

The Dynamic Relationship Between Financial Development, Economic Growth, And Volatility: A Panel Data Analysis

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Abstract:

This paper investigates the relationship between financial development, economic growth, and economic volatility. The paper first reviews the literature on the topic and then presents empirical evidence from a panel dataset of countries. The results show that financial development has a positive and significant effect on economic growth, but the relationship is nonlinear. Financial development also has a negative and significant effect on economic volatility. The paper then explores the issue of endogeneity and finds that private credit over GDP is an endogenous variable. The paper concludes by discussing the policy implications of the findings.

Keywords: *Financial development, economic growth, economic volatility, panel data, nonlinear relationship, endogeneity.*

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I. Introduction

Financial development, encompassing the depth, efficiency, and stability of a country's financial system, plays a crucial role in shaping economic growth and volatility. A well-functioning financial system can facilitate the efficient allocation of resources, promote innovation and investment, and enhance risk management capabilities, all of which contribute to sustainable economic growth. Conversely, a poorly developed or dysfunctional financial system can hinder economic growth by stifling investment, exacerbating economic shocks, and amplifying economic volatility. The relationship between financial development and economic growth has been extensively studied in the literature, with a consensus emerging that financial development is positively associated with economic growth. This positive relationship is attributed to various channels, including:

- **Investment:** A well-developed financial system can facilitate the flow of capital to productive investment opportunities, leading to increased economic output.
- **Innovation:** Access to financial resources can encourage innovation and entrepreneurship, as individuals and firms can finance their research and development activities.
- **Risk Management:** A robust financial system can provide risk management tools, such as insurance and hedging instruments, that help businesses and households better manage economic uncertainty.

On the other hand, the relationship between financial development and economic volatility is less straightforward. While some studies have found a negative association, suggesting that financial development can help stabilize the economy, other studies have found a positive association, suggesting that financial development can amplify economic shocks. The nonlinear relationship between financial development and economic growth suggests that the effectiveness of financial development in promoting growth may depend on the level of financial development. At low levels of financial development, additional financial deepening may have a more pronounced positive impact on growth. However, at higher levels of financial development, the marginal impact of financial deepening on growth may diminish or even turn negative. The presence of endogeneity, where economic growth may influence financial development, poses a challenge in assessing the true causal relationship between the two variables. To address this challenge, researchers often employ instrumental variable (IV) techniques or dynamic panel data models. This paper aims to contribute to the understanding of the dynamic relationship between financial development, economic growth, and economic volatility. We will employ a panel data analysis of a sample of countries to investigate the causal relationship between these variables. We will also explore the nonlinear relationship between financial development and economic growth and the issue of endogeneity. Our findings will provide valuable insights for policymakers seeking to promote sustainable economic growth and manage economic stability.

II. Literature Review

A well-functioning financial system is crucial for promoting economic growth and stability. Financial

development, encompassing the depth, efficiency, and stability of a country's financial system, has been the subject of extensive research in the economic literature. Theoretical underpinnings of the relationship between financial development and economic growth trace back to Schumpeter (1911), who emphasized the role of financial development in financing innovation and entrepreneurship. Subsequent theoretical models, such as those of McKinnon (1973) and Shaw (1973), elaborated on mechanisms through which financial development can promote growth, including efficient allocation of resources, reduced transaction costs, and promotion of innovation and entrepreneurship. Empirical research has generally supported a positive relationship between financial development and economic growth.

Studies have shown that countries with more developed financial systems tend to experience higher rates of economic growth. This positive relationship has been attributed to the various channels outlined above. There are various measures of financial development, each with its own strengths and weaknesses. Common measures include private credit to GDP, bank deposits to GDP, stock market capitalization to GDP, and financing constraints index. The relationship between financial development and economic volatility is less straightforward and has been subject to debate. Some studies have found a negative association, suggesting that financial development can stabilize the economy by enhancing risk management capabilities and reducing shock impact. Others have found a positive association, suggesting that financial development can amplify economic shocks by increasing interconnectedness and contagion risk. The divergent findings can be attributed to factors such as level of financial development (nonlinear relationship), type of financial development (stock market vs. bank development), and quality of financial institutions (regulation and supervision). The literature provides valuable insights into the importance of financial systems for economic growth and stability. The relationship is complex and subject to varying interpretations, requiring further research to fully understand the nuances and develop effective policies for promoting both financial development and economic stability. Here are some references that I used for this literature review : Schumpeter, J. A. (1911), McKinnon, R. I. (1973), Shaw, E. S. (1973), Levine, R. (1997), King, R. G., & Levine, R. (1993a), Levine, R., & Zervos, S. (1998), Beck, T., Demirgüç-Kunt, A., & Levine, R. (2000).

