices, interest rates and exchange rates. However, we found that these variables are not applicable to this analysis of the Federation of BiH, either due to specifics of the economy or the absence

of official data. On the one hand, the currency of BiH, the Convertible Mark (BAM), remains pegged to the Euro for a number of years and this prevents movement in the exchange rate. The banking sector lends only in BAM and EUR, which, considering pegging, limits the currency risk. There is only one bank which provided lending in a different currency: CHF, which had a movement vis a vis EUR clearly affecting some households in BiH. However, in the absence of full official data and based on unofficial data from the bank, this effect was considered insignificant for inclusion in the analysis. On the other hand, the capital market is rather undeveloped and therefore stock market prices are not perceived as an efficient indicator of the business cycle.

Finally, interest rates do not reflect the business cycle properly as they are distorted by fierce competition within the banking sector. The interest rates level is not managed by the Central Bank of BiH, but unilaterally determined and transferred to the market by foreign banks dominating the banking sector in BiH. Although BiH has had two country rating deteriorations in the past five years that resulted in a rise in the cost of funding for foreign owned banks this has not been taken into consideration when setting final interest rates for customers. This is because the cramped banking market pushes for a reduction in interest rates irrespective of the cost of the funding movement. Although CB data does not provide for an exact weighted average value of interest rates in the sector, a basic overview supports the earlier claim that regardless of logical reasons to increase the interest rate, banks have been decreasing it during the crisis years.

We found these three factors to be unreliable in Federation BiH research. The findings of other researchers, as presented in the literature review, speak in favor of analysis not being distorted by the absence of these factors. Therefore we decided to use real GDP growth, CPI and the unemployment rate as the main dependent variables.

The independent variable will be a change in the rate of nonperforming loans for private individuals in the Federation banking sector (as the share of nonperforming loans in total loans). The data is sourced from the annual reports of the Federation Banking Agency, the Central Bank of Bosnia and Herzegovina as well as the Federal Agency for Statistics, available for the period of 2000 to 2014. During this period the share of nonperforming loans in total loans varied from less than 2% to almost 12%. This analysis will attempt to determine whether this variation was driven by macroeconomic factors.

V RESULTS

The first iteration of analysis included regressing three independent variables (GDP, CPI and the unemployment rate) separately for the volume of nonperforming loans. In addition, all three variables were jointly regressed to the volume of nonperforming loans. However, the analysis surprisingly showed that these three factors had little impact on the level of nonperforming loans. This conclusion stems from the fact that all of the regression models showed a very weak relationship to the change rate for non-performing loans (when observed via R squared of the model and through the individual and joint significance of variables). Following the first attempt, the second iteration of analysis was conducted, this time to determine whether a nonlinear relationship existed. An attempt was made to define the log/ln, ln/log and log/log model for each of the variables, first individually and then jointly. In the third iteration an attempt was made to model the quadratic relationship between all of the variables; however, the models again showed low stability and weak connections (manifested by low R squares, and the joint or individual insignificance of variables) or strong collinearity, which disturbed the model stability. Finally, various attempts to build models showed only one fairly strong relationship: between the logarithm of GDP growth and the volume of nonperforming loans. The final model, preferred by us, is shown below, with details presented in Appendix 1.

$$NPL = -358624.3 - 175673.9 * \log (\text{GDP Growth})$$

This model showed fairly high explanatory power, with an R square of 0.60 and an individual T test value of the log GDP growth at 0.002. The model demonstrated a negative relationship between GDP and the level of nonperforming loans, implying that nonperforming loans will decrease within a positive economic cycle and increase in a negative economic cycle. This is consistent with other research.

An interpretation of this model is that if GDP growth increases by 1%, then the volume of nonperforming loans will decrease by 1.756 million BAM. Given the fact the dependant variable (in this case GDP growth) is expressed in the form of a percentage rather than an absolute value it is more difficult to interpret the model relationship. A range of GDP growth percentages was developed and regression formulas applied to them in order to gain a better understanding. It showed the direction in which nonperforming loans volume from 2014 would develop dependent on GDP growth, as presented below in both Figures 4 and 5.

