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Analyzing the Nexus Between Economic Development and Money Monetization: Evidence from Pakistan

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## Abstract

The study explores the intricate relationship between economic development and money monetization in the context of Pakistan, drawing on insights from endogenous growth theory. By empirically developing models based on standard gross domestic product (GDP) frameworks, the research aims to shed light on the long-term dynamics between these two crucial factors. Using the error correction model approach and co-integration analysis, the study delves into the relationship between money supply and economic development, considering variables such as inflation, income gap, investment, and money supply. The co-integration results indicate a stable equilibrium relationship among the variables over the long term, suggesting a sustained connection between money monetization and economic growth. Furthermore, the error correction results reveal the presence of a dependent relationship between economic growth and the identified independent variables, highlighting the significance of factors such as inflation, income disparity, and investment in shaping economic development. To validate the long-term equilibrium relationship between these variables, the study employs the autoregressive distributive lag bound testing approach, providing insights into the stability and sustainability of the observed dynamics. Additionally, the research examines the short-term relationship between economic growth and money monetization, offering valuable insights into the immediate impacts and dynamics. This study contributes to the understanding of the complex interplay between economic development and money monetization in Pakistan, offering empirical evidence and analytical frameworks to inform policy decisions and strategic interventions aimed at fostering sustainable economic growth.

**Keywords:** Economic Development, Money Monetization, Endogenous Growth Theory

**JEL Codes:** E51, O16, O40

## 1. INTRODUCTION

Monetization refers to the process of establishing or changing the legal tender within an economy, typically involving the issuance of central bank currency or banknotes. This process encompasses the coining or printing of money. The degree of monetization in an economy is often defined by the proportion of national income received in the form of money. While most developed economies are nearly fully monetized, the extent of monetization is significantly lower in many developing economies, where a substantial portion of national income is still received in kind, such as through barter exchange or self-consumption.

Understanding the degree of monetization is crucial for comprehending the economic development process. In more developed economies, the widespread use of money facilitates efficient market transactions, supports financial intermediation, and aids in the implementation of monetary policy. In contrast, lower levels of monetization in developing economies can indicate limited access to financial services, inefficiencies in trade, and challenges in policy implementation. To analyze monetization, one can examine the relationship between growth rates and money supply, considering how changes in money supply influence real output and economic growth. Subtracting real output growth from the growth rate of money supply helps isolate the impact of monetization on economic performance. Such studies are vital for designing policies that enhance financial inclusion and support broader economic development goals.

If central banks aim to increase the levels of debt in the economy, they can issue money without any gold backing—a process known as monetization. This involves creating money to finance government debt or spending, leading to an increase in the money supply at a rate exceeding the growth of goods and services. Monetization is often seen as a convenient method for governments to fund projects and stimulate economic growth, particularly in developing countries with underdeveloped financial markets.

In developing economies, poor financial markets limit the government's ability to raise debt through traditional means. Consequently, central banks may step in to provide the necessary funding, leading to increased money creation. This

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relationship between deficits and money creation is typically direct: when financial markets cannot supply the needed debt, central banks compensate by creating additional money, thereby expanding the money supply.

By reviewing the literature on monetization, it becomes clear how various countries have used this approach to support their economic establishment. While monetization can provide immediate funds for development projects, it must be managed carefully to avoid negative consequences such as inflation or currency devaluation. Understanding these dynamics helps policymakers in developing countries navigate the complexities of funding economic growth in the context of limited financial market development.

The long-term effects of monetization can have varied consequences for different groups within an economy. While monetization can provide immediate benefits such as funding for infrastructure projects or social services, the distribution of these benefits and the associated costs can differ significantly across population segments.

For some people, particularly those in rural or underserved areas, monetization can result in enhanced services and compensation. For example, increased funding might lead to improved local transportation services, such as low-cost or free transport options, which can significantly enhance mobility and access to essential services for rural populations.

However, the benefits of monetization can sometimes be offset by its costs. Inflation is a common consequence of excessive money creation, which can erode the purchasing power of individuals, particularly those on fixed incomes or savings. While some groups may receive direct benefits from monetization in the form of improved services or infrastructure, others may find that the rising cost of living negates these benefits.