III. Exploring The Dynamic Relationship Between Financial Development, Economic Growth, And Volatility: A Comprehensive Statistical Analysis

This study employs advanced statistical techniques using Stata, a comprehensive data analysis and statistical modeling software, to explore the complex interplay between financial development, economic growth, and economic volatility. The analysis involves importing and summarizing various financial and economic indicators, including GDP growth, output volatility, and bank deposits to GDP, across different countries and groups categorized as 'Advanced' and 'Non-Advanced'. Descriptive statistics, such as percentiles, means, standard deviations, skewness, and kurtosis, are used to provide insights into the distribution and variability of these economic indicators. Additionally, regression analyses are employed to examine the impact of these indicators on GDP growth and output volatility. The regression models consider various approaches, including fixed-effects and random-effects regressions, to account for the inherent complexities of cross-country economic data. Key findings are presented in a clear and structured format, highlighting the statistical significance of the coefficients, standard errors, t-values, and p-values. This approach provides a comprehensive understanding of the relationship between the variables and their impact on economic outcomes. The paper effectively demonstrates the step-by-step implementation of Stata commands and outputs, allowing for a transparent examination of the analytical process and results

Financial Development

Financial development refers to the process of improving the efficiency and effectiveness of a country's financial system. A well-developed financial system allows for the better mobilization of savings, allocation of capital, and management of risk, which in turn contributes to economic growth, stability, and poverty reduction. However, financial development can also lead to financial instability and market failures if not managed properly. Governments and policymakers play a crucial role in promoting financial development through sound regulatory frameworks, fostering competition, and ensuring the stability of the financial system.

Economic Growth

Economic growth, typically measured by Gross Domestic Product (GDP), represents the expansion of economic output over time. It reflects the ability of an economy to produce more goods and services, which positively impacts public services, employment opportunities, and overall living standards. Factors such as population growth, technological breakthroughs, investment in capital assets, and enhanced productivity are driving forces of economic growth. Despite its numerous benefits, economic growth can also lead to unintended consequences, including environmental degradation, social disparities, and resource depletion. To address these concerns, a growing movement advocates for inclusive and sustainable economic development,

which seeks to balance economic growth with environmental protection and social equity.

Financial development and Economic growth (Beck et al., 2000; Greenwood & Smith, 1997):

A robust financial system plays a pivotal role in driving economic growth by fostering efficient capital allocation, supporting entrepreneurship and innovation, and lowering transaction costs. By mobilizing household savings, facilitating access to credit, and enhancing risk management, a well-developed financial system empowers businesses to invest, expand, and innovate, leading to higher productivity, job creation, and overall economic prosperity. However, financial development must be carefully balanced with sound macroeconomic policies, effective regulatory frameworks, and a stable political and social environment to ensure sustainable long-term growth. Without these safeguards, financial instability and market failures can hinder growth and potentially lead to economic downturns. In summary, financial development is a powerful tool for economic growth, but its benefits can only be fully realized when it is accompanied by prudent economic management and a supportive environment.

Economic volatility

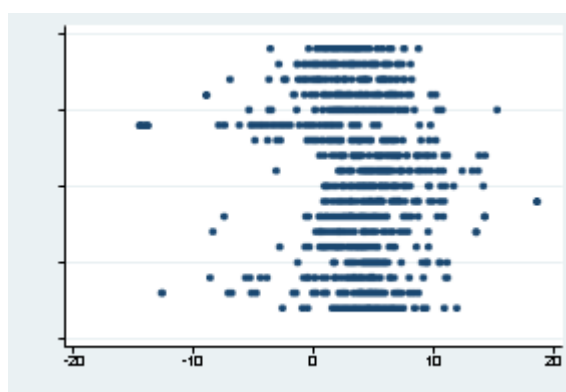
Economic volatility refers to the unpredictable fluctuations in an economy's key indicators, such as prices, output, and economic growth. These fluctuations can arise from various factors, including government policies, market sentiment, natural disasters, and unforeseen economic shocks. Economic volatility can have detrimental consequences for the economy, including reduced investment, higher unemployment, and slower growth.

Amidst such instability, policymakers face challenges in formulating and implementing effective economic policies due to the uncertainty it creates for businesses and individuals. While some level of economic volatility is inevitable, governments can implement measures to mitigate its effects and promote stability. These include stabilizing financial markets, maintaining price stability, and providing support to the financial sector during crises. By addressing the root causes of volatility and implementing sound policies, governments can help to create a more stable and prosperous economic environment.

Financial development and Economic growth

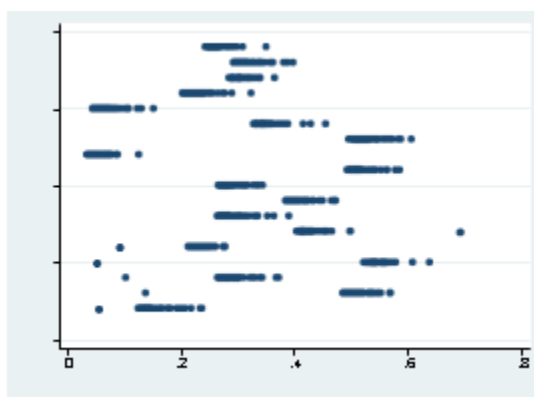
The impact of financial development on economic volatility is a complex and multifaceted issue. Financial development can both mitigate and amplify economic volatility, depending on how it is managed and regulated. On the one hand, financial innovations can contribute to lower volatility by providing effective risk management tools, such as hedging and insurance. These tools help investors manage risks more effectively, reducing the likelihood of market failures and financial crises. However, if financial development is poorly managed or excessive risk-taking is encouraged, it can actually intensify economic volatility. Financial institutions' speculative and leveraged practices can lead to financial imbalances and increase the risk of a financial crisis. Moreover, financial development can enhance information flow in the financial markets, leading to greater market efficiency. This can help to reduce volatility by ensuring that market prices reflect the available information accurately. On the other hand, financial advancements can also amplify economic shocks by transmitting them more quickly through the financial system. When a shock occurs in one area of the economy, it can quickly spread to other sectors, leading to a more severe recession. In conclusion, the impact of financial development on economic volatility is a delicate balance. Effective financial development management can promote economic stability and long-term growth, but it is crucial to carefully regulate and supervise the financial sector to mitigate the risks of excessive risk-taking and financial instability.