Figure 4: Regression results for relation of NPL and GDP growth

GDP Growth in %	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0
NPL increase/reduction index	109	99	93	89	85	83	81	79	77	75

Source: Results of main regression model from this research

Figure 5: Simulated development of NPL (base 2014) driven by GDP growth
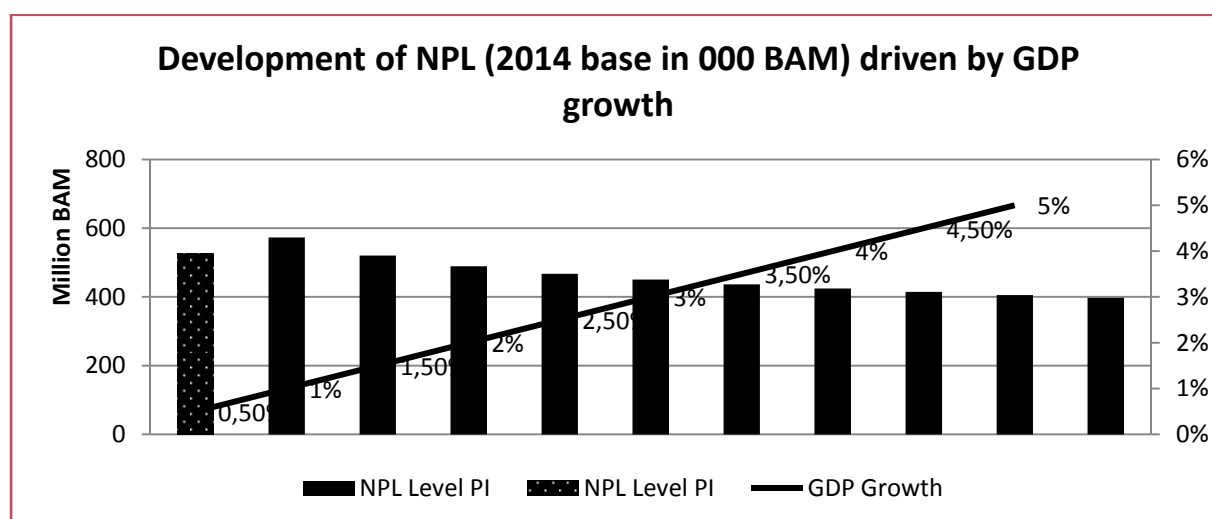
Source: Results of main regression model from this research

This data suggests a number of possible interpretations. First, should GDP growth stay at a level of 0.5% then the level of nonperforming loans will actually increase by 9%. At a GDP growth rate of 1%, nonperforming loans will maintain approximately the same level. However, at a GDP growth rate above the level of 1% there would be a gradual decrease in the level of nonperforming loans in the sector. For example, at 1.5% GDP growth nonperforming loans would reduce to 93% of their current level, while at a GDP growth rate of 3% the level of nonperforming loans would reduce to 83% of their current level. To conclude, the absence of GDP growth above 1% would result in high nonperforming loans (either stable high or increasing), whereas only GDP growth above 1% can bring relief to the Federation BiH economy from a high NPL burden by triggering their reduction, according to this regression model. As far as the two other variables are concerned, we were not able to determine any relationship regarding the level of nonperforming loans, since a stable statistical relationship could not be established. In other words, in the absence of more concrete proof we can state that the macroeconomic parameters of CPI and the unemployment rate have not affected the level of nonperforming loans in the Federation of BiH over the past fifteen years, based on the limited available data used for these particular models.

The data sample was also split into two time series, one ranging from the beginning of the period to 2006, the second ranging from 2007 to the end of the period. Regressions were conducted separately on these two samples. For the first sample, no stable model was identified in any form (simple, neither square nor log regression combinations of all variables). For the second sample, only one acceptable model was identified. This model again showed the same link – the significant effect of GDP growth on the share of NPL among households. The actual results were very close to the preferred final model; namely, R square was 66% (versus 60%), and the relation detected showed that if GDP growth would increase by 1% the volume of nonperforming loans would decrease by 1.586 million BAM (versus 1.756 million BAM). This testing indicates that the later period, from 2007 onwards (the period of the crisis), is more explanatory than the period of the positive economic cycle. The results of this test, by confirming empirical figures, also speak in favor of the robustness of the preferred model.

VI LIMITATIONS

This analysis has several limitations. First, the observation period of the past fourteen years is rather short. Unfortunately, this was the only reliable data available and therefore offers the best possible platform from which to draw conclusions. Attempts to collect official data for earlier periods and even quarters within a year failed because in earlier years the regulation for parts of the data was not aligned and therefore the data is not comparable.

Second, in the early years of the observation period banking regulation was not so strict as to assure unified recognition of nonperforming loans; there is also the possibility, although small, that part of the recognition took place after some delay. For example, loans that actually defaulted in 2006 were only reported in 2007. Nevertheless, regulation is now a sufficiently strict to ensure that all defaulted loans are recognized and therefore the analysis reflects the true situation.

