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FACTORS INFLUENCING TOTAL CREDIT ISSUANCE TO INDIVIDUALS: THE ROLE OF ECONOMIC INDICATORS AND COST OF LIVING

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DOI: 10.5937/EEE24030K
JEL: E31, E44, G21, D12
Original Scientific Paper

ABSTRACT

This study conducts a detailed regression analysis to explore the determinants of total credits extended to individuals in N. Macedonia over the period from December 2010 to May 2024. The dependent variable, total credits, is analyzed in relation to several independent economic indicators: the minimum union basket, COICOP-based inflation, COICOP cost of living indexes, and weighted interest rates on deposits and loans. The minimum union basket is examined for its influence on credit demand by reflecting the basic living standards required for wage negotiations. COICOP-based inflation provides insights into how price level changes affect the purchasing power and subsequently the demand for credit. Cost of living indexes, classified by COICOP, are analyzed to determine their effect on the real cost of living and credit utilization across various segments of the population. Weighted interest rates on deposits and loans are assessed for their impact on borrowing behavior and overall credit availability. This comprehensive analysis provides valuable insights into the interactions among these variables and their collective impact on credit dynamics, offering essential information for policymakers and financial institutions in developing effective economic and financial strategies. Understanding these relationships is crucial for policymakers and financial institutions to anticipate and mitigate economic fluctuations. Insights gained from this study can inform effective monetary and fiscal policies, enhance financial stability, and improve credit market responsiveness, ultimately supporting sustainable economic growth and individual financial well-being.

KEYWORDS

credits to individuals, minimum union basket, cost of living indexes, weighted interest rates

INTRODUCTION

Access to credit is a crucial component of economic activity, influencing both individual financial stability and broader economic dynamics. Understanding the factors that drive total credit issuance to individuals is essential for policymakers, financial institutions, and economists alike, as it helps in designing strategies that support

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sustainable economic growth and financial well-being. Development as a qualitative characteristic means the improvement of the qualitative characteristics of society and the well-being of individuals, and well-being is not just an increase in GDP, but a subjective feeling of people in the community that they live better, a feeling of improving the quality of life (Karadjova & Trajkov, 2022, p. 169).

Credit issuance is influenced by a complex interplay of factors, including inflation rates, interest rates, and cost-of-living indexes, all of which impact borrowers' capacity to service debt and lenders' willingness to extend credit. By examining these influences, we can gain valuable insights into the mechanisms that underpin credit markets and their responsiveness to economic conditions. The credit burden of the population significantly determines the lifestyle, the feeling of happiness, and freedom in decision-making and behavior, as well as the opportunities for enjoyment or investment of the population. The essence and significance of investments is the sacrifice of current consumption for the benefit of the future (Srbinoski, et al., 2023, p. 12). But in conditions of lack of funds to meet the needs, there is no opportunity for saving and investing and credit exposure dominates.

Economic indicators, such as inflation measured through COICOP-based indices, play a significant role in shaping credit dynamics. Inflation affects the real value of money, impacting individuals' purchasing power and their ability to manage credit. Simplest explanation of the phenomenon of inflation would be as a condition in the economy when the money funds exceed the supply of goods and services which causes the general level of prices to rise (Karadjova & Simonceska, 2005). High inflation can erode purchasing power and lead to higher borrowing costs, while low inflation might encourage more borrowing due to increased real income.

Similarly, the cost of living, reflected through COICOP cost-of-living indexes, directly affects individuals' financial stability. An increase in the cost of living can constrain disposable income, affecting borrowers' ability to service existing debt and potentially influencing their demand for new credit. Living below the poverty threshold, which occurs in a number of citizens, reflects an inability to settle their basic needs, or to cover the cost of normal living (electricity, water, etc.) (Karadjova & Dicevska, 2017, p. 528).

Interest rates on deposits and loans are another critical factor influencing credit issuance. The cost of borrowing, as determined by interest rates, influences both the demand for credit by individuals and the supply of credit from financial institutions. Lower interest rates can stimulate borrowing by reducing the cost of credit, while higher rates can dampen demand and tighten lending conditions.

Given the intricate nature of these factors, it is imperative to analyze how they collectively influence credit dynamics. Understanding these determinants is crucial for several reasons. Firstly, it allows financial institutions to tailor their lending practices more effectively, ensuring that credit is extended in a manner that aligns with both borrower needs and economic conditions. Secondly, policymakers can use these insights to design targeted interventions that stabilize the credit market and mitigate economic shocks. For instance, by understanding how inflation and cost-of-living pressures affect credit demand, policymakers can adjust monetary policy to support economic stability and growth.

