THE ROLE AND IMPACT OF THE BASE RATE OF INTEREST IN ECONOMIC GROWTH IN DEVELOPING COUNTRIES: A REGULATORY POLICY CONTEXT

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Abstract

This study examines the impact of the base interest rate on economic growth in Albania. The variables considered are *economic growth*, *base interest rate*, *nominal effective exchange rate* (*NEER*), and *inflation*. The analysis applied in the study is multiple regression. The study uses time series data from 2006 to 2022. The results show that the base interest rate indirectly affects economic growth. This suggests that the combination of variables used in the study may need to be more practical for predicting economic growth in Albania. However, this may also depend on the country and the parameters of the variables in each country. The study creates a panorama of the effect of the base interest rate on economic growth as it brings about a domino effect, where it affects the interest rate, which involves the withdrawal of capital and the level of loans. Through this study, it has been found that the base interest rate in Albania does not impact the economic growth of Albania, which makes it an essential instrument for economic growth. Inflation negatively affects economic growth.

Keywords: Interest Rates, International Business Cycles, Inflation, Foreign Exchange

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1. INTRODUCTION

Based on Kaldor (1980) and Woodford (2000), the central bank is the institution that sets the balance in the monetary policy, considering the payment systems and the amount of money. This role of the central bank is driven by money because apart from the quantity in the market, it is the main instrument of transactions in the economy. The currency of a country is very important because it is a key of the transaction process. For example, contracts are expressed based on value, and the devaluation or increase of a currency compared to a foreign currency impacts the arrangements as well, an aspect that increases the role of the central bank because it must also consider the part of the exchange rate.

Therefore, the main task of central banks is monitoring money (Hicks, 1989). The quantity of cash transaction change from one value level to another; it will weaken its influence because the non-administration by the central bank of money will reduce its power in managing macroeconomic parameters. But this can happen partly from electronic money where the central bank does not have a clear role and where in many countries the transaction with electronic money is not legally accepted. If a company pays in electronic money, it should not to be part of bank service, which makes the bank balance irrelevant. This company is outside the banking system, so it cannot support its

obligations. It would increase the level of risk that would bring a domino effect affecting the granting of loans or financial agreements between companies. It would also decrease a country's gross domestic product (GDP) because it would affect investments and the increase in the number of employees. However, the complete replacement of money with electronic money is a complex process, and many obstacles must be realised, including the level of risk and high cost. The application of electronic money can be a better instrument than traditional money.

Still, many financial institutions, mainly central banks, must accept it, but the possibility of applying electronic cash could be higher. An unusual phenomenon for central banks is the negative level of the interest rate. This is caused by not influencing the reduction of the nominal interest rate to precipitate a negative interest rate (Borio & Disyatat, 2009; Pyka & Nocoń, 2016). This was evidenced in 2012 when Danmarks National Bank used the base interest rate with zero level as an instrument. Sveriges Riksbank, the National Bank of Switzerland, and the Bank of Japan made the same moves. The primary purpose of this movement was the stability of the value of the local currency because in 2011, in the Eurozone, there was a widespread debt situation in many countries because it directly affected investors who had invested in the Danish krone. This made the National Bank of Denmark buy currency in the market to lower the interest rate, this volatility also had an impact on the exchange rate between the Danish krone and the euro (Carlsen & Fæste, 2007).

Another example is that of the Swiss National Bank, where in 2014, it lowered the interest rate to -0.25% for current funds and where the exchange rate floor was 1.2 euros. This lasted until 2015 when the fixed exchange rate was removed. The primary purpose of lowering the interest rate was to encourage lending growth and increase inflation to 2%. This phenomenon comes from the problem of inflation in shallow values. If the interest rate were to grow, it would bring more capital and an element that would increase deposits (Mathai, n.d.).

Central banks do not have opportunity costs for deposits because they can intervene in interest rate policies, which also affect deposits. Without the opportunity cost for deposits, central banks will not pay to save on deposit balances. If holding deposits has a price, it will reduce the market's monetary supply. But the demand for deposits increase at a certain level falls below a certain level. In that case, it will bring problems for the bank's performance and procedures; this would bring about changes in interest rates and affect the contraction of deposits. It would also force the central bank to trade loans and deposits, making the interbank market dysfunctional.

Njie and Badjie (2021) have studied the impact of interest rates on economic growth. Moreover, the real interest rate was analysed, not the introductory interest rate. As well as the real exchange rate. The element that shows that only some of the currencies that Ghana trades have been taken constitutes a gap in the literature as it avoids the full effect of currencies with more weight on economic growth.

