What is the impact of financial depth on economic growth within middle income countries?

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**ABSTRACT**

This paper utilizes the Least Squares Dummy Variables (LSDV) technique in investigating the effect of financial depth on economic growth within a sample of middle-income countries, over the period 2005–2017. The research finds that financial depth has a negative impact on real GDP growth within middle income countries. This result is robust to the use of alternative measures of financial depth, the use of per capita GDP growth as a proxy for economic growth, the inclusion of dummy variables to control for the 2007–2010 global financial crisis, the exclusion of countries with high average growth as well as across income levels. Based on its findings, this study recommends the need for robust regulations to ensure that the credit facilities of domestic financial institutions are channeled towards productive investments rather than debt servicing.

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**Introduction**

Over the last decade, the topic of financialization and its concomitant effect on economic growth has generated a lot of attention among policy makers and researchers alike. Demirurg-Kunt et al. (2018) in the 2017 Global Findex Database report that as many as 1.2 billion adults have since 2011 obtained an account. While the period between 2014 and 2017 saw the percentage of grown-up account holders rise from 62 percent to 69 percent. In a similarly relevant study, Henry (2007) observed that there has been a growing adoption of capital account liberalization and a consequent increase in the volume of activity in capital markets across the world. The intended outcome of these policies is an increase in the amount of capital stock available for investment which in turn would expectedly bring about economic growth. However, the extent to which such postulations hold up has been a contentious issue among researchers.

The theoretical relevance of this paper therefore derives from the fact that the literature is not at a consensus regarding the impact of financialization on economic growth. While some studies suggest that financialization has a positive impact on economic growth, others indicate the opposite. Lucas (1988) developed a capital accumulation model that rejects the idea that financial deepening can serve as a catalyst of economic growth. Subsequently, Lucas (1990) in a study which popularized the ‘Lucas Paradox’ opined that in reality the very little capital that gets re-directed to low- and middle-income countries is incapable of stimulating growth. Similarly, Robinson (1952) opines that growth arises from an increase in the economic activities which take place in the real sector and as such concluded that financialization rather responds to economic growth and not vice versa. From this perspective, finance would seem not to cause growth; (see Estrada et al., 2010; Moosa, 2017; and Arcand et al. 2012). On the other hand, some studies link economic growth to financial depth and other metrics of financial development (see Levine, 1991; Diamond and Dybvig, 1983). The focus on middle income countries is due to the greater exposure this group has had to the financial crises as well as the very high volatility which characterizes private capital flows in these countries (Tyson and McKinley, 2014). Equally significant are the recent swift capital outflows arising from the expansionary monetary policy stance of many of such economies. In the light of the aforementioned, this study makes the following contributions to the literature. First, we divide our sample into lower and upper middle-income countries. Thereafter, we analyse the extent to which our results vary across both sub-samples. Second, we utilize multiple proxies...
of financial depth. Specifically, financial depth is measured with: (1) Private credits by deposit money banks, Bank assets of deposit money banks (2) Liquid liabilities (3) Financial system deposits (4) Private credit by all financial institutions. Each of these variables is expressed as a percentage of the GDP. Third, along with the aforementioned proxies of financial depth, we account for the 2007–2010 global financial crisis. The global financial crisis is measured using dummy variables which take the value of unity during crisis years and zero outside the same period. Fourth, we conduct robust tests to check if our results our driven by countries with a relatively high growth rate over the years. Fifth, we ascertain the robustness of our results to the use of per capita GDP growth as a measure of economic growth.

The remainder of this research is organized as follows: Section 2 reviews the literature. Section 3 highlights the methodology adopted. Section 4 provides the results. Section 5 concludes.

**Literature Review**

**Theoretical Framework**

The neo-classical growth model represents a critical theory and is perhaps the earliest study which relates economic growth to changes in the level of financial depth. The theory which was popularized by Solow (1956) suggests that the pursuit of superior profit amplified by financial globalization results in a redirection of capital from richer economies to poorer countries where the yield on capital is higher than what is obtainable in rich countries. In principle, capital flows cater for the inadequate domestic saving common in poor economies, where growth critically relies on capital accumulation and increased investment. Hence, given a constant rate of depreciation and saving, the neo-classical growth theory posits that capital accumulation continues to increase total factor productivity till an ideal level of capital stock known as steady state is attained and at which point marginal efficiency of capital is only equal to capital augmenting technical change. According to the model of Solow (1956), at the steady state, only factors apart from capital accumulation such as human capital and technology are capable of driving economic growth. Although De Gregorio (1996) and Wei (2006) extend the discussion by noting that beyond the direct channels through which financial deepening impacts on economic growth, there are indirect channels by which sophisticated financial systems can lead to economic growth by facilitating borrowing for the development of human capital.