Railway transport companies, for example, might benefit from monetization through increased investment in infrastructure and services, leading to better operational efficiency and expanded networks. This can provide clear advantages, such as improved connectivity and economic opportunities for the regions served. Nevertheless, if inflationary pressures arise from excessive monetization, the operational costs for these companies might increase, potentially leading to higher fares and reduced affordability for passengers.

Thus, while monetization can drive economic development and provide immediate resources for various projects, its long-term effects must be carefully managed to balance the benefits against potential drawbacks. Policymakers must consider the diverse impacts on different population groups to ensure that the advantages of monetization are equitably distributed and that the economy remains stable.

The effects of monetization on the medical system are indeed controversial. On one hand, monetization can provide much-needed funds for healthcare services, potentially improving infrastructure, expanding access to care, and enhancing the quality of medical services. With increased financial resources, hospitals and clinics can purchase new medical equipment, construct new facilities, and expand existing services. This influx of funds can also help extend healthcare services to underserved areas, thereby improving access to care for rural and low-income populations. Additionally, additional funding can enable healthcare providers to hire more professionals, reducing patient-to-doctor ratios and enhancing the overall quality of care.

However, monetization might also require healthcare providers to spend more time on administrative tasks, such as filling out forms and justifying expenses. This can reduce the time available for patient care, leading to inefficiencies in the system. Furthermore, if monetization leads to inflation, the costs of medical supplies and services may increase. This can offset the benefits of increased funding, making healthcare less affordable for patients and complicating budget planning for healthcare institutions.

The impact of monetization can be real or unreal depending on how the funds are utilized. If the funds from monetization are used for productive purposes, such as building new hospitals, training healthcare professionals, or investing in medical research, the economy can experience real growth. This can lead to higher employment levels in the healthcare sector and improved health outcomes. However, if the funds are used for non-productive purposes or merely to cover operational deficits without improving efficiency or capacity, the result can be inflation without any real growth. This scenario can lead to higher costs for medical care and reduced purchasing power for consumers.

For policymakers, the key is to ensure that monetization is directed towards productive investments that can generate long-term benefits. This involves prioritizing investments in areas that will yield the highest returns, such as preventive care, medical research, and the expansion of healthcare infrastructure. Implementing robust systems to monitor the use of funds and evaluate their impact on healthcare outcomes and economic growth is also essential. Moreover, balancing short-term and long-term goals is crucial to ensure that while immediate healthcare needs are met, the long-term sustainability and efficiency of the healthcare system are not compromised.

## **2. REVIEW OF LITERATURE**

The study by Wolf et al. (1976) delves into the implications and perspectives surrounding monetization, examining different viewpoints from economists and scholars. One aspect discussed is Professor Higgins' inquiry into the purported advantages of economic growth resulting from monetization. This inquiry likely explores whether the process of monetization indeed leads to tangible economic benefits and growth, or if it may have unforeseen consequences.

Another focal point of the study is the examination of two distinct approaches to monetization. The first approach scrutinizes whether communities exposed to monetization and its associated processes might endure more pronounced socio-cultural side effects than commonly assumed. This suggests a deeper exploration of the broader societal impacts of monetization beyond its economic dimensions. The second approach considers the possibility that even carefully controlled monetization initiatives could potentially become potent destabilizing forces, leading to adverse consequences.

Furthermore, Ekaette and Far (2003) contribute to the discourse on monetization by defining it as a monetary policy designed to restructure the way public servants receive certain benefits. These benefits include various allowances such as leave grants, meal subsidies, entertainment allowances, duty tour allowances, and allowances for domestic servants. Additionally, the items earmarked for monetization encompass essentials like housing, medical treatment, utilities bills, and transportation allowances.

Together, these studies shed light on the multifaceted nature of monetization, highlighting its potential economic, socio-cultural, and policy implications. By examining different viewpoints and approaches, researchers aim to provide a comprehensive understanding of monetization and its effects on various facets of society and the economy.

In 2002, a bill was introduced, sparking discussions on various economic assumptions and solutions. Shubik, M. (2004) contributed to this discourse by exploring different scenarios where individuals engage in creating credit or issuing currency, raising questions about the roles of banks and governments in such situations. He proposed a solution termed "credit-constrained equilibrium" to address potential challenges arising from widespread credit creation or currency issuance.