Furthermore, analyzing these factors helps to identify potential vulnerabilities in the credit market, such as how rising living costs or fluctuating interest rates might impact borrower repayment capacities. This, in turn, can guide financial institutions in developing risk management strategies to safeguard their portfolios and ensure financial stability. It is crucial to recognize the impact tax revenue has on a nation's capacity to meet its political, social, and economic goals (Miloshoska, et al., 2024), as financial stability depends not only on monetary policy but also significantly on fiscal policy and the efficient collection of taxes and customs duties, which in turn influence household credit exposure and overall financial stability.

The study employs both comprehensive and simplified regression models to dissect these relationships, providing a nuanced understanding of the predictors' roles and their statistical significance in the case



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of Macedonian economy over a significant period, from December 2010 to May 2024. By examining the impact of economic indicators and cost-of-living factors on total credit issuance, we aim to provide a comprehensive understanding of the drivers of credit markets. This analysis seeks to uncover patterns and trends that can inform policy decisions and financial strategies, promoting a more stable and accessible credit environment.

Through this research, we contribute to the broader discourse on credit market dynamics, offering insights that are critical for effective financial policy-making and personal financial planning. The significance of this research extends beyond theoretical insights, offering practical implications for policymakers, financial institutions, and consumers. Policymakers can utilize the findings to design more effective monetary and regulatory policies, financial institutions can refine their credit risk models, and consumers can better understand how economic changes may impact their credit options. In exploring these dynamics, this paper contributes to the existing literature by providing empirical evidence on the role of economic indicators and the cost of living in shaping credit markets. Through rigorous analysis, it seeks to advance the understanding of credit dynamics and inform better financial and economic policies.

LITERATURE REVIEW

Understanding the interplay between total credits to individuals, the minimum union basket, COICOP-based inflation and cost of living indexes, and weighted interest rates provides valuable insights into economic stability and personal finance. Each component plays a crucial role in shaping economic policy and personal financial strategies, highlighting the importance of comprehensive and accurate data in economic analysis and policy-making.

Total credits to individuals, including loans and credit extensions, significantly impact economic activity and personal financial stability. Research highlights that an increase in personal credit can stimulate consumer spending and economic growth, acting as a driver for aggregate demand (Kiyotaki & Moore, 1997). However, excessive credit expansion may lead to financial instability and contribute to economic crises (Minsky, 1992). Studies also indicate that the availability and cost of credit are influenced by broader macroeconomic factors, including interest rates and monetary policy (Bernank & Gertler, 2001).

The minimum union basket represents a measure of the minimum necessary expenditures required for maintaining a basic standard of living. Statistics measure the standard of living most often through so called Laeken indicators of poverty (a set of common European statistical indicators on poverty and social exclusion, established at the European Council of December 2001 in the Brussels suburb of Laeken, Belgium), through household consumption, and also through data on the use of time and balancing between work and family (Karadjova, 2019, p. 29). This concept is crucial in labor negotiations and wage-setting practices (Gordon, 2012). Variations in the minimum basket can affect income distribution and poverty levels, making it an essential tool for understanding the economic well-being of different demographic groups (Katz, 2017). Literature also discusses the implications of changes in the basket's composition for assessing economic inequality and living standards (Deaton & Muellbauer, 1980).

Inflation measurement using the COICOP (Classification of Individual Consumption by Purpose) framework provides detailed insights into price changes across various categories of consumption (Eurostat, 2019). Research shows that COICOP-based inflation measures help in understanding the



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impact of inflation on different segments of the population (HICP, 2020). Studies also discuss how accurate inflation measurement is crucial for effective monetary policy (Blanchard & Fischer, 1989).

Cost of living indexes based on the COICOP classification reflect changes in the cost of a predefined basket of goods and services, providing a detailed picture of price dynamics (OECD, 2015). These indexes are instrumental in adjusting wages and social benefits to align with inflationary trends (Winkelmann & Winkelmann, 1998). The effectiveness of these indexes in capturing true changes in living costs has implications for economic policy and social equity.

Weighted interest rates on deposits and loans serve as critical indicators of financial conditions and economic stability. Literature explores how these rates influence consumer and business borrowing behaviors, affecting overall economic activity (Mishkin, 1995). Changes in interest rates can impact both the supply and demand for credit, influencing economic growth and stability (Taylor, 1993). Furthermore, interest rate adjustments are a key tool in monetary policy aimed at managing inflation and ensuring financial stability.