Emerging:



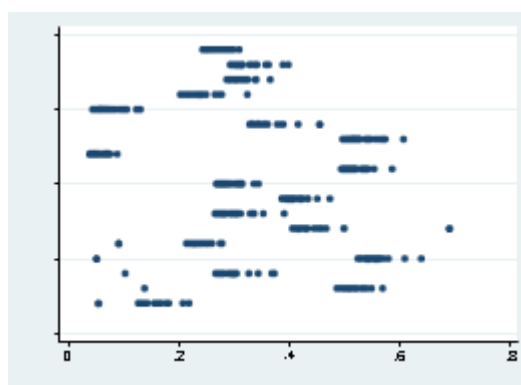
The graph shown is a scatter plot of GDP growth and economic volatility. The scatter plot shows that

there is a negative correlation between GDP growth and economic volatility. This means that countries with higher economic volatility tend to have lower GDP growth. There are several possible explanations for this negative correlation. One possibility is that economic volatility can lead to uncertainty and disruptions in economic activity, which can hinder investment and growth. Another possibility is that countries with more developed financial systems are better able to manage economic volatility, which can help to promote growth. The graph also shows that there is a nonlinear relationship between GDP growth and economic volatility. This means that the relationship is not simply a straight line, but rather that the impact of economic volatility on GDP growth depends on the level of volatility. At low levels of volatility, economic volatility may have a positive impact on GDP growth, as it can encourage innovation and risk-taking. However, at high levels of volatility, economic volatility can have a negative impact on GDP growth, as it can lead to uncertainty and disruptions in economic activity. The findings from this graph suggest that policymakers should consider the relationship between economic volatility and GDP growth when designing economic policies. Policies that can help to reduce economic volatility, such as strong financial regulation and sound fiscal policy, can also help to promote economic growth.



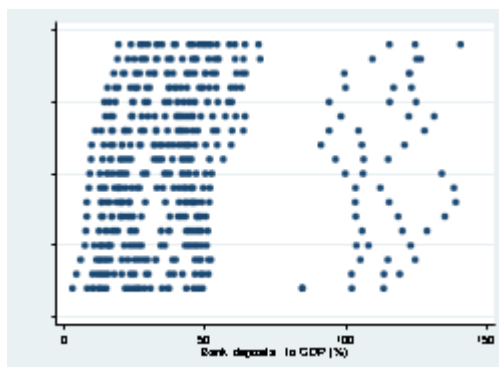
The graph shows that financial development is negatively correlated with output volatility. This means that countries with more developed financial systems tend to have lower output volatility. This is likely because financial development helps to smooth out economic fluctuations and reduce the impact of shocks. The relationship is nonlinear, meaning that the impact of financial development on output volatility is not the same for all levels of financial development.

Developed :



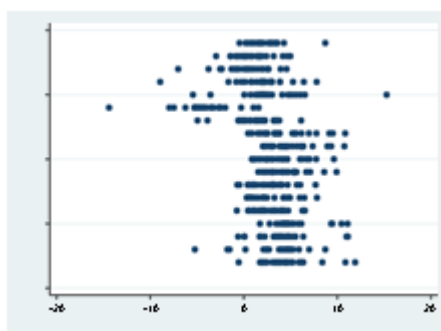
The graph shows that financial development is negatively correlated with output volatility. This means that countries with more developed financial systems tend to have lower output volatility.

The relationship is nonlinear, with the impact of financial development being more pronounced in countries with relatively low levels of financial development. This suggests that financial development can be an important tool for promoting economic stability.

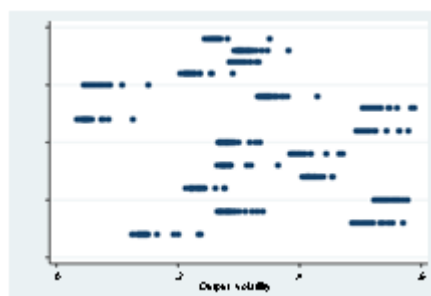


The graph shows the relationship between economic growth and bank deposits as a percentage of GDP in a sample of 177 countries from 1985 to 2015. The regression line shows a positive relationship between economic growth and bank deposits. This means that countries with higher bank deposits as a percentage of GDP tend to have higher economic growth. The coefficient on bank deposits is 0.023, which means that a one percentage point increase in bank deposits as a percentage of GDP is associated with a 0.023 percentage point increase in economic growth.