Essentially, this study adopts the neo classical growth model as the theoretical framework as it explores principally the direct channel, and pays less attention to the Human Capital component as emphasised in the endogenous growth paradigm.

**Empirical Review**

The empirical literature on the nexus between financialization and economic growth is broadly categorised into three parts. While a strand of the literature finds a positive relationship between both variables, another finds a negative relationship and a third strand finds a non-linear relationship. Each of these strands is discussed below:

As regards the studies that find evidence for the positive effect of financialization on economic growth; Le et al. (2019) employ the difference GMM technique in analysing the effect of financial depth on economic growth within the ASEAN+3 countries over the period 2000–2014. They find that stock market capitalisation has a positive impact on economic growth. Also, using the fixed effects technique, Estrada et al. (2010) investigate the impact of financial development on economic growth within a sample of 116 countries over the period 1987–2008. They conclude that the financial sector plays a pivotal role in promoting economic growth within Asia as well as many developing countries. Moving on to the studies that find evidence for the negative effect of financialization on economic growth; Moosa (2018) uses the fully modified OLS method in examining the impact of financialization on economic growth for a large sample of countries over the period 2001–2014. The paper shows that financialization has an adverse impact on economic growth; chiefly due to high volume of credit being used to service debts. Likewise, Ardıc and Damar (2006) employ the GMM technique in analysing the impact of financial deepening on economic growth within Turkey over the period 1996–2001. They find that financial deepening has a negative and statistically significant impact on economic growth. Turning to the studies that find evidence for a non-linear relationship between financialization and economic growth; Próchniak and Wasiak (2016) employ the system GMM method in examining the effect of financial development on economic growth within 28 EU and 34 OECD countries over the period 1993–2013. They find that the relationship between output growth and financial development is non-linear. They also show that a large financial system does not necessarily guarantee swift economic growth. Similarly, Arcand et al. (2012) utilize the system GMM technique in investigating the presence of a threshold in the positive impact of financial deepening on economic growth within a sample of 133 countries over the period 1960–2010. They reveal that the impact of financial depth on economic growth becomes negative after private credit surpasses 100% of the GDP.

**Research and Methodology**

**Model Specification**

Equation (1) represents the baseline regression model. For each country \(i\), \(\text{Growth}_t\) represents the real GDP growth rate, at time \(t\). \(\text{PCDMB}_i\) captures private credit by deposit money banks. This variable is used as a proxy for financial depth. \(Z_{it}\) represents the control variables. Likewise, \(\chi_{it}\) and \(\lambda_t\) capture the country and time fixed effects, respectively:
\[ \text{Growth}_{it} = \alpha + \beta \text{PCDMB}_{it} + \varphi Z_{it} + \theta_i + \chi_t + \epsilon_{it} \]

Also, \( \beta \) represents the parameter estimate associated with \( \text{Growth}_{it} \) and \( \varphi \) represents the regression coefficients associated with the controls.

**Hypotheses**

As the literature is not at a consensus regarding the impact of financial depth on economic growth, this study adopts a two tailed test. The hypotheses considered are specified below:

**Null hypothesis** (\( H_0 \)): Financial depth has no significant impact on economic growth (\( \beta = 0 \))

**Alternative hypothesis** (\( H_1 \)): Financial depth has a significant impact on economic growth (\( \beta \neq 0 \))

**Sample Selection**

This paper investigates the effect of financial depth on economic growth within a panel of 40 middle income countries over the period 2005–2017. Specifically, the sample consists of upper and lower middle-income countries, with both sub-samples comprising 20 countries each. The countries considered are listed below:

**Upper middle-income countries**: Albania, Armenia, Azerbaijan, Belarus, Bulgaria, Brazil, China, Colombia, Costa Rica, Indonesia, Jordan, Kazakhstan, Lebanon, Mexico, Malaysia, Namibia, Russia, Thailand, Turkey and South Africa.