The interaction between these variables creates a complex economic ecosystem. Total credits to individuals and weighted interest rates are interconnected; higher credit availability often results from lower interest rates, while increased borrowing can drive economic growth but also pose risks if not managed prudently. The minimum union basket and cost of living indexes, derived using COICOP classifications, provide context for assessing the impact of inflation and cost-of-living changes on different income groups. Understanding how inflation affects the real value of credits and wages is crucial for ensuring that the minimum basket remains reflective of actual living costs.

Studies suggest that monitoring these variables together can offer a comprehensive view of economic health and personal financial stability. For example, rising inflation may erode purchasing power, making it harder for individuals to maintain a standard of living as defined by the minimum basket, even if their credit access increases (Eurostat, 2019). Similarly, changes in weighted interest rates can influence borrowing costs and consumer behavior, impacting both credit dynamics and inflationary pressures.

Analyzing the interplay among total credits to individuals, minimum union basket, COICOP-based inflation, cost of living indexes, and weighted interest rates offers a holistic view of economic dynamics. Each variable influences and is influenced by the others, underscoring the need for integrated economic policies and careful monitoring. This comprehensive approach helps in understanding the broader implications of economic trends on personal finance and macroeconomic stability.

DATA COLLECTION AND ANALYTICAL METHODS

For the purposes of this analysis, monthly data were collected from relevant sources covering the period from December 2010 to May 2024. This provided a dataset consisting of 162 observations, ensuring the statistical significance of the results.

Data on bank credits extended to households were sourced from the National Bank of the Republic of North Macedonia's statistical web portal (NBStat) under the category >> Monetary and Interest Rates Statistics >> Monetary statistics >> Monetary and Credit Aggregates >> Household Bank Loans (National Bank of the Republic of North Macedonia). Since January 2009, the National Bank has conducted a revision of the time series data due to the implementation of a new methodology. This update aligns with the revised guidelines outlined in the 2016 IMF Manual and Guide for Monetary and Financial Statistics. The revision ensures that the data adheres to the latest international standards for



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accuracy and comparability. The study utilizes secondary data sourced from the National Bank. The methodology employed by the National Bank for data collection adheres to the Methodological Explanations outlined in the publication "Monetary Statistics and Statistics of Other Financial Institutions" from November 2007, with the latest revision conducted in July 2018. This methodological framework ensures that the data collection processes are in line with established standards and practices for accuracy and reliability (National Bank of the Republic of Macedonia, (2007) 2018). The regression model utilized data on total bank credits extended to households.

Monthly data on the minimum union consumer basket were obtained from the official website of the Union of Trade Unions of Macedonia (SSM) (Union of Trade Unions of Macedonia (SSM)). This variable (minimum consumer basket value), which has been computed by the Union of Trade Unions of Macedonia (SSM) since February 2011, provides a measure of essential living costs (Karadjova & Spaseska, 2024). On February 24, 2011, the Union of Trade Unions of Macedonia (SSM) presented its Syndical Minimum Basket. According to the SSM, this basket provides a more accurate model for assessing the cost of living. The Syndical Minimum Basket is derived from the Consumer Basket value calculated by the State Statistical Office.

Inflation data according to COICOP were acquired from the Ministry of Finance (Ministry of Finance, 2024), while cost of living indexes by COICOP classification were retrieved from the State Statistical Office (State Statistical Office). The inflation data used in the model were obtained from Table 4. Inflation and stock exchange prices of the Statistical Reviews published by the Ministry of Finance (Ministry of Finance, 2024), specifically within the Macroeconomics section. According to the methodology employed by the State Statistical Office (State Statistical Office, 2011), the Classification of Individual Consumption by Purpose (COICOP) serves as an international standard for categorizing personal consumption expenditures. COICOP is utilized by European Union member states for calculating the Harmonized Index of Consumer Prices (HICP), which is a key indicator of inflation. COICOP classifies expenditure based on the purpose of consumption and is used to categorize expenditures made by households and non-profit institutions serving households. This classification system facilitates consistent and comparable measurement of consumption patterns and price changes across different countries, providing a robust framework for analyzing inflation and its impact on economic variables (Karadjova & Spaseska, 2024). This source provides comprehensive and reliable data on inflation rates, which are crucial for the analysis conducted in the model.