Coats, W.L., et al. (2000), delved into the challenges faced by less developed countries (LDCs) in implementing effective monetary policies. They examined the Shaw-McKinnon Framework, which suggests a model tailored to LDCs that emphasizes the symbiotic relationship between real money balances and capital formation. In this framework, money serves as a tool for fostering overall economic development, highlighting its crucial role in LDCs' growth strategies. Coats and colleagues underscored the importance of monetary policy in leveraging money as a catalyst for development in LDCs, advocating for a strategic focus on utilizing monetary instruments to drive economic progress.

A. Siegel and J.J. (2000) delved into the business events spanning from 1974 to 1986, with a particular focus on the United States economy. Their analysis highlighted the pivotal role of banks in controlling monetary policy through mechanisms such as the purchase and sale of monetary policy instruments. They concluded that large government deficits could potentially fuel the growth of money supply, leading to inflationary pressures.

Lee (2000) explored the relationship between financial development and economic growth in Canada. Using data from 1948 to 2001, Lee found evidence suggesting that financial development significantly contributed to economic development in Canada, even during periods when the country was already considered industrialized. Statistical tests indicated that measures of financial development had a Granger-causal relationship with economic growth, with positive coefficients observed for each variable in the vector autoregression (VAR) model. While there was no evidence of reverse causality (i.e., economic growth leading to financial development), there was an indication that economic growth Granger-caused private credit expansion.

Alyoshina (2007) examined the secondary data of Ukraine, focusing on indicators such as money supply in circulation, the level of economic monetization, dynamics of components proportion ratio of money supply, Ukrainian currency ratio, and various growth rates related to the economy from 1996 to 2000. The study aimed to analyze the relationship between these variables and the overall economic performance of Ukraine during the specified period.

The findings highlighted the importance of restructuring the state financial flow structure, particularly in strengthening the investment component of the Ukrainian economy. Alyoshina emphasized the need for an effective mechanism to channel funds from credit and financial institutions into stocks of trade, industrial, and transport enterprises, especially those with promising prospects in the domestic market. Additionally, the study underscored the significance of developing an efficient mechanism for long-term savings mobilization, aligning with the strategic direction of economic growth.

Steinbock (2007) delved into the various strategies employed by the U.S. government to uphold the value of the dollar. He also presented insights from different economists regarding the significance of the U.S. dollar, with a particular emphasis on its role in U.S. economic policy. For instance, the article referenced (Rethink) stating that since the early 1980s, a primary objective of U.S. economic policy has been to maintain a strong dollar.

Febrero (2008) likely contributed to this discourse, although specific details about their work are not provided here. Their contribution may have offered further analysis or perspectives on the role of the U.S. dollar in the global economy or its implications for economic policies and strategies.

The process described pertains to the dynamics of monetary creation and destruction within an economic system. Essentially, money is generated within a certain period, and even if some of it is destroyed (for example, through loan repayment), a portion may remain in circulation due to ongoing loan obligations.

Distinguishing between short-term and long-term interest rates is crucial in understanding how banks operate within this framework. Short-term interest payments reflect immediate spending, while long-term interest payments are linked to the extension of productive capacity in the economy. The ability to set long-term interest rates plays a significant role in

influencing economic growth, particularly when the growth rate is relatively low compared to the rest of the money supply that remains in circulation.

These points underscore the complex relationship between monetary policy, interest rates, and economic growth, emphasizing the importance of both short-term and long-term perspectives in shaping financial outcomes.

In their study, Rousseau and Stroup (2011) delve into the historical context of Colonial England between 1703 and 1749 to investigate the dynamics of money creation and its impact on research and development within the economy. Utilizing tools from modern economics, they aim to quantify the effects of activities in the modern sector, particularly focusing on the short-term and long-term consequences of monetary policies.

One key aspect of their research is the separation of short-term and long-term effects, allowing for a nuanced understanding of how monetization influences real economic activity over time. They suggest that while monetization may initially spur development and innovation, its long-term effects could be more profound and potentially transformative.

The study highlights the temporary nature of the increase in monetization costs, emphasizing that while it may encourage development in the short run, its effects may diminish over time. Additionally, the authors examine the role of colonial legislatures in financing military conflicts through money creation, both directly and indirectly through the issuance of public debt.

Drawing on various historical sources, including data from New England, the researchers construct a measure of the money supply to analyze the impact of monetization on economic activities during the specified period. Through their rigorous analysis, Rousseau and Stroup shed light on the intricate relationship between monetary policy, economic development, and historical context, providing valuable insights into the evolution of monetary systems and their consequences.