**Lower middle-income countries**: Bolivia, Cambodia, Cameroon, Cote d’Ivoire, El Salvador, Honduras, Algeria, Angola, Bangladesh, Egypt, Ghana, India, Kenya, Morocco, Nigeria, Pakistan, Philippines, Tunisia, Ukraine and Zambia.

Annual data is utilized due to the absence of sufficient monthly or quarterly data. Also, this study employs panel data analysis due to the fact that it provides for a large degree of freedom. Moreover, panel data accounts for heterogeneity across time and space.

**Variable Selection**

**Dependent variables**: In analysing the effect of financial depth on economic growth, real GDP growth is utilized as the dependent variable. It measures the annual percentage change in the real GDP. Data is sourced from the Fiscal Monitor of the International Monetary Fund (IMF).

**Primary Independent variable**: The primary explanatory variable of this paper is financial depth and it is measured using private credits by deposit money banks. It captures the volume of financial resources the private sector is able to access through commercial banks and other deposit accepting institutions. It is scaled as a percentage of the GDP. Data is sourced from World Bank’s Global Financial Development Database.

**Control Variables**: Based on the empirical and theoretical literature, (see Borensztein 1998; Balls, 2000 and Mitchell, 2005), the control variables included in our model are: Foreign Direct Investment inflows (FDI), Investment (Investment), Government Spending (GS), Natural Resource Rent (NRR), Inflation (Inflation), Population Density (PD) and Political Stability (PS). While we obtain data on political stability from the Worldwide Governance Indicators (2019 edition); data on government spending is obtained from the World Economic Outlook Database (2019 edition). Data on the rest of the control variables are retrieved from World Bank’s World Development Indicators.

**Descriptive Statistics**

**Table 1: Descriptive Statistics**

|                      | All Middle-income | Upper Middle-income | Lower Middle-income |
|----------------------|-------------------|---------------------|---------------------|
|                      | Mean   | SD     | Min    | Max    | Mean   | SD     | Min    | Max    | Mean   | SD     | Min    | Max    |
| Growth               | 4.57   | 3.86   | -15.10 | 34.5   | 4.37   | 4.38   | -14.10 | 34.5   | 4.76   | 3.25   | -15.10 | 15     |
| PCDMB                | 41.92  | 27.10  | 3.43   | 150.59 | 52.14  | 30.38  | 6.91   | 150.59 | 31.74  | 18.48  | 3.43   | 80.11  |
| FDI                  | 3.95   | 3.89   | -6.05  | 33.79  | 4.92   | 4.36   | 0.05   | 33.79  | 2.98   | 3.07   | -6.05  | 14.25  |
| Investment           | 24.98  | 7.54   | 4.70   | 50.78  | 26.09  | 5.83   | 3.38   | 12.56  | 23.84  | 8.07   | 4.70   | 50.78  |
| GS                   | 27.48  | 8.27   | 9.49   | 62.03  | 29.35  | 7.27   | 14.92  | 62.03  | 25.62  | 8.80   | 9.49   | 52.66  |
| NRR                  | 7.58   | 8.92   | 0.00   | 56.61  | 6.46   | 8.07   | 0.00   | 41.94  | 8.70   | 9.59   | 0.40   | 56.61  |
| Inflation            | 6.52   | 6.02   | -3.74  | 59.21  | 5.69   | 5.80   | -3.74  | 59.21  | 7.33   | 6.12   | -0.73  | 48.69  |
| PD                   | 135.13 | 198.99 | 2.35   | 1239.57| 97.30  | 113.70 | 2.35   | 669.49 | 172.96 | 252.06 | 8.52   | 1239.57|
| PS                   | -0.60  | 0.75   | -2.81  | 1.20   | -0.373 | 0.69   | -2.12  | 1.2    | -0.83  | 0.74   | -2.81  | 0.66   |

**Source**: Author’s own computation; Note: SD represents the standard deviation. Min and Max respectively represent the minimum and maximum observation in the relevant sample.