Data on weighted interest rates for deposits and loans, segmented for households (individuals, sole proprietors, and non-profit institutions serving households), were sourced from NBStat, the statistical portal of the National Bank of the Republic of North Macedonia under the category >> Monetary and Interest Rates Statistics >> Interest Rates Statistics >> Weighted Interest Rates, time series (monthly data) (National Bank of the Republic of North Macedonia).

In this study, regression analysis is employed to investigate the relationship between bank credits extended to households and several independent economic indicators. The dependent variable in the regression model is bank credits extended to households, while the independent variables include the minimum union consumer basket, inflation data according to COICOP, cost of living indexes by COICOP classification, and weighted interest rates for deposits and loans. The analysis is based on a monthly time series consisting of 162 observations. Also summary statistics as a part of descriptive statistics is used, which provides an overview of the data distribution for variables such as credit amounts, inflation rates, and cost of living indexes. ANOVA (Analysis of Variance) is implemented using comparative analysis, used to compare means across different groups or categories (e.g., different levels of economic indicators) and assess whether observed differences are statistically significant. The ANOVA results in the paper provide insights into the overall significance of the regression model.



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Model Diagnostics is completed through Standard Error Analysis which assesses the accuracy of coefficient estimates and overall model reliability and through P-values and Confidence Intervals which evaluates the significance of individual predictors and provides confidence intervals for estimates, which helps in understanding the reliability of the predictor variables. Goodness-of-Fit Measures is implemented by using R-Squared and Adjusted R-Squared as a measures the proportion of variance in the dependent variable explained by the predictors, indicating the model's explanatory power and fit. Variable Significance Testing is carried out through t-Statistics, which assesses whether the individual coefficients for predictors are significantly different from zero, contributing to the overall understanding of predictor importance. In summary, the paper utilizes descriptive statistics, correlation analysis, ANOVA, and model diagnostics alongside regression analysis. These methods collectively contribute to a comprehensive understanding of credit dynamics, the impact of economic indicators, and the role of the cost of living.

MODEL FRAMEWORK AND REGRESSION ANALYSIS

Regression Model Specification

1. Dependent Variable:

- Bank Credits Extended to Households: This variable represents the total amount of credit provided by banks to households. It is measured on a monthly basis and serves as the outcome variable that the model aims to explain.

2. Independent Variables:

- Minimum Union Consumer Basket: Represents the essential expenditure required to maintain a basic standard of living, which could influence household borrowing behavior.
- Inflation Data According to COICOP: Measures the rate of inflation based on the Classification of Individual Consumption by Purpose (COICOP), reflecting changes in the cost of goods and services over time.
- Cost of Living Indexes by COICOP Classification: Provides an index of the cost of maintaining a certain standard of living, categorized by COICOP, which can affect households' financial decisions and credit demand. There are statistical measures used to track changes in the cost of maintaining a specific standard of living over time. These indexes are essential for understanding how inflation and changes in prices affect household expenditures. Indexes used in an analysis have 2010 as a base (Base Period: 2010 = 100).
- Weighted Interest Rates for Deposits and Loans: Reflects the average interest rates on deposits and loans weighted by their respective amounts, impacting the cost of borrowing and saving.

Methodology

- **Data Collection**: Monthly data from December 2010 to May 2024 are collected, providing a comprehensive dataset of 162 observations. This time frame ensures a robust temporal analysis of credit dynamics.



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- **Model Estimation:** The regression model is estimated using Ordinary Least Squares (OLS) or another appropriate method depending on the characteristics of the data (e.g., time series properties).
- **The general formula** for a multiple linear regression model can be specified as follows:

$$\text{Bank Credits}_t = \beta_0 + \beta_1 \text{Minimum Basket}_t + \beta_2 \text{Inflation}_t + \beta_3 \text{Cost of Living Index}_t + \beta_4 \text{Interest Rates}_t + \epsilon_t \dots\dots\dots(1)$$

where:

- Bank Credits_t is the dependent variable at time t,
- Minimum Basket_t, Inflation_t, Cost of Living Index_t, and Interest Rates_t are the independent variables at time t,
- β_0 is the intercept,
- β_1 , β_2 , β_3 , and β_4 are the coefficients for the independent variables,
- ϵ_t is the error term.
- **Interpretation of Coefficients:** Each coefficient β represents the effect of the corresponding independent variable on the dependent variable. For instance, β_1 measures how changes in the minimum union consumer basket affect the amount of bank credit extended to households.
- **Diagnostic Checks:** The model undergoes diagnostic checks to ensure the validity of the regression results. This includes tests for autocorrelation, heteroscedasticity, and multicollinearity, which are particularly important in time series analysis.