Third, the findings answered the question of "how much nonperforming loans would decrease if GDP growth were to range from 0 to 5 per cent," but not the question of "how much nonperforming loans would increase if GDP growth ranged from 0 to 5 per cent." In other words, specific arithmetic results are claimed for positive economic cycles rather than negative ones. This stems from the fact that the model determined the relationship for the logarithm of GDP, but efforts to calculate the logarithm of a negative number (negative GDP growth) would result in a complex as opposed to a real number. This is mitigated by the fact that one can clearly conclude from the findings that 1% GDP growth is the breakeven point, whereas any growth weaker than this would cause an increase in nonperforming loans. Although not quantified, this information may be sufficient for banks to readjust their credit policies for GDP growth forecasts below 1%.

Finally, unlike similar research studies, this study did not consider the effect of the movement of interest rates or stock prices on NPL, either due to the absence of proper data or the specifics of the economy.

It is highly likely that these limitations have caused the relationship between the variables to be less apparent and less strong; however, this was addressed by using logarithm modelling, where a stronger link was determined and the best possible final model generated in accordance with the available data.

VII POLICY RECCOMENDATIONS

The analysis shows that the unemployment rate and CPI movement do not affect the level of

nonperforming loans in the sector. Yet GDP growth is shown to have a fairly strong influence on the level of nonperforming loans. This effect is mathematically negative (positive for the economy): the more GDP growth advances in the economy the more strongly the level of nonperforming loans is reduced. It should be noted that this general premise is valid for GDP growth above the 1% rate, where nonperforming loans appear to maintain approximately the same level. However, if GDP growth were to stay at a level of 0.5% then the level of nonperforming loans would actually increase by 9%. Further lower levels of GDP growth (zero or negative) would cause the level of nonperforming loans to increase. This means that the destiny of loan repayments does not depend solely on good customer assessment by banks. Even the most promising customers can be adversely affected by external macroeconomic factors that influence the destiny of the loan after approval and therefore the profitability of the bank. Having said this, the question is: what can banks or government do to control the level of nonperforming loans from this point onward?

Proactive Bank Measures

The primary responsibility to implement policy adjustments according to these findings is on banks. They have to ensure that their risk management includes observation of future macroeconomic forecasts and their expected influence on loan repayment, rather than customer features alone. More concretely, knowing the relationship of factors presented in this paper, banks need to forecast macroeconomic trends. This forecast should be twofold: a baseline midterm forecast (three years) that incorporates basic official country expectations of economic trends and more conservative stress test forecasts for the long term (a term to be equal to the average maturity of consumer loans on the market), where extreme stress events in the economy would be incorporated. These forecasts should provide banks with a range of likely, expected and up to worst case impact estimates for the business cycle for their level of nonperforming loans and hence their earnings and capital.

The first layer of consideration for these forecasts by the banks should be the decision on whether to reduce or expand their portfolio, depending on business cycle expectations, through a statement of change strategy within their credit policy. If the macroeconomic forecast and stress tests suggest negative trends (i.e., negative GDP growth in the future period) then, based on the findings of this paper, the banks can calculate the exact expected increase in

nonperforming loan stock along with the expected losses.

The banks can set up their credit policy in two directions to mitigate this problem. One direction would be to reduce the overall lending potential in order to avoid an increase in nonperforming loans and the respective losses or maintain them at the desired acceptable level. As part of the reduction, banks can approach this generally by making decisions on the overall level of the portfolio (i.e., an overall reduction by 5% in one year) or selective through prioritization (i.e., maintain the portfolio at the same level, but change the structure in favor of less risky customers). For example, banks could be selective or restrictive in terms of the industries that are more susceptible to the effects of negative GDP trends, or more restrictive towards sections of the households that are more likely to lose income. By doing this, banks would reduce losses stemming from nonperforming loans. An alternative direction would be to not reduce lending potential but to increase the cost of loans. This would require risk-based costing wherein all customers or the riskier customers are charged higher prices. The purpose of this increased pricing would be for banks to generate higher revenue in order to cover increased losses from nonperforming loans. Banks can do this in two ways. One would be to not increase specific prices at the approval stage in the coming years, but rather to insert a clause in the contract that would allow for unilateral upward interest rate changes for the customer in the event that stress events occur in the economy. In this way the banks would later be able to increase pricing for overall existing portfolios. The other way would be to determine which customers are riskier and immediately designate higher pricing for their products, which would mean that they would be charged more than other customers at the loan approval stage. The bank should keep in mind its desired competitiveness in the market and consumer protection legislation when choosing between these two options.

The second layer of consideration for these forecasts, once the general credit policies are defined, is the business of daily risk management. Here banks have to make sure that their credit policies are implemented diligently so that they result in the desired restrictions. This implies the need for careful analysis of the debtor and implementation of steps to alleviate risks from daily underwriting. This includes detailed consideration of job and future employment requirements for co-debtors, the appropriate assignment of risk based pricing to the right customers, and keeping caps on the maximum debt to income ratio for customers.