After conducting our analysis, we observed that the relative impact of these factors varied significantly on proxies for the effect of total real money supply. In particular, we examined instances where colonial legislatures approved loans and bank emissions, utilizing data on loans obtained from banks to derive relevant components. This allowed us to subtract the value of paper money and calculate the outstanding amount for each year, taking into account the redemption schedule.

Our findings indicate that the expansion of the money stock stimulated growth in modern sector activities, suggesting a mutually reinforcing relationship. Interestingly, we also found that debt issued by banks, specifically bills, had a positive impact on the sector. However, it's worth noting that we excluded certain factors associated with the feudal age for analytical purposes.

Our analysis provides insights into the complex interplay between monetary policies, financial institutions, and economic development during the colonial period. By examining the effects of various monetary instruments and legislative actions, we gain a deeper understanding of the mechanisms driving economic activity and growth in historical contexts.

In their review, Ghafele and Gibert (2012) address the challenges and opportunities associated with implementing a knowledge-driven growth strategy in developing countries, with a specific focus on the monetization of intellectual property (IP) to foster research and innovation. They highlight several key approaches, including patent securitization, online patent exchange platforms, technology transfer offices, joint public-private funding initiatives, and leveraging litigation support for small innovative firms.

The report emphasizes the importance of utilizing these mechanisms to attract international cooperation and investment in technology, thereby facilitating the monetization of patents and the promotion of innovation within the developing world. Furthermore, it identifies various commercial tools available for assessing the value of intellectual property assets and optimizing their commercialization potential.

By exploring these strategies and tools, Ghafele and Gibert offer insights into how developing countries can leverage their intellectual capital to drive economic growth and technological advancement in an increasingly knowledge-based global economy.

Malakwai et al. (2012) employed an autoregressive distributed lag (ARDL) approach to assess the level of development finance in the UAE. They utilized two key indicators: the monetization ratio (M2/GDP), reflecting the financial depth or size of the financial intermediary sector, and the financial intermediation ratio, which represents the percentage of private sector loans provided by commercial banks relative to GDP. Additionally, the study incorporated three control variables: inflation (INF), unemployment (UNEMP), and government expenditure (GOV).

By examining the long-term relationships and short-run dynamics between financial development and economic growth in the UAE from 1974 to 2008, the study found a negative and statistically significant relationship between financial development and economic growth, as measured by M2/GDP. This suggests that there may be complex dynamics at play between financial sector development and overall economic performance in the UAE during the specified period.

Ghafele and Gibert (2012) suggest that policymakers in all developing countries have the opportunity to assist innovators in leveraging the intellectual property (IP) system to their advantage. They propose implementing targeted public support programs and raising awareness about market mechanisms available for more effective monetization of IP. By doing so, policymakers can empower innovators and foster innovation-driven growth strategies in developing nations.

Osaka (2012) conducted research on the macroeconomic impact of monetization on the Nigerian economy. The main objective of the paper was to develop macroeconometric models to assess the impact of monetization on output in Nigeria.

The empirical analysis was based on data taken from the Nigerian Central Bank Statistical Bulletin for the period of 1980 to 2010.

The results of the analysis indicated that wages and salaries, as well as fringe benefits of public servants, significantly contributed to recurrent expenditure. Moreover, monetization was found to divert real domestic direct resources away from recurrent expenditure towards capital expenditure. As a result, hypotheses testing was conducted based on the econometric results of multiple regression analysis, which revealed the relationship between recurrent government expenditures, wages and salaries, fringe benefits of public servants, and other variables.

**3. THEORETICAL FRAMEWORK**

In this study, the model incorporates six variables: GDP per capita, money supply (M2), inflation (inf), investment (inv), and income disparity (int). The model is represented as  $GDP = f(INV, INT, M2, INF)$ , where T represents time periods ranging from 1 to 32, covering the years from 1980 to 2011. Each variable is measured over these time periods, with GDP representing Gross Domestic Product, Inv representing investment, M2 representing money supply, Inf representing inflation, and Int representing income disparity.

The data used for this analysis comprises annual time series data sourced from the World Development Indicators of the World Bank. Specifically, the dataset includes information on the growth rate of GDP, inflation, income disparity, investment, and money supply (M2). These variables are essential for assessing the macroeconomic impact of monetization on the Nigerian economy.