The regression analysis aims to elucidate how various economic indicators influence the volume of bank credits extended to households. By analyzing the relationship between the dependent variable and the independent variables, the study provides insights into how factors such as living costs, inflation, and interest rates impact household borrowing behavior.

Regression model outputs

Excel's data analysis package is used for research and to calculate regression outputs, which include three components: (1) the Regression Statistics table, (2) ANOVA (Analysis of Variance), and (3) the Regression Coefficient table.

(1) The Regression Statistics is es follows:

Table 1. Regression statistic output

<i>Regression Statistics</i>	
Multiple R	0,97573466
R Square	0,95205813
Adjusted R Square	0,95083668
Standard Error	11014,1457
Observations	162

Source: own calculations



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Multiple R (0.9757): This is the correlation coefficient between the observed values and the values predicted by the regression model. A value close to 1 indicates a very strong positive linear relationship between the dependent variable and the independent variables.

R Square (0.9521): R^2 , or the coefficient of determination, represents the proportion of the variance in the dependent variable that is predictable from the independent variables. In this case, 95.21% of the variability in the dependent variable is explained by the model. This is a very high R^2 , suggesting that the model fits the data very well.

Adjusted R Square (0.9508): Adjusted R^2 adjusts the R^2 value for the number of predictors in the model. It accounts for the possibility that adding more predictors can artificially inflate the R^2 value. The adjusted R^2 of 95.08% is very close to the R^2 , indicating that the model is not only explaining a large proportion of variance but also doing so efficiently with the predictors used.

Standard Error (11014.15): This is the standard error of the estimate, which measures the average distance that the observed values fall from the regression line. A smaller standard error relative to the range of the dependent variable suggests a better model fit. The magnitude of 11014.15 should be interpreted in the context of the scale of the dependent variable (dependent variable is Total Bank Credits Extended to Households in millions of denars). If it's small relative to the range of the dependent variable, it indicates a good fit. In this case, the range of the dependent variable values is as follows:

- Minimum Value: 69,483.36
- Maximum Value: 232,938.11
- Range: $232,938.11 - 69,483.36 = 163,454.75$

So, the Standard Error is about $\frac{11,014.15}{163,454.75} \approx 6.73\%$ of the range of the dependent variable. In that sense, having in mind practical implications the SE being 6.73% of the range indicates that, on average, the predicted values are off by about 6.73% of the range of the dependent variable. While this might seem like a significant error in absolute terms, it's relatively small compared to the range, suggesting that the model's predictions are reasonably close to the actual values. In summary, that means that the regression model seems to be quite good at predicting the dependent variable, though there is still some average error.

Observations (162): This is the number of data points used in the regression analysis. A sample size of 162 is relatively large, which generally provides more reliable estimates and enhances the robustness of the regression model.

Summary on the Regression Statistics table:

- The high Multiple R and R^2 values indicate a strong and substantial relationship between the dependent variable and the independent variables.
- The Adjusted R^2 being close to R^2 suggests that the model's predictive power is reliable and not just a result of having many predictors.
- The Standard Error is a measure of how well the model predicts the dependent variable, and its interpretation depends on the context of the data.
- The sample size of 162 is sufficient for most regression analyses, enhancing the reliability of the results.

Overall, these statistics suggest that the regression model is performing very well and explains a large proportion of the variance in the dependent variable.

(2) The ANOVA (Analysis of Variance) table helps assess the overall fit of the regression model by comparing the variability explained by the model (regression) to the unexplained variability (residual).



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Table 2. ANOVA output

ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	4	3,78E+11	9,46E+10	779,4498	2,1E-102
Residual	157	1,9E+10	1,21E+08		
Total	161	3,97E+11			

Source: own calculations

Components of the ANOVA Table 2:

Degrees of Freedom (df)

- **Regression df:** 4. This corresponds to the number of independent variables (predictors) in the model. Here, there are 4 predictors.
- **Residual df:** 157. This is the number of observations minus the number of predictors minus 1 (i.e., $n - k - 1$).
- **Total df:** 161. This is the total number of observations minus 1 (i.e., $n - 1$).

Sum of Squares (SS)

- **Regression SS:** 3.78225×10^{11} . This represents the total variability explained by the model.
- **Residual SS:** $1.9045890588 \times 10^{10}$. This represents the variability not explained by the model (error).
- **Total SS:** 3.9727×10^{11} . This is the total variability in the dependent variable.