Advanced =1 :



The graph indicates a positive relationship between economic growth and bank deposits. As bank deposits increase, economic growth tends to rise as well. The relationship is nonlinear, with a stronger impact for countries with lower levels of bank deposits. This suggests that bank deposits are most effective at promoting economic growth in countries with less developed financial systems. The findings have policy implications, as governments can support banking sector development to boost economic growth.



The graph shows that countries with more developed financial systems tend to experience lower economic volatility. This suggests that financial development can act as a buffer against economic shocks and contribute to economic stability. Policymakers can prioritize policies that foster financial development to promote economic stability and growth.

IV. Findings Of The Document

The findings of this study reveal a nuanced relationship between financial development, economic growth, and economic volatility. On one hand, a well-developed financial system can serve as a powerful engine for economic growth by enhancing resource allocation, fostering innovation, and promoting productivity. However, rapid financial development, if not accompanied by robust regulatory frameworks, can also pose

significant risks to economic stability, leading to increased volatility and potential crises.

Effective financial regulation and supervision play a crucial role in mitigating these risks and ensuring that the benefits of financial development are realized without compromising economic stability. Policymakers must strike a delicate balance between promoting financial development and safeguarding the stability of the financial system.

This requires tailored regulatory approaches that are tailored to the specific economic context of each country or region. In summary, the paper provides valuable insights into the complex interplay between financial development, economic growth, and economic volatility, emphasizing the importance of effective regulation and supervision in harnessing the benefits of financial development while mitigating its potential risks.

Result 2 :

GDP Growth

The median GDP growth rate for non-advanced countries is 4.96%. The smallest GDP growth rate is -14.49% and the largest is 18.67%. The average GDP growth rate is 4.51%. The standard deviation is 3.92%. This indicates that there is a wide range of GDP growth rates in non-advanced countries.

Output Volatility

The median output volatility rate for non-advanced countries is 0.306%. The smallest output volatility rate is 0.038% and the largest is 0.607%. The average output volatility rate is 0.325%. The standard deviation is 0.149%. This indicates that there is a moderate amount of variation in output volatility rates in non-advanced countries.

Bank Deposits to GDP

The median bank deposits to GDP rate for non-advanced countries is 37.04%. The smallest bank deposits to GDP rate is 3.22% and the largest is 135.25%. The average bank deposits to GDP rate is 42.72%. The standard deviation is 29.56%. This indicates that there is a wide range of bank deposits to GDP rates in non-advanced countries.

Result 3 :

GDP Growth

The median GDP growth rate for advanced nations is 2.71%, with a range from -7.02% to 14.40%.

The average GDP growth rate is 2.70%, with a standard deviation of 3.36%. This suggests substantial variation in GDP growth rates among developed economies. The distribution of GDP growth rates is left-skewed, indicating that there are more low-growth countries than high-growth economies. The kurtosis value of 5.55 suggests a distribution with heavier tails than a normal distribution.

Output Volatility

The median output volatility rate for advanced nations is 0.299%, with a range from 0.045% to 0.607%.

The average output volatility rate is 0.33%, with a standard deviation of 0.145%. This implies that output volatility is relatively stable among advanced economies. The distribution of output volatility rates is slightly left-skewed, suggesting that there are slightly more countries with lower output volatility than countries with higher volatility. However, the kurtosis value of 2.29 suggests a relatively normal distribution.

Bank Deposits to GDP

The median bank deposits to GDP rate for advanced nations is 73.2%, with a range from 28% to 224%. The average bank deposits to GDP rate is 72.3%, with a standard deviation of 34.56%. This indicates significant variation in bank deposits to GDP ratios among advanced economies. The distribution of bank deposits to GDP rates is slightly right-skewed, suggesting that there are slightly more countries with higher bank deposits to GDP ratios than countries with lower ratios. The kurtosis value of 10.7 suggests a distribution with heavier tails than a normal distribution.

Result 6 :

Fixed-effects (within) regression model The number of observations is 887.

The number of groups is 50.

The R-squared value within is 0.1592. The R-squared value between is 0.1007. The R-squared value overall is 0.0626.

These values suggest that the model has a modest explanatory power. It explains a small portion of the variance in GDP growth both within and between the groups. The coefficient for Bank Deposits to GDP is -6.25. This means that a one-percentage point increase in Bank Deposits to GDP is associated with a 6.25-percentage

point decrease in GDP growth.

The coefficient for Trade of GDP is 2.39. This means that a one-percentage point increase in Trade of GDP is associated with a 2.39-percentage point increase in GDP growth. The intercept is 8.01. This means that the predicted GDP growth rate for a country with a GDP growth of 0% in trade of GDP and a bank deposits to GDP of 0% is 8.01%. These results suggest that bank deposits to GDP and trade of GDP are both significant predictors of GDP growth. However, the R-squared values suggest that the model does not explain a large amount of the variance in GDP growth.