Shaukat et al. (2019) analysed the effect of the real interest rate, an element that excludes the impact of other elements. Also, several economies were taken together as an element that deviates from the precise determination of the interest rate, which affects economic growth in a country because the countries' economies have different parameters; this constitutes a gap in the literature.

Bakshi and Elangbam (2022) analysed the impact of the interest rate on economic growth based on foreign investments. This constitutes a gap in the literature where the effect of interest on economic growth is not measured.

Naeruz et al. (2022) analysed the impact of economic growth on interest rates and technological developments. So, there needs to be more literature to study the effect of the interest rate on economic growth because the impact of economic growth on the interest rate was analysed rather than the effect of the interest rate on economic growth.

The study aims to measure the impact of the base interest rate on Albania's economic growth.

The importance of the study lies in the fact that in the literature, there is room for measuring the impact of the base interest rate on economic growth because the base interest rate affects the interest rate and brings a domino effect to other macro and microeconomic parameters, directly and indirectly, bring impact on economic growth. We are measuring the effects of the base interest rate on economic development and the effectiveness of the combination of variables taken in the regression analysis.

The combination of variables taken in the study could have been more effective, so it is not suggested that it be used for prediction. *Inflation* negatively affects *economic growth.* The volatility of the *nominal effective exchange rate (NEER)* has a positive effect on *economic growth.* The *base interest rate* hurts *economic growth.*

The paper is structured as follows: Section 1 shows the study's introduction, Section 2 reviews the relevant literature, Section 3 analyses the methodology used to conduct empirical research, Section 4 states the survey result, and Section 5 discusses the study. Section 6 provides conclusions of our findings.

2. LITERATURE REVIEW

The literature touches on inflation's effect on economic growth, with data from the Institute of Statistics (INSTAT) and projections from the International Monetary Fund (IMF). The focus on maintaining price stability to foster economic growth underscores the central role of inflation management in monetary policy. It also explores the impact of exchange rate fluctuations, particularly the overvaluation of the Albanian lek (ALL) against the euro, on the Albanian economy. The analysis here points to the complex effects of exchange rate movements on trade balances, foreign direct investment (FDI), and remittances.

Engen and Hubbard (2004) suggest that increasing government debt, akin to a rise in GDP, could lead to higher interest rates. This view contrasts with di Giovanni and Shambaugh (2008), who argue that high loans could shrink GDP growth, especially in countries with a fixed exchange rate. The divergence in these views highlights

the complex relationship between government borrowing, economic development, and interest rates, suggesting that the impact of debt on the economy might depend on various factors, including monetary policy, exchange rate regimes, and the broader economic context.

Tridico (2007) emphasises the complexity of economic growth, pointing out that socio-economic aspects and government strategies on economic parameters influence it. This assertion underlines the multidimensional nature of economic development, suggesting that it cannot be solely attributed to monetary policy or interest rate adjustments.

Various studies (Eggertsson & Woodford, 2003; Okina & Shiratsuka, 2004; Gagnon et al., 2011; Glick & Leduc, 2012; Joyce et al., 2012; Christensen & Krogstrup, 2019; Guo et al., 2020) affirm the effectiveness of quantitative monetary policy in reducing interest rates, which is generally seen as beneficial for economic growth. However, Kliesen and Smith (2010) caution that long-term low-interest rates may not be an efficient solution, highlighting the potential drawbacks of prolonged low rates, such as asset bubbles and reduced incentives for savings.

Nucera et al. (2017) highlight the adverse effects of negative interest rates on banks, which can cascade and negatively impact the broader economy. This is echoed by Molyneux et al. (2019) and Beauregard and Spiegel (2020), who find that negative rates can harm bank profitability in the long run, mainly due to the bank's limited ability to pass these rates on to depositors.

According to Maiga (2017), the impact of the interest rate was low on economic growth, but a low interest rate positively affects investments. According to Harswari and Hamza (2017), the interest rate has a negative impact on economic growth. Based on Merko and Habili (2023), the interest rate affects GDP by 24%; this fact shows that for Albania's GDP, the interest rate is a determining factor that positively impacts the attraction of FDI.

By contrast, Rostagno et al. (2019) estimate that euro area bank profitability would have been lower in counterfactual scenarios where the policy interest rate remained zero or above.