Mean Squares (MS)

- **Regression MS:** 94556146748 (calculated as Regression SS / Regression df). This is the average variability explained by each predictor.
- **Residual MS:** 121311405 (calculated as Residual SS / Residual df). This is the average unexplained variability.

F-Statistic

- **F:** 779.45. This statistic tests the overall significance of the regression model. It compares the model's explained variability to the unexplained variability. A high F-value indicates that the model explains a significant portion of the variability in the dependent variable.

Significance F

- **Significance F:** 2.0674×10^{-102} . This p-value is very close to 0, indicating that the model is statistically significant. It means there is a very strong likelihood that at least one of the predictors is significantly related to the dependent variable.

Summary on the ANOVA table:

ANOVA analysis is important in the context of the null hypothesis (H_0). In the context of regression analysis, the null hypothesis (H_0) typically states that: **H_0 :** All regression coefficients (except the intercept) are equal to zero. This means that none of the predictors have a significant linear relationship with the dependent variable. The alternative hypothesis (H_A) states that at least one of the regression coefficients is not zero, implying that at least one predictor significantly contributes to explaining the variability in the dependent variable. In this case:



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- An F-value of 779.45 indicates that the regression model explains a significantly large proportion of the variance in the dependent variable compared to the error variance. This high value suggests that the model is much better at predicting the dependent variable than a model with no predictors.
- The p-value here is extremely small (approximately 2.07×10^{-102} , much smaller than common significance levels (e.g., 0.05 or 0.01). This indicates that the likelihood of observing such an F-value if the null hypothesis were true is extremely low.
- This means that the model **Rejects the null hypothesis**. Given the very low Significance F value, we reject the null hypothesis (H_0) at any conventional significance level. This means that it is highly unlikely that the observed F-value of 779.45 occurred due to random chance if all the predictors had no effect.
- The high F-value and the extremely small p-value indicate that the regression model as a whole is statistically significant. In other words, at least one of the predictors in the model significantly contributes to explaining the variability in the dependent variable.
- This strong statistical significance suggests that the regression model provides a meaningful explanation of the dependent variable, and the predictors included in the model collectively have a significant relationship with the dependent variable.
- In summary, the very high F-value and the extremely low Significance F value together indicate that the regression model is highly significant and that the predictors included in the model significantly explain the variability in the dependent variable.

(3) The Regression Coefficient table shows the values of each regression coefficient and their statistical significance in the model, indicating how each independent variable affects the dependent variable. It also provides the precision of these estimates through the standard errors and their significance through p-values.

Table 3. Regression coefficient table

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	16493,737	20459,51	0,806165	0,421367	-23917,7	56905,13
Minimum Union Consumer Basket	0,23831572	0,490785	0,485581	0,627941	-0,73108	1,207709
Inflation (acc. to COICOP)	534,108574	339,4276	1,573557	0,117603	-136,325	1204,542
Cost of Living Indexes (acc to COICOP)	1897,8692	283,276	6,699719	3,53E-10	1338,346	2457,393
Weighted Interest Rates (for Deposits and Loans)	-16023,946	641,0168	-24,9977	1,31E-56	-17290,1	-14757,8

Source: own calculations

The formula for predicting the dependent variable using the coefficients given in Table 3 is:

$$\text{Bank Credits}_t = 16493,737 + 0,23831572 \text{ Minimum Basket}_t + 534,108574 \text{ Inflation}_t + 1897,8692 \text{ Cost of Living Index}_t + (-16023,946) \text{ Interest Rates}_t \dots\dots\dots (2)$$

Summary on the Regression coefficient table:

1. Statistically Significant Predictors are:

- Cost of Living Indexes (according to COICOP): This variable has a coefficient of 1,897.87, a t-statistic of 6.70, and a p-value of 3.53×10^{-10} . These metrics demonstrate a statistically significant positive effect on the dependent variable, meaning that changes in the cost of living indexes have a strong and reliable impact.



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- Weighted Interest Rates (for Deposits and Loans): This variable has a coefficient of -16,023.95, a t-statistic of -24.998, and a p-value of 1.31×10^{-56} . These values indicate a statistically significant negative effect on the dependent variable, reflecting a robust and consistent inverse relationship.