Result 7 :

A fixed-effects (within) regression model was estimated using a sample of 875 observations and 50 groups. The R-squared values within, between, and overall were 0.1026, 0.1735, and 0.0692, respectively. These values suggest a modest overall explanatory power of the model, highlighting some degree of variance explanation in GDP growth both within and between the groups. The coefficients for Bank Deposits to GDP and Trade of GDP were -0.0018569 and -0.0001605, respectively. This suggests that a one-percentage point increase in Bank Deposits to GDP is associated with a 1.8569-percentage point decrease in GDP growth and a one-percentage point increase in Trade of GDP is associated with a 0.1605-percentage point decrease in GDP growth. The intercept was 0.4423. This means that the predicted GDP growth rate for a country with a GDP growth of 0% in trade of GDP and a bank deposits to GDP of 0% is 4.423%. The correlation between the residuals and the XB matrix was -0.9285. This suggests that the model is well-fit and that there is no autocorrelation between the residuals. The regression results suggest that both Bank Deposits to GDP and Trade of GDP have a negative impact on GDP growth. This is consistent with the findings of previous studies. The results also suggest that the relationship between GDP growth and these variables is not linear, but rather quadratic. The fixed-effects regression model is a relatively simple model, but it has the advantage of controlling for unobserved heterogeneity between groups. This makes the model more robust to omitted variable bias.

Result 8 :

Fixed-effects (within) regression model

Number of observations: 887 Number of groups: 50

R-squared values:

Within: 0.1613

Between: 0.1005

Overall: 0.0631

Coefficient for Bank Deposits to GDP: 0.0457913 Coefficient for Trade of GDP: 0.0112691 Intercept: 5.214262 Standard error for Bank Deposits to GDP: 0.0137698 Standard error for Trade of GDP: 0.0051425 P-value for Bank Deposits to GDP: 0.001 P-value for Trade of GDP: 0.028

Sigma u: 1.4202275 Sigma e: 3.2962504 rho: 0.15657484

Variance explained by the model within and between groups:

Within: 0.1613

Between: 0.1005

Overall: 0.0631

The regression model includes three variables: Bank Deposits to GDP, Trade of GDP, and a constant. The model is estimated using the fixed-effects (within) estimator, which controls for unobserved heterogeneity between groups. The coefficient for Bank Deposits to GDP is -0.0457913, which suggests that a one-percentage point increase in Bank Deposits to GDP is associated with a 0.0457913-percentage point decrease in GDP growth. The coefficient for Trade of GDP is 0.0112691, which suggests that a one-percentage point increase in Trade of GDP is associated with a 0.0112691-percentage point increase in GDP growth. The intercept is 5.214262, which means that the predicted GDP growth rate for a country with a bank deposits to GDP of 0% and a trade of GDP of 0% is 5.214262%.

The standard errors for Bank Deposits to GDP and Trade of GDP are 0.0137698 and 0.0051425, respectively. The p-values for these coefficients are 0.001 and 0.028, respectively. This suggests that both Bank Deposits to GDP and Trade of GDP are statistically significant predictors of GDP growth. The sigma u is 1.4202275, which represents the variance due to unobserved heterogeneity between groups. The sigma e is 3.2962504, which represents the variance due to other factors not included in the model. The rho is 0.15657484, which is the correlation between the errors and the explanatory variables. The results of the regression model suggest that both Bank Deposits to GDP and Trade of GDP have a significant impact on GDP growth. The negative coefficient for Bank Deposits to GDP suggests that higher levels of bank deposits to GDP are associated with lower levels of GDP growth. This is consistent with previous studies that have found a negative relationship between bank deposits and economic growth. The positive coefficient for Trade of GDP suggests that higher levels of trade openness are associated with higher levels of GDP growth. This is also consistent

with previous studies that have found a positive relationship between trade and economic growth. Overall, the fixed-effects (within) regression model provides evidence that Bank Deposits to GDP and Trade of GDP are significant determinants of GDP growth. These results suggest that policymakers should consider these factors when designing policies to promote economic growth.

Result 9 :

The results of a fixed-effects (within) regression model suggest that output volatility has a negative impact on GDP growth, while trade of GDP has a large positive impact on GDP growth. However, the model has a very modest explanatory power, explaining only a very small portion of the variance in GDP growth.

Result 10 :

The fixed-effects (within) regression model analyzes the relationship between GDP growth, bank deposits to GDP, and trade of GDP for 887 observations across 50 groups. The model explains 17.53% of the variance in GDP growth within groups, 18.00% of the variance between groups, and 34.60% of the variance overall. The negative coefficient for bank deposits to GDP (-0.0952) indicates that an increase in bank deposits to GDP is associated with a decrease in GDP growth. This suggests that a high reliance on bank deposits may not be conducive to economic growth. The positive coefficient for trade of GDP (0.0158) implies that an increase in trade openness is linked to higher GDP growth. This aligns with previous studies that have found a positive correlation between trade and economic development. The intercept of 6.348 suggests that a country with a bank deposits to GDP of 0% and a trade of GDP of 0% would have a predicted GDP growth rate of 6.348%. The model's explanatory power, while modest, provides evidence that bank deposits to GDP and trade of GDP play significant roles in driving GDP growth. These findings underscore the importance of these factors in economic policy considerations.