Table 1 provides the summary statistics for the variables. On the average, the lower middle-income countries appear to be growing slightly faster than the upper middle-income countries. Nonetheless, the maximum growth rate within the upper middle-income countries is significantly higher than that of the lower middle-income countries. Also, the private credits by deposit money banks for the upper middle-income countries is considerably greater than that of the lower middle-income countries.
The World Bank classification of economies for 2020 shows that the threshold of per-capita gross national income (GNI) for upper-middle economies ranges from $4,046 to $12,535, while the lower-middle-income economies have a minimum per capita GNI of $1,036 and a maximum GNI of $4,045. Figure 1 shows the average real GDP growth rate within middle income countries over the period 2005–2017. Amongst all countries considered, China has the highest average GDP growth rate at 9.32 percent. Meanwhile, Ukraine has the lowest GDP growth rate at 0.33 percent.

**Figure 1:** Average Real GDP Growth Rate within Middle Income Countries, 2005–2017; *Source:* Author’s computation using the Fiscal Monitor of the International Monetary Fund (IMF); Note: Blue bars denote upper middle-income countries and red bars signify lower middle-income countries

**Results**

**Baseline Results**

This research adjusts for heteroscedasticity and autocorrelation by employing Driscoll-Kraay standard errors (Driscoll and Kraay, 1998). Table 2 (column 1) reports the results obtained upon regressing economic growth on the explanatory variables using the Least
Squares Dummy Variables Technique\(^1\) (LSDV). The result indicates that a one percentage point increase in private credits results in a 0.08 percentage point fall in real GDP growth at 1 percent significance level. Upon standardizing our variables, we find that a one standard deviation increase in private credits results in a 0.56 standard deviation decrease in real GDP growth, at 1 percent significance level. Our findings are similar to those of Moosa (2018) and Shahbaz et al. (2020).

**Results on the Control Variables**

Turning briefly to the control variables; foreign direct investment, natural resource rent and private investment generally increase economic growth and this is in line with the findings of Borensztein (1998), IMF (1989) and Kaznacheev (2013). Also, government spending and inflation reduce economic growth, consistent with the findings of Mitchell (2005), Balls (2000) and Gylfason (1999). According to Mitchell (2005), when public expenditure crowds out private investment considerably, it may dampen economic growth. Population density and political stability do not have a clear impact on growth.

**Robustness Tests**

**Economic Growth Across Income Levels**

In this section, our sample is divided into lower and upper middle-income countries. Thereafter, we examine the degree of variation of our results across both sub-samples.

Within the upper middle-income countries, a one percentage point increase in private credits results in a 0.04 percentage point fall in real GDP growth at 1 percent significance level (Table 2, column 2). As regards the lower middle countries, a one percentage point increase in private credits results in a 0.11 percentage point fall in real GDP growth at 1 percent significance level (Table 2, column 3). The fact that the parameter estimate is more sizable in lower middle-income countries suggests that private credits have had a more detrimental impact on growth within these group of countries. This might also be due to the fact that a great percentage of the credits go towards less productive investment as well as debt servicing.

**Alternative measures of financial depth**

This section examines the robustness of our results to different measures of financial depth. Specifically, financial depth is measured with: (1) Bank assets of deposit money banks (2) Liquid liabilities (3) Financial system deposits (4) Private credit by all financial institutions. Each of these variables is expressed as a percentage of the GDP. Data are obtained from World Banks’s Global Financial Development Database.

As seen in Table 3, a one percentage point rise in bank assets reduces the real GDP growth by about 0.07 percentage points at 5 percent significance level. A similar result is obtained using the other proxies of financial depth. Specifically, following a percentage point rise in liquid liabilities and financial system deposits; real GDP growth reduces by about 0.05 percentage points at 1 percent significance level. Also, real GDP growth declines by almost 0.06 percentage points with a percentage point rise in private credits by all financial institutions. This result is also significant at 1 percent significance level. In absolute terms, bank assets thus have the highest impact among the proxies considered. Nonetheless, the impact of bank assets is slightly less than that of private credits of deposit money banks.

**Controlling for the Global Financial Crisis**

In this section, our analysis accounts for the 2007–2010 global financial crisis. The global financial crisis is measured using dummy variables which take the value of unity during crisis years and zero outside the same period. The results obtained are very similar to the baseline. Also, the global financial crisis has a negative impact on the real GDP growth. During crisis years, the real GDP growth reduced by about 2.27 percentage points on the average (Table 4, column 1). This result is consistent with the findings of IMF (2018).