Negative interest rates reduce bank profitability in the long run, partly because of banks' limited ability to pass negative rates on to depositors or adjust their business models. Grigoli and Sandri (2022) and Holm et al. (2021) provide insights into how interest rate changes affect household consumption and credit card spending. These studies indicate that the impact varies significantly across different income levels and household balance sheet compositions, suggesting that monetary policy effects are not uniform across the economy. However, at the household level, the impact of interest rate changes depends significantly on the income level of households as well as the composition of household balance sheets. Holm et al. (2021) echo these findings concerning an increase in interest rates. They order households into a liquid asset distribution and find that those at the lower end tend to decrease their consumption as their disposable income declines. In contrast, households with intermediate liquid asset holdings tend to reduce savings or increase borrowing before adjusting their consumption levels. Finally, households at the top of the fluid asset distribution increase their consumption in response to rising interest rates due to a rise in interest income from financial assets and savings.

Byrne et al. (2022) and Morell et al. (2022) discuss the relationship between interest rates and mortgage defaults, highlighting how interest rate increases can significantly impact borrowers, particularly those with variable-rate mortgages or those in lower income brackets. Byrne et al. (2022) use a quasi-natural experiment to identify the impact of interest rates on mortgage default. They find a strong, statistically significant effect of interest rates on default; a 1% increase in the mortgage instalment (repayment) is associated with a 5.8% increase in the likelihood of default. They also find evidence that negative equity amplifies the rise in default risk caused by higher interest rates. Morell et al. (2022) also discuss increasing interest rates and note that although fixed-rate mortgages have been popular recently, over half of the Irish mortgages are standard variable rate or tracker mortgages. Hence, many borrowers remain exposed to rising policy rates. However, when an analysis of mortgage servicing burden relative to gross income is carried out, it becomes clear that it is, once again, lower-income households that are at a greater risk of defaulting on their mortgage.

Moyo and Le Roux (2019) state that interest rates positively impact economic growth. The hypothesis is based on other studies like Vangjel and Mamo (2022), who studied the impact of financial development on economic growth in Western Balkan (including Albania), including interest rate spread, and found that this variable was insignificant.

By combining the literature that supports the theoretical side and the methodology of the work and in line with the purpose of the study, three hypotheses have been raised:

H1: Inflation affects economic growth.

H2: NEER affects economic growth.

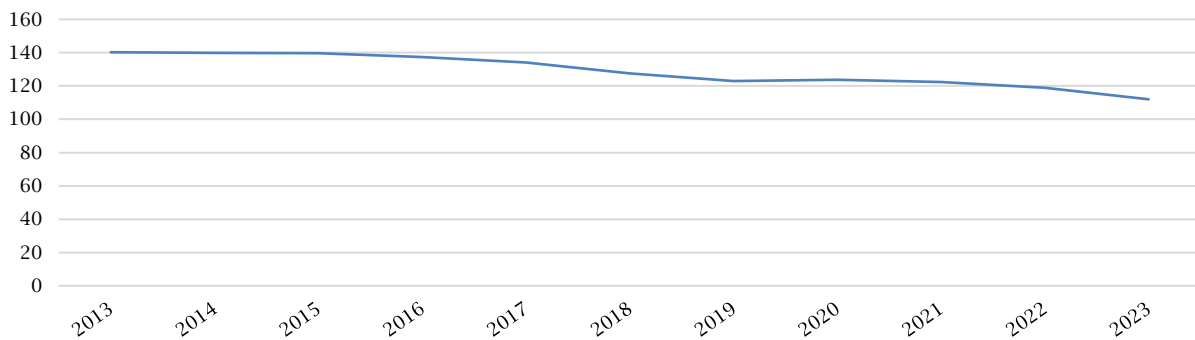*H3: The economic base rate affects economic growth.*

Based on Trading Economics. (n.d.), the inflation rate in Albania in June 2023 reached a value of 4.5%. This was caused by the decrease in the costs of furniture, consumer goods by 0.2%, housing and communal services by 0.1%, and food by 0.2%, while consumer prices increased by 4%, whereas alcoholic beverages and tobacco products by 3.7% while food and non-alcoholic beverages increased by 0.3%, entertainment, and culture experienced an increase by 3.4%. Based on INSTAT (2023), the most critical category in the consumer price index is food and non-alcoholic beverages, which is 34% of the total. The projection of the average inflation rate was with a downward trend between 2023–2028 with a value of 2%. This IMF projection was based on annual changes and the average index. For the Central Bank of Albania, the focus is on inflation, i.e., keeping prices stable. Theoretically, the central bank focuses on the stability of prices to positively impact economic growth, i.e., the creation of strength of macroeconomic factors, where the value of 3.0% has been determined as the level of stability decisions (Bank of Albania, 2023).