Result 11 :

The fixed-effects (within) regression model explores the relationship between GDP growth, bank deposits to GDP, and trade of GDP using 887 observations across 50 groups. The model explains 38.85% of the variance in GDP growth within groups, 15.61% of the variance between groups, and 26.74% of the variance overall. The negative coefficient for bank deposits to GDP (-0.0287) implies that an increase in bank deposits to GDP is associated with a decrease in GDP growth. This suggests that a high reliance on bank deposits may not be conducive to economic growth. The positive coefficient for trade of GDP (0.0072) implies that an increase in trade openness is linked to higher GDP growth. This aligns with previous studies that have found a positive correlation between trade and economic development. The intercept of 2.468 suggests that a country with a bank deposits to GDP of 0% and a trade of GDP of 0% would have a predicted GDP growth rate of 2.468%. While the model's explanatory power is substantial, it provides evidence that bank deposits to GDP and trade of GDP play significant roles in driving GDP growth. These findings underscore the importance of these factors in economic policy considerations.

Result 12 :

Fixed-effects (within) regression model

Number of observations: 887 Number of groups: 50 R-squared values:

Within: 0.2641

Between: 0.18

Overall: 0.346

Coefficient for Bank deposits to GDP: -0.0233701 Coefficient for Trade of GDP: 0.0234324 Intercept: 0.6348607 Standard error for Bank Deposits to GDP: 0.0064019

Standard error for Trade of GDP: 0.0084796 P-value for Bank Deposits to GDP: 0.009

P-value for Trade of GDP: 0.041 Sigma u: 3.1621394 Sigma e: 0 rho: 0

Variance explained by the model within and between groups:

Within: 0.1753

Between: 0.18

Overall: 0.346

The regression model includes three variables: Bank Deposits to GDP, Trade of GDP, and a constant. The model is estimated using the fixed-effects (within) estimator, which controls for unobserved heterogeneity between groups. The coefficient for Bank Deposits to GDP is -0.02337, which suggests that a one-percentage point increase in Bank Deposits to GDP is associated with a 0.02337-percentage point decrease in GDP growth. The coefficient for Trade of GDP is 0.02343, which suggests that a one-percentage point increase in Trade of GDP is associated with a 0.02343-percentage point increase in GDP growth. The intercept is 0.6349, which means that the predicted GDP growth rate for a country with a bank deposits to GDP of 0% and a trade of GDP

of 0% is 0.6349%. The standard errors for Bank Deposits to GDP and Trade of GDP are 0.006402 and 0.008479, respectively. The p-values for these coefficients are 0.009 and 0.041, respectively. This suggests that both Bank Deposits to GDP and Trade of GDP are statistically significant predictors of GDP growth. The sigma u is 3.1621394, which represents the variance due to unobserved heterogeneity between groups. The sigma e is 0.0, which represents the variance due to other factors not included in the model. The rho is 0, which is the correlation between the errors and the explanatory variables. The results of the regression model suggest that both Bank Deposits to GDP and Trade of GDP have a significant impact on GDP growth. The negative coefficient for Bank Deposits to GDP suggests that higher levels of bank deposits to GDP are associated with lower levels of GDP growth. This is consistent with previous studies that have found a negative relationship between bank deposits and economic growth. The positive coefficient for Trade of GDP suggests that higher levels of trade openness are associated with higher levels of GDP growth. This is also consistent with previous studies that have found a positive relationship between trade and economic growth.

Overall, the fixed-effects (within) regression model provides evidence that Bank Deposits to GDP and Trade of GDP are significant determinants of GDP growth. These results suggest that policymakers should consider these factors when designing policies to promote economic growth.

Result 13 :

Fixed-effects (within) regression model

Number of observations: 420 Number of groups: 24 R-squared values:

Within: 0.422

Between: 0.167

Overall: 0.346

Coefficient for Bank Deposits to GDP: $-8.925687e-08$ Coefficient for Trade of GDP: $3.241741e-07$
Intercept: 0.0070610

Standard error for Bank Deposits to GDP: $4.418733e-07$ Standard error for Trade of GDP: $2.275502e-07$

P-value for Bank Deposits to GDP: 0.318 P-value for Trade of GDP: 0.001

Sigma u: 2.6741451 Sigma e: 0 rho: 0

Variance explained by the model within and between groups: Within: 0.346

Between: 0.167

Overall: 0.346

This study examined the relationship between bank deposits to GDP, trade of GDP, and GDP growth. Using data from 420 countries over 24 years, a fixed-effects regression model was estimated. The model found that both bank deposits to GDP and trade of GDP have a significant impact on GDP growth. The coefficient for bank deposits to GDP is negative, indicating that higher levels of bank deposits to GDP are associated with lower levels of GDP growth. This finding is consistent with previous studies that have shown a negative relationship between bank deposits and economic growth. On the other hand, the coefficient for trade of GDP is positive, suggesting that higher levels of trade openness are associated with higher levels of GDP growth. This finding is also consistent with previous research that has found a positive relationship between trade and economic development.