The study aims to evaluate the relationship between recurrent government expenditures, wages, salaries, and fringe benefits of public servants, among other variables. To achieve this, econometric analysis is conducted using multiple regression analysis. The analysis tests hypotheses based on the results of the regression analysis, which explores the relationship between recurrent government expenditures, wages, salaries, fringe benefits of public servants, and other variables.

The study seeks to assess the impact of monetization on output in Nigeria by employing macro econometric models. By examining the relationship between various economic indicators and recurrent government expenditures, the study aims to provide insights into the effects of monetization on the Nigerian economy over the period from 1980 to 2011.

**4. RESULTS AND DISCUSSIONS**

The table 1 presents the results of the Augmented Dickey-Fuller (ADF) test for unit root at both the level and first difference of various economic variables. This test is essential for determining the stationarity of the variables, which is a crucial aspect of time series analysis.

**Table 1: Augmented Dickey-Fuller (ADF) Test for Unit Root**

Augmented Dickey-Fuller (ADF) Test at Level			
Variables	t –Statistic	p- Value	No of lags
INFL	-2.702179	0.0847	0
LNGDPPC	-0.820932	0.7991	1
LNID	-2.107902	0.2430	
LNINV	-2.007262	0.1122	0
LNM2	160427	0.9332	0
Augmented Dickey-Fuller (ADF) Test of 1 <sup>st</sup> Difference			
Variables	t –Statistic	p- Value	No of lags
D(INFL)	-6.871233	0.0000	0
D(LNGDPPC)	-3.700923	0.0090	0
D(LNID)	-3.949040	0.0000	1
D(LNINV)	-4.837407	0.0000	0
D(LNM2)	-4.404122	0.0010	0

At the level, the variable INFL (Inflation) yields a t-statistic of -2.702179 with a p-value of 0.0847 and zero lags. This result indicates that INFL is non-stationary at the 5% significance level but is marginally close to rejecting the null hypothesis of a unit root at the 10% level. The variable LNGDPPC (Log of GDP per Capita) shows a t-statistic of -0.820932 with a p-value of 0.7991 and one lag, strongly indicating non-stationarity. For LNID (Log of Industrial Development), the t-statistic is -2.107902 with a p-value of 0.2430, suggesting non-stationarity without specifying the number of lags. The variable LNINV (Log of Investment) has a t-statistic of -2.007262 and a p-value of 0.1122 with zero lags, which also indicates non-stationarity. Lastly, LNM2 (Log of Money Supply) presents a t-statistic of 160427 with a p-value of 0.9332 and zero lags, clearly indicating non-stationarity.

At the first difference, D(INFL) shows a t-statistic of -6.871233 with a p-value of 0.0000 and zero lags, strongly indicating

stationarity. D(LNGDPPC) yields a t-statistic of -3.700923 with a p-value of 0.0090 and zero lags, suggesting stationarity at the first difference. The variable D(LNID) has a t-statistic of -3.949040 with a p-value of 0.0000 and one lag, indicating stationarity. For D(LNINV), the t-statistic is -4.837407 with a p-value of 0.0000 and zero lags, confirming stationarity. Lastly, D(LNM2) presents a t-statistic of -4.404122 with a p-value of 0.0010 and zero lags, indicating that the variable is stationary at the first difference.

Overall, the ADF test results show that all variables are non-stationary at their levels but become stationary upon first differencing. This is a common characteristic in economic time series data, where taking the first difference often removes trends and results in a stationary series.

The table 2 provides the estimated long-run coefficients using the Autoregressive Distributed Lag (ARDL) approach, with LNGDPPC (Log of GDP per Capita) as the dependent variable. The coefficients for the independent variables and their corresponding t-statistics and p-values are presented.

For the variable INFL (Inflation), the coefficient is -0.0009480, with a t-statistic of 0.34769 and a p-value of 0.731. This result suggests that the impact of inflation on the log of GDP per capita is negative but statistically insignificant, indicating that changes in inflation do not have a substantial long-term effect on GDP per capita in this model.

The variable LNID (Log of Industrial Development) has a coefficient of -0.31806, a t-statistic of -2.0646, and a p-value of 0.049. This indicates a statistically significant negative relationship between industrial development and GDP per capita at the 5% significance level, suggesting that higher levels of industrial development are associated with a decrease in GDP per capita in the long run.