Figure 1. Inflation in Albania from 1998 to 2023
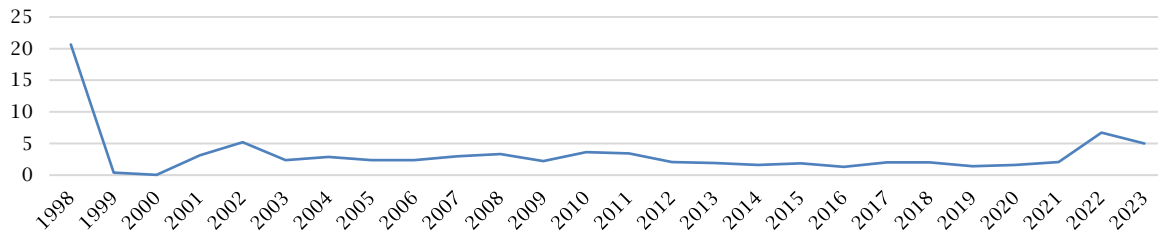
Based on the Bank of Albania (2023), in the five months of 2023, the euro's exchange rate against the ALL reached a record value. In contrast, in May 2023, the euro reached the value of 110.0 ALL, while in June, the weight of 109.69 ALL, and in July 2023, the value of 106.44 ALL, for there was also an increase in the number of tourists who brought more foreign currency to the Albanian currency market. So, the ALL variability has happened with overestimation. In average figures only for April 2023, the inflation of the ALL was 6.7% of the average value (Bank of Albania, 2023). The strengthening of the ALL has come as a result of the increase in the monetary supply in the market, where there are many foreign currencies. This is also encouraged by the number of foreign tourists who have visited Albania, where for the year 2022, according to INSTAT (2022), 7,543,817 tourists visited Albania, while for the period January–May 2023, 2,389,899 tourists visited Albania. Another reason is the conversion of more funds into ALL.

Figure 2. Euro-ALL exchange rate in average value 2013–2023

The Bank of Albania has intervened in purchasing currency worth 551 million euros for 2018–2023. This move of the Central Bank was unforeseen. The high value of the ALL against foreign currencies has a positive impact on the economy because its debt by the end of 2022 reached the value of 9.8 billion euros. This translates into a reduction in the value of liabilities. Another positive aspect is that the government of Albania's reports on macroeconomic parameters are made in euros. This would bring a more significant improvement (Bank of Albania, 2023). Also, strengthening the ALL reduces the obligations for monthly instalments of loan payments. This caused the increase in lending rates; the negative effect of this element is balanced by the overvaluation of the ALL. The positive impact on the economy of strengthening the ALL is also on imports, where goods are bought cheaper and increased competition in the domestic market, where importers' profit for 2022 is 38 billion ALL. Still, this movement needs to be conveyed to the consumer end. The overvaluation of the euro also has adverse effects, such as the increase in the prices of products for export, which makes the goods less competitive, and the spending power of tourists, which is calculated at 8%, will also decrease. Another adverse effect will be the impact on FDIs and remittances. Accordingly, the decrease will be estimated at ten billion for foreign investments and seven billion for remittances. The egative impact will also be on deposits in foreign currency, where the effect is around 58 billion ALL (Bank of Albania, 2023).

In summary, the literature presents a nuanced view of the relationship between interest rates, economic growth, and other macroeconomic factors. While there is consensus on some points, such as the short-term benefits of lowering interest rates to stimulate growth, there are significant divergences on issues like the long-term effects of low or negative rates, the role of government debt, and the impact of monetary policy on different sectors of the economy and income groups.

3. DATA AND RESEARCH METHODOLOGY

The methodology of this study is based on the survey conducted by Atanasov (2021) with the thematic relationship between the introductory interest rate and the economic growth of the Organisation for Economic Co-operation and Development (OECD), applying the methodology

based on Granger's model. In the study conducted by Njie and Badjie (2021), multiple regression were applied to analyse and process data.

In the study of Mohsen et al. (2022), the thematic effect of interest rates on economic growth in Bangladesh was applied as an autoregressive conditional heteroskedasticity (ARCH) model methodology. The Engle-Granger method was used in the study by Berko et al. (2022). Based on the study of Atigala et al. (2022), multiple regression was applied as a methodology.