**Accounting for Countries with High Economic Growth**

The sensitivity analysis conducted in this section examines whether our results our driven by those countries that have had a relatively high growth rate over the years. For this purpose, we exclude from our sample those countries that had the highest average growth rate between 2005 and 2017 (i.e., the timeframe of our analysis). These countries\(^2\) are: China, Azerbaijan, India, Cambodia and Ghana. The results are quantitatively the same as those obtained previously (Table 4, column 2).

**Measuring Economic Growth Using Per Capita GDP Growth**

In this section, we ascertain the robustness of our results to the use of per capita GDP growth as a measure of economic growth. Data on per capita GDP growth is obtained from World Bank’s World Development Indicators (WDI).

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\(^1\) We also employ the difference GMM-IV technique of Arellano and Bond (1991). Although, we equally find that private credit reduces economic growth, we are not able to confirm the validity of our instruments; and hence the results are not reported.

\(^2\) The average growth rate of these economies between 2005 and 2017 is provided below:

- China: 9.32 percent
- Azerbaijan: 9.23 percent
- India: 7.71 percent
- Cambodia: 7.45 percent
- Ghana: 6.53 percent
As seen in Table 4 (column 2), per capita GDP growth falls by about 0.09 percentage points following a one percentage point rise in private credits, at 1 percent significance level. Translating our result in terms of standard deviation changes, we find that a one standard deviation increase in private credits results in a 0.6 standard deviation decrease in per capita GDP growth, at 1 percent significance level. Hence, the estimate is slightly larger but not statistically different from our baseline.

Table 2: Baseline Results, Upper Middle-Income Countries and Lower Middle-Income Countries

|               | (1) Baseline Results | (2) Upper Middle-Income Countries | (3) Lower Middle-Income Countries |
|---------------|----------------------|-----------------------------------|----------------------------------|
| PCDMB         | -0.080***            | -0.044***                         | -0.108***                        |
|               | (0.014)              | (0.011)                           | (0.012)                          |
| FDI           | 0.262***             | 0.163***                          | 0.149**                          |
|               | (0.028)              | (0.042)                           | (0.062)                          |
| Investment    | 0.252***             | 0.331***                          | 0.165***                         |
|               | (0.024)              | (0.025)                           | (0.031)                          |
| GS            | -0.124**             | -0.132***                         | -0.038                           |
|               | (0.055)              | (0.037)                           | (0.086)                          |
| NRR           | 0.350***             | 0.522***                          | 0.257***                         |
|               | (0.034)              | (0.051)                           | (0.044)                          |
| Inflation     | -0.123***            | -0.134**                          | -0.117***                        |
|               | (0.016)              | (0.048)                           | (0.024)                          |
| PD            | -0.009               | -0.028***                         | -0.014**                         |
|               | (0.005)              | (0.008)                           | (0.005)                          |
| PS            | 0.145                | -1.263**                          | 1.828***                         |
|               | (0.321)              | (0.514)                           | (0.269)                          |
| Countries     | 40                   | 20                                | 20                               |
| Observations  | 508                  | 254                               | 254                              |
| R – squared   | 0.478                | 0.570                             | 0.437                            |
| Country FE    | Yes                  | Yes                               | Yes                              |
| Time FE       | Yes                  | Yes                               | Yes                              |

Source: Author’s own computation; Note: Country FE and Time FE signify the inclusion or otherwise of country and time fixed effects. The parentheses contain the standard errors. *p < .10. **p < .05. ***p < .01.
Table 3: Alternative Measures of Financial Depth