LNINV (Log of Investment) shows a coefficient of 0.21480, with a t-statistic of 2.2873 and a p-value of 0.031. This positive and statistically significant coefficient implies that increases in investment are associated with higher GDP per capita, highlighting the importance of investment for economic growth.

The variable LNM2 (Log of Money Supply) has a coefficient of 0.068393, a t-statistic of 3.2300, and a p-value of 0.003. This result is statistically significant at the 1% level, indicating a positive long-term relationship between money supply and GDP per capita, suggesting that an increase in money supply contributes to economic growth.

Lastly, the constant term (C) has a coefficient of 2.4980, with a t-statistic of 1.1882 and a p-value of 0.246. This suggests that the constant term is not statistically significant, indicating that the model's intercept does not significantly affect the log of GDP per capita. Overall, the ARDL approach reveals that while inflation does not significantly impact GDP per capita, industrial development negatively affects it. In contrast, both investment and money supply positively contribute to long-term economic growth.

**Table 2: Estimated Long Run Coefficients using the ARDL Approach**

Dependent variable: LNGDPPC				
Variables	Co efficient	t –Statistic	p- Value	
INFL	-0.0009480	0.34769	0.731	
LNID	-0.31806	-2.0646	0.049	
LNINV	0.21480	2.2873	0.031	
LNM2	0.068393	3.2300	0.003	
C	2.4980	1.1882	0.246	

The table 3 presents the error correction representation for the selected Autoregressive Distributed Lag (ARDL) model, with LNGDPPC (Log of GDP per Capita) as the dependent variable. This model captures both the short-term dynamics and the long-term equilibrium relationship among the variables.

The coefficient for the change in inflation ( $\Delta$ INFL) is -0.0003269, with a t-statistic of -0.37891 and a p-value of 0.708. This indicates that changes in inflation do not have a statistically significant short-term effect on GDP per capita, consistent with the earlier finding that inflation's long-term impact is also insignificant.

For the change in industrial development ( $\Delta$ LNID), the coefficient is 0.010382, with a t-statistic of 0.28826 and a p-value of 0.770. This result shows that short-term changes in industrial development are not statistically significant in affecting GDP per capita.

The change in investment ( $\Delta$ LNINV) has a coefficient of 0.074040, with a t-statistic of 1.3709 and a p-value of 0.181. Although this coefficient is positive, it is not statistically significant, suggesting that short-term variations in investment do not have a significant impact on GDP per capita in the short run.

The coefficient for the change in money supply ( $\Delta$ LNM2) is 0.023071, with a t-statistic of 1.7000 and a p-value of 0.101. This result is approaching significance, indicating that while short-term changes in money supply have a positive effect on GDP per capita, the impact is not statistically significant at conventional levels (e.g., 5%).

The error correction term (ECT(-1)) has a coefficient of -0.34464, with a t-statistic of -2.1984 and a p-value of 0.037. This coefficient is statistically significant at the 5% level, confirming the presence of a long-term equilibrium relationship among

the variables. The negative sign indicates that any deviation from the long-term equilibrium is corrected at a rate of approximately 34.5% per period, implying a relatively moderate speed of adjustment back to equilibrium.

The constant term (C) is not reported in this representation, as it is not relevant for interpreting the short-term dynamics and error correction mechanism.

In summary, the error correction representation shows that while short-term changes in inflation, industrial development, investment, and money supply do not have statistically significant effects on GDP per capita, the significant error correction term indicates that deviations from the long-term equilibrium are corrected over time, reaffirming the long-term relationships identified in the ARDL model.

**Table 3: Error Correction Representation for the Selected ARDL Model**

Dependent variable: LNGDPPC				
Variables	Co efficient	t –Statistic	p- Value	
ΔINFL	-0.0003269	-0.37891	0.708	
ΔLNID	0.010382	0.28826	0.770	
ΔLNINV	0.074040	1.3709	0.181	
ΔLNM2	0.023071	1.7000	0.101	
ECT(-1)	-0.34464	-2.1984	0.037	
C	-	-	-	

The table 4 summarizes the results of various diagnostic tests performed on the model to evaluate its statistical properties and validity.

The Normality Test, represented by the Jarque-Bera statistic, has a value of 0.83941 with a probability of 0.607. This high p-value indicates that the residuals of the model are normally distributed, as the null hypothesis of normality cannot be rejected.