The study is based on multiple regression analysis. Alternative methods that could have been applied are vector autoregression (VAR), generalized method of moments (GMM), and co-integration tests. Based on this analysis, the dependent variable taken in the survey is *economic growth*. In contrast, the independent variables are *inflation,* the *base interest rate*, and the *NEER*. The period taken in the study is 2006–2023, with 2017 data, so the sample is 2017 data in total measured annually. The *NEER* rate was taken for the exchange rate, and the *NEER* was calculated against the currencies of the five main trading partners (Italy, Greece, Germany, Turkey, and China) using the relevant weights in the trade. The least squares method was applied as the most used method to evaluate the variables. We run the following tests: augmented Dickey-Fuller, Ramsey regression equation specification error (RESET), Skewness, Kurtosis, Jarque-Bera, Breusch-Pagan, and Fisher (see resuls in the Appendix). The study data were obtained from the Central Bank of Albania and the INSTAT, official institutions in Albania. Correlation was applied to measure the relationship between the variables.

4. RESULTS

Referring to Table 1 below, we present the result of the correlation estimation for the variables. The result shows a negative relationship between *economic growth* and *inflation*. There is a positive relationship between *economic growth* and *NEER*. And the relationship between *economic growth* and *base interest rate* is positive. The analysis based on Table 1 found that the *base interest rate* has a relationship with a value of 0.629, a positive relationship with *economic growth*. This shows that the variables go in the same direction. The relationship between *economic growth* and *NEER* has resulted in 0.633; a positive relationship indicates that the variables go in the same order. The relationship between *economic growth* and *inflation* has resulted in a -0.7 value of the coefficient, a negative relationship. This suggests that the variables go in the opposite direction. The relationship between *inflation* and *NEER* has

resulted in a -0.209 negative relationship. This shows that the variables go in the opposite direction. The correlation between *NEER* and the *base interest rate* was 0.344, which is a positive relationship. This indicates that the variables go in the same order. The relationship between *inflation* and the *base interest rate* has resulted in a -0.282 negative relationship. This suggests that the variables go in the opposite direction. Table 1 shows the relationship of variables and the direction of variables.

Table 1. Correlations matrix

Variables	Economic growth	Inflation	NEER	Base interest rate
Economic growth	1.000000	-0.700111	0.633344	0.628604
Inflation	-0.700111	1.000000	-0.209502	-0.282515
NEER	0.633344	-0.209502	1.000000	0.343858
Base interest rate	0.628604	-0.282515	0.343858	1.000000

Source: Authors' calculations.

The next step applied in the analysis is the unit root test to determine the unit roots in the factors taken in the study. From the application of the Augmented Dickey-Fuller test based on Table 2, it has been found that the *economic growth* variable has turned out to be stationary at level I(0), referring to p-value $0.0156 < 0.05$. In contrast, the *inflation* variable will be placed into the equation with a time difference at the first level I(1), referring to p-value $0.0329 < 0.05$. In contrast, the *NEER* (with a p-value $0.0069 < 0.05$) and *base interest rate* variables become stationary at the second level I(2), referring to p-value $0.0484 < 0.05$.

Table 2. Augmented Dickey-Fuller test

Factor	p-value (lag 0)	p-value (lag 1)	p-value (lag 2)
Economic growth	0.0156	–	–
Inflation	0.9778	0.0329	–
NEER	0.9111	0.4307	0.0069
Base interest rate	0.0848	0.7816	0.0484

Source: Authors' calculations.

The coefficient of determination is 0.098, meaning that the independent variable explains 9.8% of the variation of the dependent variable, showing that it is too low to take into consideration.

The next step is to find the functional form to determine the best equation model. The Ramsey RESET test was applied to identify the best model, and the method used was ordinary least squares (OLS).

Table 3. Results of the Ramsey RESET test

Indicators	Value	Df.	Probability
T-statistic	0.662839	11	0.5211
F-statistic	0.439355	(1,11)	0.5211
Likelihood ratio	0.626630	1	0.4286
F-test summary	**A sum of sg.**	**Df.**	**Mean squares**
Sum of squares due to regression (SSR) test	3.749097	1	3.749097
Restricted SSR	97.61401	12	8.134501
Unrestricted	93.86491	11	8.533174

Based on Table 3, the linear model is the best model for the equation. This means this equation form is the best form for the model. The next step is the evaluation of the normal distribution. In this step, OLS is applied.