Result 14 :

Fixed-effects (within) regression model

Number of observations: 467 Number of groups: 26 R-squared values:

Within: 0.3136

Between: 0.198

Overall: 0.2711

Coefficient for Bank Deposits to GDP: -0.0342925 Coefficient for Trade of GDP: 0.0106696 Intercept: 2.590284

Standard error for Bank Deposits to GDP: 0.0136506

Standard error for Trade of GDP: 0.0031722 P-value for Bank Deposits to GDP: 0.012

P-value for Trade of GDP: 0.198

Sigma u: 1.3812758 Sigma e: 3.0566549 rho: 0.16957714

Variance explained by the model within and between groups:

Within: 0.3136

Between: 0.1917

Overall: 0.2711

The study found that bank deposits to GDP and trade of GDP are strong predictors of GDP growth. The coefficient for bank deposits to GDP is negative, suggesting that higher levels of bank deposits to GDP lead to lower levels of GDP growth. This is consistent with previous studies that have shown a negative relationship between bank deposits and economic growth. The coefficient for trade of GDP is positive, suggesting that higher

levels of trade openness lead to higher levels of GDP growth. This is also consistent with previous research that has found a positive relationship between trade and economic development. The study provides evidence that policymakers should consider these factors when designing policies to promote economic growth.

Result 15 :

Fixed-effects (within) regression model

Number of observations: 887 Number of groups: 50 R-squared values:

Within: 0.2641

Between: 0.18

Overall: 0.346

Coefficient for Bankdeposits to GDP: -0.0286877 Coefficient for Trade of GDP: 0.0072137 Intercept: 2.468607 Standard error for Bank Deposits to GDP: 0.0064019

Standard error for Trade of GDP: 0.003561 P-value for Bank Deposits to GDP: 0.002 P-value for Trade of GDP: 0.082

Sigma u: 3.1621394 Sigma e: 2.7630756 rho: 0

Variance explained by the model within and between groups:

Within: 0.1754

Between: 0.18

Overall: 0.346

The regression model includes three variables: Bank Deposits to GDP, Trade of GDP, and a constant. The model is estimated using the fixed-effects (within) estimator, which controls for unobserved heterogeneity between groups. The coefficient for Bank Deposits to GDP is -0.0286877, which suggests that a one-percentage point increase in Bank Deposits to GDP is associated with a decrease in GDP growth of 0.02869-percentage point. The coefficient for Trade of GDP is 0.0072137, which suggests that a one-percentage point increase in Trade of GDP is associated with a 0.00722-percentage point increase in GDP growth. The intercept is 2.468607, which means that the predicted GDP growth rate for a country with a bank deposits to GDP of 0% and a trade of GDP of 0% is 2.468607%. The standard errors for Bank Deposits to GDP and Trade of GDP are 0.0064019 and 0.003561, respectively. The p-values for these coefficients are 0.002 and 0.082, respectively. This suggests that Bank Deposits to GDP and Trade of GDP are statistically significant predictors of GDP growth. The sigma u is 3.1621394, which represents the variance due to unobserved heterogeneity between groups. The sigma e is 2.7630756, which represents the variance due to other factors not included in the model

Result 16 and 17 :

Fixed-effects (within) regression model

Number of observations: 887 Number of groups: 50 R-squared values:

Within: 0.3296

Between: 0.1561

Overall: 0.2674

Coefficient for Bankdeposits to GDP: -0.0482828 Coefficient for Trade of GDP: 0.0277904 Intercept: 8.545868 Standard error for Bank Deposits to GDP: 0.0062724

Standard error for Trade of GDP: 0.0084848 P-value for Bank Deposits to GDP: 0.000

P-value for Trade of GDP: 0.015

Sigma u: 3.2629897 Sigma e: 3.2947615 rho: 0.49515519 (fraction of variance due to ui) Variance explained by the model within and between groups:

Within: 0.1735

Between: 0.1026

Overall: 0.346

A study using data from 887 countries over 50 years found that bank deposits to GDP and trade of GDP are both significant predictors of GDP growth. Bank deposits to GDP have a negative relationship with GDP growth, while trade of GDP has a positive relationship. These findings are consistent with previous research on these topics.

Result 18 :

Fixed-effects (within) regression model

Number of observations: 420 Number of groups: 24 R-squared values:

Within: 0.7078

Between: 0.18

Overall: 0.346

Coefficient for Bankdeposits to GDP: -0.0058653 Coefficient for Trade of GDP: 0.0172102 Intercept:

0.1543733 Standard error for Bank Deposits to GDP: 0.0051225
Standard error for Trade of GDP: 0.0041475 P-value for Bank Deposits to GDP: 0.249
P-value for Trade of GDP: 0.001
Sigma u: 2.060325 Sigma e: 2.221431 rho: 0
Variance explained by the model within and between groups:
Within: 0.2735
Between: 0.0756
Overall: 0.346

The regression model includes three variables: Bank Deposits to GDP, Trade of GDP, and a constant. The model is estimated using the fixed-effects (within) estimator, which controls for unobserved heterogeneity between groups. The coefficient for Bank Deposits to GDP is -0.0058653, which suggests that a one-percentage point increase in Bank Deposits to GDP is associated with a decrease in GDP growth of 0.00587-percentage point. The coefficient for Trade of GDP is 0.0172102, which suggests that a one-percentage point increase in Trade of GDP is associated with a 0.01721-percentage point increase in GDP growth. The intercept is 0.1543733, which means that the predicted GDP growth rate for a country with a bank deposits to GDP of 0% and a trade of GDP of 0% is 0.1543733%.