2. Statistically Non-Significant Predictors:

- Intercept: The intercept has a coefficient of 16,493.74 with a high standard error of 20,459.51, a t-statistic of 0.81, and a p-value of 0.421. These results suggest that the intercept is not significantly different from zero, indicating that it does not meaningfully contribute to explaining the dependent variable.
- Minimum Union Consumer Basket: With a coefficient of 0.24, a t-statistic of 0.49, and a p-value of 0.628, this predictor is not statistically significant, suggesting that it does not have a meaningful effect on the dependent variable.
- Inflation (according to COICOP): This variable has a coefficient of 534.11, a t-statistic of 1.57, and a p-value of 0.118. Although the p-value is somewhat close to the typical significance threshold (0.05), it is generally considered non-significant, implying that its effect on the dependent variable is not robustly established.

Overall, the table shows that while some predictors have a statistically significant impact on the dependent variable, others do not exhibit a strong or reliable effect.

Relevance of the Model:

- **Strengths:**
 - High R-Square: The model explains a large portion of the variance in the dependent variable, which suggests a strong fit.
 - Significant Overall Model: The high F-statistic and extremely low p-value for the ANOVA test indicate that the model as a whole is statistically significant.
- **Weaknesses:**
 - Insignificant Predictors: Some predictors, such as "Minimum Union Consumer Basket" and "Inflation (according to COICOP)", have high p-values, suggesting they are not significant contributors to the model.
 - Intercept: The intercept is not statistically significant, though this is often less critical compared to the significance of predictors.

Overall, the model appears to be relevant and useful in explaining the variance of the dependent variable based on the high R-squared value and significant overall F-test. However, the presence of some insignificant predictors suggests that the model could potentially be improved by removing or replacing these predictors with more relevant ones. The significant predictors "Cost of Living Indexes (according to COICOP)" and "Weighted Interest Rates (for Deposits and Loans)", are strong indicators that the model has important variables that are effectively capturing the variation in the dependent variable.

Model 2 (by removing the Statistically Non-Significant Predictors):

To test the model's validity and improve its predictive accuracy, a second model was developed by excluding the predictors that were found to be statistically insignificant in the initial model. That is made in order to: Improve Model Simplicity, Enhance Predictive Accuracy, Reduce Multicollinearity, Increase Statistical Power. By excluding the statistically insignificant predictors, the second model aims to provide a clearer, more focused representation of the relationships between the significant predictors and the dependent variable. This approach helps ensure that the final model is both statistically sound



Conference Proceedings

and practically useful, focusing on the most relevant factors for accurate predictions. Given this context, the results of the second model are as follows:

Table 4. Regression statistic output

<i>Regression Statistics</i>	
Multiple R	0,975304
R Square	0,951217
Adjusted R Square	0,950604
Standard Error	11040,23
Observations	162

Source: own calculations

Table 5. ANOVA output

ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	2	3,779E+11	1,89E+11	1550,171	5,2E-105
Residual	159	1,938E+10	1,22E+08		
Total	161	3,973E+11			

Source: own calculations

Table 6. Regression coefficient table

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	-4552,89	10799,017	-0,4216	0,673885	-25880,9	16775,13
Cost of Living Indexes (acc to COICOP)	2140,389	73,289437	29,20461	8,7E-66	1995,643	2285,136
Weighted Interest Rates (for Deposits and Loans)	-15620,4	549,81705	-28,4102	3,46E-64	-16706,3	-14534,5

Source: own calculations

Comparison of Model 1 (Comprehensive Model) and Model 2 (Simplified Model):

The two models have their Strengths and Weaknesses.

Model 1: Comprehensive Model

Strengths:

1. Detailed Analysis: Includes four predictors (Minimum Union Consumer Basket, Inflation, Cost of Living Indexes, and Weighted Interest Rates), which allows for a more nuanced understanding of the factors affecting the dependent variable.
2. High Significance Levels: Key predictors like Cost of Living Indexes and Weighted Interest Rates are highly significant, with very low p-values, indicating robust relationships with the dependent variable.

Weaknesses:

1. Non-Significant Predictors: Some predictors, such as the Intercept, Minimum Union Consumer Basket, and Inflation, are not statistically significant, which might indicate that



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they do not contribute meaningfully to the model or that their impact is too small to be reliably detected.

2. Complexity: The inclusion of multiple predictors might introduce multicollinearity or overfitting issues, especially if some predictors do not contribute significantly.

Model 2: Simplified Model

Strengths:

2. Simplicity: Only includes two predictors (Cost of Living Indexes and Weighted Interest Rates), simplifying the model and focusing on the most significant variables.
3. Strong Statistical Significance: Both predictors are highly significant, with very low p-values, suggesting a strong and reliable impact on the dependent variable.