Figure 3. Residual graph for the linear model

Series: Residuals	
Sample 2008 2023	
Observations 16	
Mean	1.42e-16
Median	-0.193677
Maximum	4.868054
Minimum	-5.941028
Std. Dev.	2.551000
Skewness	0.025210
Kurtosis	3.920721
Jarque-Bera	0.566847
Probability	0.753201
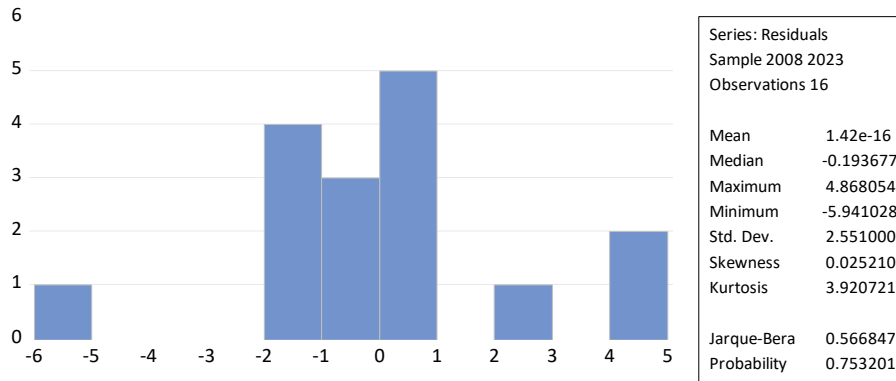
Source: Authors' calculations.

Based on Figure 3, it was found that the waste has the shape of a bell shape. The Jarque-Bera test was applied to analyse this element further.

Table 4. Indicators for the test of normality of the residuals

Indicator	Value
Skewness	0.02
Kurtosis	3.92
Jarque-Bera	0.56
Probability	0.75

Source: Authors' calculations.

Based on the Jarque-Bera tests, it was found that the residuals have a normal distribution. So, another condition for the equation is fulfilled. Another condition that the equation must fulfil is homoscedasticity. For this, referring to Table 5, the Breusch-Pagan test was applied and had a prob. Chi-square = 0.9635 greater than 0.05, so we accept the null hypothesis. There is homoscedasticity in the equation.

Table 5. Breusch-Pagan-Godfrey test

Variable	Coefficient	Stand. err.	T-statistic	p-value
Constant	7.23	2.99	2.41	0.032
D(INFLATION)	-1.48	1.39	-1.06	0.308
D(NEER,2)	0.56	0.92	0.61	0.552
D(BASE_INTEREST RATE,2)	-0.26	7.85	-0.03	0.974
R²	0.109424	Mean dependent var.		6.100876
Adj. R²	-0.113221	S. D. dependent var.		10.76841
S. E. of regression	11.36167	Akaike information criterion		7.910686
SSR	1549.051	Schwarz criterion		8.103833
F-statistic	0.491473	Hannan-Quinn criterion		7.920577
Prob. (F-statistic)	0.694767	Durbin-Watson stat.		1.370188
Prob. Chi-square	0.6966			

Source: Authors' calculations.

The resulting equation:

$$\hat{u}^2 = 7.23 - 1.48 * D(INFLATION) + 0.56 * D(NEER, 2) - 0.26 * D(BASE\_INTEREST\_RATE, 2) \tag{1}$$

Based on Table 5, it was found that the model has no heteroskedasticity. Also, the equation does not suffer from serial correlation, an element that makes the equation suitable for prediction. Another condition that affects the equation is multicorrelation; for this, the OLS method was applied.

Table 6. Multicollinearity

Variable	Coefficient variance	Uncentered variance inflation factor (VIF)	Centred variance inflation factor (VIF)
Constant	0.566506	1.114278	NA
D(INFLATION)	0.122987	1.114379	1.018366
D(NEER,2)	0.053421	1.355629	1.344359
D(BASE_INTEREST RATE,2)	3.889905	1.335022	1.325141

Source: Authors' calculations.

Table 6 shows that the model has no problems with multicorrelation, which makes the equation good for prediction. VIF coefficients of the variables are near number one, meaning that they are significant.

Referring to Table 7, we proceed with an OLS methodology, where *economic growth* is the dependent variable and *inflation*, *NEER*, and *base interest rate* are the independent variables. All the variables are significant at p-value < 0.05. *Inflation* positively affects *economic growth* with a positive coefficient of 0.12 units. *NEER* negatively impacts *economic growth* with a coefficient of -0.14 units. The *base interest rate* is affected by a positive coefficient of *economic growth* of 1.02 units.