Proactive Government Measures

The secondary responsibility to adjust policy based on these findings is on the government to proactively address consideration of macroeconomic trends in nonperforming loans reduction or prevention. The government's interest in being proactive on this topic lies in ensuring the stability of the banking sector and in the fact that if left unaddressed the high level of nonperforming loans is likely to boomerang back to the economy by slowing down the economic recovery.

The first measure that can be taken by government is transparent communication on macroeconomic forecasts to ensure that there is only one recommended source for forecast expectations. Since most of the banks in the Federation lack experience and skills in observing the impact of economic trends, in order to allow for this shift in approach government should continue to provide technical assistance to banks for the development of stress tests. Government should also strengthen supervision over the banking sector in general and more specifically in the area of consideration of macroeconomic trends. This should be done in such a way that supervisors impose the obligation on banks to develop stress tests that include at minimum the three factors observed in this analysis and to adjust their lending plans accordingly, as suggested by Borio (2001). Government could also control unreasonable credit growth or foreign currency lending via the supervisor, if it is suspected that this will develop in the wrong direction. Finally, when there is a high share of nonperforming loans government could provide tax and regulatory incentives in order to encourage the banking sector to clean up its stocks of nonperforming loans. Examples of such incentives could include loan write offs to be fully income tax deductible, the sale of distressed portfolios not burdened by high tax rates, more flexibility in terms of acceptance of various nonperforming loan stock clean up activities and lower supervision fees for those banks with the largest nonperforming stock decrease on a year to year basis.

VIII CONCLUSION

The level of nonperforming loans to the households is sensitive and influenced by macroeconomic developments in any country. This relationship is manifested indirectly via the level of unemployment in the country and the cost of living. An increase in the unemployment rate leads to job losses for bank customers, and as a consequence they default on their loans. Increases in the cost of living in an environment of flat wages and no savings or rollover options could

reduce available income for loan annuity repayment on a monthly basis, and this might also lead to increased numbers of customers being unable to repay their loans.

This paper deals with the influence of macroeconomic factors on the level of nonperforming loans in the market of the Federation of Bosnia and Herzegovina. The macroeconomic factors analyzed were GDP movement, CPI and the unemployment rate and covered the period from 2000 to 2014. The method used was regression.

The analysis shows that the unemployment rate and CPI movement do not affect the level of nonperforming loans in the banking sector of the Federation of BiH. Yet GDP growth is shown to have a fairly strong influence on the level of nonperforming loans. This is in line with findings of similar research, as presented in the literature review of this paper. This effect is mathematically negative (positive for the economy): the more GDP growth advances in the economy the more strongly the level of nonperforming loans is reduced. . This means that the destiny of loan repayments does not depend solely on good customer assessment by the banks. Even the most promising customers can be adversely affected by external macroeconomic factors that influence the destiny of the loan after approval and therefore the profitability of the bank. Having said this, the question is: what can banks or government do to control the level of nonperforming loans from this point onward?

Banks have to ensure that their risk management includes observation of future macroeconomic forecasts, given the relationship between the factors presented in this paper. Banks should make the decision on whether to reduce or expand their portfolio based on these forecasts, reviewing business cycle expectations and incorporating these into their credit policy. If forecasts suggest negative economic trends, credit policy should result in some of the following measures: the reduction of overall lending potential or selective lending through prioritization (i.e., maintain the portfolio at the same level but change the structure in favor of less risky customers or industries, increase the cost of loans, or exercise prudent risk management practices in daily activities).

Government should also proactively address consideration of macroeconomic trends in nonperforming loans reduction or prevention. Government interest in being proactive on this topic lays in ensuring the stability of the banking sector and in the fact that if left unaddressed the high level of nonperforming loans is likely to boomerang back to the economy by slowing down economic recovery. Measures that

could be taken by government include the following: transparent communication on macroeconomic forecasts to ensure that there is only one true source for forecast expectations, technical assistance to banks for the development of stress tests, improved supervision over the banking sector by imposing an obligation on banks to develop stress tests and to adjust their lending plans accordingly, the control of unreasonable credit growth or foreign currency lending, and tax and regulatory incentives in order to encourage the banking sector to clean up its stocks of nonperforming loans.

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APPENDIX 1   REGRESSION RESULTS FOR PREFERED MODEL

Relation of GDP growth logarithm and level of household NPLs:

F(1, 11))	16.77
Prob > F	0.0018
R-squared	0.6039
Adj R-squared	0.5679
Root MSE	1.2e+05

NPL	Coefficient	Standard Error	t	P>|t|	[95% Confidence Interval]
Log GDP Growth	-175673.9	42899.76	-4.09	0.002	-270095.6 -81252.17
_cons	-358624.3	147961.8	-2.42	0.034	-684285.9 -32962.67