Weaknesses:

1. Limited Scope: By excluding predictors like Minimum Union Consumer Basket and Inflation, the model may miss out on potentially relevant factors that could provide a more comprehensive understanding of the dependent variable.
2. Potential Over-Simplification: Simplifying the model might overlook important interactions or contributions from excluded variables, which could affect the overall interpretation.

As summary or conclusion can be mentioned that Model 1 offers a comprehensive analysis with a broader range of predictors. It provides detailed insights but includes some predictors that are not statistically significant, which could complicate the interpretation and may suggest issues with model fit or variable relevance. Model 2 is a simplified model that focuses on the most statistically significant predictors. It demonstrates strong significance with a cleaner and more focused approach. However, it may overlook other potentially important factors, leading to a less nuanced understanding of the dependent variable. Overall, Model 2 may be preferable for its clarity and strong significance of its predictors, while Model 1 provides a more detailed view but requires careful consideration of the significance and contribution of each predictor. The choice between models should consider the trade-off between model simplicity and the comprehensiveness of the analysis.

CONCLUSION

This study explores credit dynamics by examining the influence of economic indicators and the cost of living on total bank credits extended to households. Two regression models were evaluated to understand these relationships: a Comprehensive Model (Model 1) and a Simplified Model (Model 2).

Model 1, incorporating four predictors – Minimum Union Consumer Basket, Inflation, Cost of Living Indexes, and Weighted Interest Rates – demonstrates a high overall fit with an R^2 of 0.952 and an F-value of 779.45, highlighting a robust explanatory power. Despite this, the model includes non-significant predictors such as the Intercept, Minimum Union Consumer Basket, and Inflation. These non-significant variables suggest that while the model accounts for a substantial amount of variability, some predictors may not contribute meaningfully to explaining credit dynamics. The model's complexity, with multiple predictors, could also introduce issues such as multicollinearity, potentially affecting the reliability of coefficient estimates.



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Model 2, a more streamlined version, focuses on two key predictors – Cost of Living Indexes and Weighted Interest Rates. This model shows a slightly lower R^2 of 0.951 but achieves a higher F-value of 1550.17, indicating a strong and focused fit with the data. Both predictors are highly significant, with p-values effectively close to zero, suggesting that they provide robust insights into credit dynamics. The simplified nature of this model enhances interpretability and reduces potential overfitting, although it may miss additional explanatory power that could be offered by other factors excluded from the analysis.

In summary, while Model 1 offers a comprehensive view with a broader range of predictors, Model 2 provides a clearer and more focused analysis with high statistical significance for its variables. The choice between models depends on the balance between comprehensiveness and clarity. For future research and practical application, Model 2's simplicity and significance offer a strong foundation for understanding key drivers of credit dynamics, though additional variables might be considered to capture a more complete picture of the factors influencing credit outcomes.

The paper provides valuable insights into the factors influencing credit dynamics, which has several practical implications:

- **Policy Formulation:**

- 1) **Targeted Economic Policies:** Understanding the impact of economic indicators and cost of living on credit dynamics helps policymakers design targeted interventions to manage credit markets more effectively. For instance, recognizing how inflation and cost of living influence credit availability can guide monetary policy adjustments to stabilize financial systems.

- 2) **Regulatory Adjustments:** Insights from the study can inform regulatory bodies about necessary changes in credit regulations or lending practices, ensuring that financial policies align with current economic conditions.

- **Financial Planning and Risk Management:**

- 1) **Lender Strategies:** Financial institutions can use the findings to refine their credit risk assessment models. By understanding which economic indicators most significantly affect credit dynamics, lenders can better predict creditworthiness and adjust their lending criteria to mitigate risks.

- 2) **Borrower Guidance:** Borrowers can benefit from understanding how economic factors impact credit availability and terms. This knowledge enables individuals and businesses to make informed decisions about borrowing and managing their credit.

- **Economic Forecasting:** Through **Predictive Analysis** the study's results can enhance economic forecasting models by incorporating the identified predictors of credit dynamics. This helps in anticipating credit market trends and preparing for economic fluctuations.

- **Consumer Protection:** By Using **Informed Decision-Making** and by highlighting the role of cost of living and economic indicators, the research contributes to greater transparency in how credit conditions are influenced. This enables consumers to better understand how external economic factors may impact their credit options and financial stability.

In summary, this paper provides critical insights that are directly applicable to policymakers, financial institutions, borrowers, and economic forecasters. Its findings support more informed decision-making, enhance risk management practices, and contribute to the formulation of more effective economic policies and financial strategies.



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