Table 7. Evaluations of the initial model with the OLS method

Model	Variable	Coefficient	Stand. err.	T-statistic	p-value
Economic growth	Constant	2.98	0.75	3.96	0.001
	D(INFLATION)	0.12	0.03	3.51	0.003
	D(NEER,2)	-0.14	0.02	-6.11	0.000
	D(BASE_INTEREST RATE,2)	1.02	0.27	3.75	0.001
	R^2	0.098479			
	Adj. R^2	-0.126902			
	SSR	97.61401			
	F	37.17047			
	Prob. (F-statistic)	0.730625			

Note: Dependent variable: Economic growth.
Source: Authors' calculations.

Referring to Table 7, the equation must be suitable for prediction and have a certain level of importance. The model has a significance level of 9%. This shows that the independent variables explain the dependent variable to the extent of 9%. So, the *base interest rate* has no impact on *economic growth* in the case of Albania.

The analysis with OLS showed that coefficents are as follows:

- $|t\beta_0|$ = 3.96, and p-value = 0.001 is statistically significant.
- $|t\beta_1|$ = 3.51, p-value = 0.003 is statistically significant.
- $|t\beta_2|$ = -6.11, p-value = 0.000 is statistically significant.
- $|t\beta_3|$ = 3.75, p-value = 0.001 is statistically significant.

5. DISCUSSION

In the context of the Albanian economy, traditional economic indicators such as the base interest rate and inflation have complex and varied impacts on economic growth. The discussion would be that these crucial indicators cannot be relied upon in isolation to predict economic trends accurately due to their low explanatory power, as shown by the regression model's R-squared value of 9%.

The substantial negative impact of inflation suggests that it is a critical factor for economic stability in Albania, potentially more so than in countries with different economic structures or historical contexts. The positive impact of the NEER rate indicates unique aspects of the Albanian economy, perhaps its trade structure, where the currency's value and the balance of trade do not conform to traditional economic expectations.

The study's findings also imply that other unmeasured factors — possibly socio-political influences, international economic conditions, or sector-specific dynamics — play a more significant role in driving economic growth in Albania. This could be particularly true given the country's transition from a centrally planned to a market-oriented economy, which standard economic models may not fully capture.

A multi-dimensional approach to economic modelling is essential for economies like Albania, with an intricate interplay of a broad range of economic, historical, and social factors to understand and predict economic growth more effectively. The findings suggest a need for policymakers to look beyond conventional economic measures and consider a holistic view of the economy when crafting economic policy and forecasts.

6. CONCLUSION

Through this study, we seek to identify and measure the impact that the base interest rate has on economic growth. It should be noted that the effect of the base interest rate does not directly impact economic growth but impacts the interest rate of second-tier banks and this brings an impact on the cost of loans and deposits, which brings a domino effect on the macro and microeconomic parameters of the economy that impact economic growth.

The regression equation obtained from the study has fulfilled all the statistical steps to be used for prediction, but it has an R^2 value of 9%, an element that shows that the importance of the model is very low; this fact refutes hypothesis *H3* and makes it not suitable for this model to be used for prediction, this fact should guide future studies in this field that if these variables are taken into the study, their combination does not produce a suitable equation for prediction. Still, it depends on the values of the variables taken into the study because they are not the same for all countries. Inflation harms economic growth by 148%, so a one percentage point increase in inflation impacts economic growth by 148% if we had an economy created hypothetically with these variables. The negative effect of inflation is related to the rise in prices, which would weaken the purchasing power and overvalue the currency. This would impact consumption and savings, and on the other hand, it would reduce income in the state budget and affect exports, both of which affect economic growth. Hypothesis *H1* is accepted because the statistical condition is fulfilled that the value of (p ≤ 5%). This

conclusion is in cohesion with the study of Atigala et al. (2022) where, both in the long term and in the short time, inflation harms economic growth, but it should be emphasised that it is not precisely determined at which value inflation brings this negative effect on economic growth. Hypothesis *H2* is accepted because the statistical condition that the value of (p ≤ 5%) is fulfilled. The impact of the NEER rate is 56%; in contrast, in the case of a hypothetical economy with these two variables, an increase of one percentage point in the NEER rate would positively affect economic growth by 56%.