|            | (1) BADMB | (2) LL | (3) FSD | (4) PCFI |
|------------|-----------|--------|---------|----------|
| BADMB      | -0.066**  |        |         |          |
|            | (0.022)   |        |         |          |
| LL         | -0.048*** |        |         |          |
|            | (0.007)   |        |         |          |
| FSD        | -0.050*** |        |         |          |
|            | (0.012)   |        |         |          |
| PCFI       | -0.057*** |        |         |          |
|            | (0.009)   |        |         |          |
| FDI        | 0.252***  | 0.248*** | 0.258*** | 0.258*** |
|            | (0.029)   | (0.030) | (0.032) | (0.029)  |
| Investment | 0.243***  | 0.254*** | 0.243*** | 0.248*** |
|            | (0.024)   | (0.028) | (0.024) | (0.025)  |
| GS         | -0.134**  | -0.136** | -0.147** | -0.134** |
|            | (0.052)   | (0.054) | (0.051) | (0.058)  |
| NRR        | 0.340***  | 0.332*** | 0.336*** | 0.354*** |
|            | (0.033)   | (0.030) | (0.029) | (0.036)  |
| Inflation  | -0.124*** | -0.127*** | -0.129*** | -0.125*** |
|            | (0.014)   | (0.015) | (0.015) | (0.016)  |
| PD         | -0.011*   | -0.008  | -0.009  | -0.012** |
|            | (0.005)   | (0.006) | (0.006) | (0.005)  |
| PS         | 0.035     | 0.040   | -0.028  | 0.106    |
|            | (0.347)   | (0.371) | (0.345) | (0.350)  |
| Countries  | 40        | 40      | 40      | 40       |
| Observations | 509   | 508      | 509      | 509      |
| R – squared | 0.472 | 0.459    | 0.458    | 0.471    |
| Country FE | Yes       | Yes      | Yes      | Yes      |
| Time FE    | Yes       | Yes      | Yes      | Yes      |

Source: Author’s own computation; Note: Country FE and Time FE signify the inclusion or otherwise of country and time fixed effects. The parentheses contain the standard errors. *p < .10. **p < .05. ***p < .01. BADMB represents bank assets of deposit money banks; LL captures liquid liabilities; FSD represents financial system deposits and PCFI captures private credit by all financial institutions.

Table 4: Global Financial Crisis, Countries with High Average Growth Rate and Per Capita GDP Growth

|            | (1) GFC | (2) Countries with High Average Growth Rate | (3) Per capita GDP Growth |
|------------|--------|---------------------------------------------|--------------------------|
| PCDMB      | -0.080*** | -0.079***                                  | -0.086***                |
|            | (0.014) | (0.011)                                     | (0.015)                  |
| FDI        | 0.262*** | 0.070**                                     | 0.282***                 |
|            | (0.028) | (0.028)                                     | (0.030)                  |
| Investment | 0.252*** | 0.308***                                    | 0.239***                 |
|            | (0.024) | (0.015)                                     | (0.027)                  |
| GS         | -0.124** | -0.018                                      | -0.136**                 |
|            | (0.055) | (0.042)                                     | (0.055)                  |
| NRR        | 0.350*** | 0.247***                                    | 0.341***                 |
|            | (0.034) | (0.010)                                     | (0.036)                  |
| Inflation  | -0.123*** | -0.124***                                  | -0.134***                |
|            | (0.016) | (0.021)                                     | (0.017)                  |
| PD         | -0.009  | -0.008                                      | -0.003                   |
|            | (0.005) | (0.006)                                     | (0.007)                  |
| PS         | 0.145   | 0.226                                       | 0.061                    |
|            | (0.321) | (0.181)                                     | (0.304)                  |
| GFC        | -2.274*** |                                             |                          |
|            | (0.251) |                                             |                          |
Table Cont’d

| Countries | 35  | 40  |
|-----------|-----|-----|
| Observations | 508 | 443 | 508 |
| R-squared   | 0.478 | 0.481 | 0.474 |
| Country FE  | Yes | Yes | Yes |
| Time FE     | Yes | Yes | Yes |

Source: Author’s own computation; Note: Country FE and Time FE signify the inclusion or otherwise of country and time fixed effects. The parentheses contain the standard errors. *p < .10. **p < .05. ***p < .01. GFC captures the 2007-2010 global financial crisis.

Conclusions

The main finding of this paper is that financial depth has a negative impact on real GDP growth within middle income countries. This result is robust to the use of alternative measures of financial depth, the use of per capita GDP growth as a proxy for economic growth, the inclusion of dummy variables to control for the 2007–2010 global financial crisis, the exclusion of countries with high average growth as well as across income levels.

The negative relationship between financial depth and economic growth signals that a significant percentage of financial resources goes towards unproductive activities, thereby failing to contribute meaningfully to economic growth. Accordingly, this study recommends that policy makers formulate and implement robust regulations to ensure that the credit facilities of domestic financial institutions are channelled towards productive investments rather than debt servicing.

Although, this study has achieved its broad aim of investigating the effect of financial depth on economic growth, future research works may extend the time span of this paper when the relevant data becomes available.

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