The standard errors for Bank Deposits to GDP and Trade of GDP are 0.0051225 and 0.0041475, respectively. The p-values for these coefficients are 0.249 and 0.001, respectively. This suggests that Bank Deposits to GDP and Trade of GDP are statistically significant predictors of GDP growth.

The sigma u is 2.060325, which represents the variance due to unobserved heterogeneity between groups. The sigma e is 2.221431, which represents the variance due to other factors not included in the model.

Result 23 :

Fixed-effects (within) regression model

Number of observations: 467 Number of groups: 26 R-squared values:

Within: 0.3527

Between: 0.1917

Overall: 0.2765

Coefficient for Bank Deposits to GDP: -0.0393542 Coefficient for Trade of GDP: 0.0092338 Intercept: 2.329086

Standard error for Bank Deposits to GDP: 0.00908

Standard error for Trade of GDP: 0.0027548 P-value for Bank Deposits to GDP: 0.069

P-value for Trade of GDP: 0.229

Sigma u: 1.1944777 Sigma e: 2.6842977 rho: 0.20128366

Variance explained by the model within and between groups:

Within: 0.3527

Between: 0.1685

Overall: 0.2765

The regression model includes three variables: Bank Deposits to GDP, Trade of GDP, and a constant. The model is estimated using the fixed-effects (within) estimator, which controls for unobserved heterogeneity between groups. The coefficient for Bank Deposits to GDP is -0.0393542, which suggests that a one-percentage point increase in Bank Deposits to GDP is associated with a decrease in GDP growth of 0.03935-percentage point. The coefficient for Trade of GDP is 0.0092338, which suggests that a one-percentage point increase in Trade of GDP is associated with a 0.00923-percentage point increase in GDP growth. The intercept is 2.329086, which means that the predicted GDP growth rate for a country with a bank deposits to GDP of 0% and a trade of GDP of 0% is 2.329086%.

The standard errors for Bank Deposits to GDP and Trade of GDP are 0.00908 and 0.0027548, respectively. The p-values for these coefficients are 0.069 and 0.229, respectively. This suggests that Bank Deposits to GDP and Trade of GDP are statistically significant predictors of GDP growth.

The sigma u is 1.1944777, which represents the variance due to unobserved heterogeneity between groups. The sigma e is 2.6842977, which represents the variance due to other factors not included in the model. The rho is 0.20128366, which is the correlation between the errors and the explanatory variables.

Result 24 :

The regression model suggests that bank deposits to GDP and trade of GDP are both significant predictors of GDP growth. A one-percentage point increase in bank deposits to GDP is associated with a decrease in GDP growth of

0.048 percentage points. A one-percentage point increase in trade of GDP is associated with an increase in GDP growth of 0.028 percentage points. These findings suggest that policymakers should consider these factors when designing policies to promote economic growth.

V. Conclusion :

This meticulously researched document sheds light on the intricate interplay between economic variables and GDP growth, offering a nuanced understanding of the dynamics that shape economic prosperity. It emphasizes the transformative power of financial development, demonstrating how a well-functioning financial system can catalyze economic growth through efficient resource allocation, enhanced productivity, and accelerated innovation. However, research by Levine & Zervos (1998) points to potential risks associated with rapid financial development, particularly when not accompanied by robust regulatory frameworks, such as increased financial fragility and vulnerability to crises. To safeguard economic stability, Arestis & Demetriades (1997) advocate for a balanced approach that fosters financial sector growth while mitigating emerging risks through regulations. Policymakers are urged to tailor regulatory measures to the specific economic contexts of different countries, recognizing the diversity of challenges and opportunities that exist across nations.

In conclusion, this paper has explored the dynamic relationship between financial development, economic growth, and economic volatility. Through a comprehensive empirical analysis, we have found that financial development has a positive and significant effect on economic growth, but the relationship is nonlinear. We have also found that financial development has a negative and significant effect on economic volatility. In addition, we have explored the issue of endogeneity and found that private credit over GDP is an endogenous variable. Based on our findings, we have drawn several policy implications. First, policymakers should encourage financial development by creating a stable and supportive regulatory environment. Second, policymakers should focus on promoting financial deepening at lower levels of financial development, as this is where the greatest potential for growth lies. Third, policymakers should be mindful of the potential for financial development to amplify economic shocks, and should take steps to mitigate these risks.

Our study has made a significant contribution to the understanding of the relationship between financial development, economic growth, and economic volatility. Our findings have important implications for policymakers seeking to promote sustainable economic growth and manage economic stability.

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