It should be noted that the NEER rate taken in the study has to do with the exchange rate of all currencies and the currencies of the five countries with which Albania has commercial relations. The increase in the exchange rate makes an overvalued currency, which would make goods more expensive, affect exports and make goods more expensive and less competitive. Still, the fact that the impact should be negative and positive in economic growth shows that there are more imports than exports in the Albanian economy, so there is a negative trade balance. This contradicts the study's conclusions by Rehan et al. (2019), where the exchange rate volatility negatively affects economic growth. Hypothesis *H3* is accepted because the statistical condition that the value of (p ≤ 5%) is fulfilled. The primary base interest rate negatively affects economic growth by 26% in the case of a hypothetical economy, where all variables are zero, which shows that with a 1% increase in the introductory base interest rate, it decreases by 26%. If the base interest rate increases, it translates into the cost of loans, which would affect the reduction of loans, the decrease in new investments, and the possibility of increased

employment, an element that affects economic growth. It should be emphasised that the increase in the introductory interest rate increases the base interest rate of the second-level banks, and the effect is transmitted to other macro and microeconomic elements. This conclusion is the same result as the study of Njie and Badjie (2021). It should be highlighted that the factors that were not taken into the study affect 723% of the economic growth in a hypothetical economy. This shows that in the economy of Albania, many elements affect economic growth. This fact is related to the economy of developing countries. Still, Albania also had another shortcoming because its economy from 1945 to 1990 was decentralised since it was under the communist regime.

In conclusion, the factors that were not included in the study are more important than the variables included in the study. Also, the probability increases that the combination of variables included in the study in developing countries will not be practical for forecasting. Still, it depends on the country and the parameters of the variables in each country.

The limitation of the study is that a more extended period was not taken into analysis due to the lack of data, and the variables that could have a more significant impact on growth and the base interest rate should have been taken into analysis. An essential limitation of the study is the level of corruption and informality in the Albanian economy and a fragile banking sector.

Other variables should be analysed to measure the impact of the base interest rate on economic growth. The first point is determining which variables related to the base interest rate impact economic growth most.

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APPENDIX

Table A.1. White test

Variable	Coefficient	Stand. err.	T-statistic	Probability
Constant	8.529759	7.525952	1.133379	0.3003
$D(INFLATION)^2$	-0.381825	1.094894	-0.348733	0.7392
$D(INFLATION) * D(NEER,2)$	0.005042	0.797087	0.006326	0.9952
$D(INFLATION) * D(BASE\_INTEREST\ RATE)$	4.008760	6.499132	0.616815	0.5600
$D(INFLATION)$	-1.570111	4.318473	-0.363580	0.7286
$D(NEER,2)^2$	-0.366993	0.593672	-0.618175	0.5592
$D(NEER,2) * D(BASE\_INTEREST\ RATE)$	-0.244435	6.701903	-0.036472	0.9721
$D(NEER,2)$	0.456783	1.572407	0.290499	0.7812
$D(BASE\_INTEREST\ RATE,2)^2$	29.84406	38.17602	0.781749	0.4641
$D(BASE\_INTEREST\ RATE,2)$	-1.998239	12.19045	-0.163918	0.8752
R^2	0.336599	Mean dependent var.		6.100876
Adj. R^2	-0.658503	S. D. dependent var.		10.76841
S. E. of regression	13.86787	Akaike information criterion		8.366197
SSR	1153.907	Schwarz criterion		8.849065
Log-likelihood	-56.92958	Hannan-Quinn criterion		8.390924
F-statistic	0.338256	Durbin-Watson stat.		1.962690
Prob. (F-statistic)	0.929759			
Prob. Chi-square	0.8814			

Table A.2. Breusch-Godfrey test

Variable	Coefficient	Stand. err.	T-statistic	Probability
Constant	2.984159	0.752666	3.964786	0.0019
$D(INFLATION)$	0.123232	0.350696	0.351392	0.7314
$D(NEER,2)$	-0.141244	0.231131	-0.611100	0.5525
$D(BASE\_INTEREST\ RATE,2)$	1.023747	1.972284	0.519066	0.6132
R^2	0.098479	Mean dependent var.		3.144844
Adj. R^2	-0.126902	S. D. dependent var.		2.686720
S. E. of regression	2.852105	Akaike information criterion		5.146309
SSR	97.61401	Schwarz criterion		5.339457
Log-likelihood	-37.17047	Hannan-Quinn criterion		5.156200
F-statistic	0.436944	Durbin-Watson stat.		1.845096
Prob. (F-statistic)	0.730625			
Prob. Chi-square	0.9635			