The Serial Correlation test, conducted using the Breusch-Godfrey Serial Correlation LM Test, yields a chi-square statistic of 0.040320 with a probability of 0.831. This high p-value suggests that there is no evidence of serial correlation in the residuals, implying that the residuals are uncorrelated over time, which is a desirable property in regression models.

The ARCH Test (Autoregressive Conditional Heteroskedasticity Test) shows a chi-square statistic of 0.0018083 with a probability of 0.966. The high p-value indicates the absence of heteroskedasticity, meaning that the variance of the residuals is constant over time, which meets one of the key assumptions of classical regression models.

The Model Specification Test, assessed using the Ramsey RESET Test, has a chi-square statistic of 2.2499 with a probability of 0.134. The p-value being greater than 0.05 suggests that the null hypothesis of correct model specification cannot be rejected. This indicates that the model is correctly specified, with no significant omitted variables or incorrect functional forms.

In summary, the diagnostic tests collectively suggest that the model performs well in terms of normality, absence of serial correlation and heteroskedasticity, and correct specification. This increases the reliability of the regression results and the validity of the model's inferences.

**Table 4: Diagnostic Tests**

Normality Test (Jarque-Bera Statistics)	Jarque-Bera Statistics=0.83941	Probability = 0.607
Serial Correlation (Brush-Godfrey Serial Correlation LM Test)	CHSQ statistic=0.040320	Probability = 0.831
ARCH Test (Autoregressive Heteroskedasticity Test)	CHSQ statistic=0.0018083	Probability = 0.966
Model Specification Test (Ramsey RESET Test)	CHSQ statistic=2.2499	Probability = 0.134

## 5. CONCLUSIONS AND POLICY IMPLICATIONS

The study acknowledges the substantial size and intricacy of logistics within Pakistan's economy, recognizing the long-term and capital-intensive nature of its economic activities. In doing so, it highlights the key challenges inherent in implementing logistical frameworks within such an economy.

Furthermore, the study examines the interplay between various economic factors, including money supply, inflation, income inequality, economic growth, and investments. It suggests that, given the complexities involved, optimizing investments to

generate income may offer a viable alternative to address these challenges. By exploring these dynamics, the study aims to provide insights into potential strategies for navigating the multifaceted landscape of Pakistan's economy.

The study group aims to identify optimal strategies for wealth generation, recognizing that the factors outlined above present significant opportunities for profit. Specifically, they observe that increases in money supply and investment tend to correlate positively with economic growth, indicating promising avenues for financial gain.

Moreover, the research seeks to delve into the effects of monetization within Pakistan, a dimension often overlooked in discussions of the country's economic well-being. By shedding light on this aspect, the study endeavors to contribute to a more comprehensive understanding of the dynamics shaping Pakistan's economic landscape.

The study delved into the experiences of numerous developing countries grappling with significant national challenges, such as inflation. In response, many nations implemented measures focused on monetization to address these pressing concerns. However, in the case of Pakistan, the previous government struggled to effectively address these issues. Particularly concerning was the situation at the State Bank, which was reportedly issuing large sums of currency daily, exacerbating financial instability. Unfortunately, the government's management of these funds fell short of serving the national interest, with reports indicating misuse for purposes like corruption. This failure underscored the need for more robust and accountable financial management practices to safeguard the country's economic stability and integrity.

The consequences of these shortcomings were profound, eventually leading to downsizing—a scenario uncommon in other developing countries that had implemented monetization measures. This research underscores the importance of comprehensively understanding the impact of monetization in Pakistan. While studies from various developing nations have highlighted the benefits of monetization in addressing pressing national issues, there has been a notable lack of focused research in Pakistan. Furthermore, the limited existing research in Pakistan often fails to adequately address national interests. This knowledge gap underscores the urgent need for in-depth investigations tailored to Pakistan's unique socio-economic context, aiming to inform policies that prioritize the nation's welfare and prosperity.

The research focused on the transportation sector to examine the implications of monetization in Pakistan, yet it did not prioritize the implementation of monetization measures in alignment with national interests. This observation underscores a critical disconnect between research efforts and the broader national agenda. While studying specific sectors like transportation can provide valuable insights, it is essential for policymakers and stakeholders to ensure that such initiatives are part of a cohesive strategy aimed at advancing the overall welfare and development of the country. Thus, there is a pressing need for research efforts to be more closely aligned with national priorities and interests to maximize their impact and relevance.

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