The Effect of Financial Market Depth on Economic Growth in Developing Countries with Large Financial Sectors

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ABSTRACT

Research Aims: The financial market depth has emerged as a phenomenon shaping developing economies with large financial sectors. This paper presents the effect of financial market depth on economic growth in developing countries with large financial sectors from 1996 to 2022. While developing countries are typically characterized by lower levels of economic development and industrialization, some of them may have relatively large financial sectors. These countries include Brazil, India, Indonesia, Malaysia, Mexico, and South Africa.

Design/methodology/approach: We utilize the random effects model, a panel data econometrics model, to estimate the nexus. Our proxy for financial market depth is the stock market capitalization as percentage of gross domestic product. A higher market capitalization suggests larger and more liquid markets. The indicator of economic growth is the real gross domestic product, which is growth accounted for inflation.

Research Findings: We find that financial market depth has a significant and positive effect on economic growth in developing countries with large financial sectors.

Theoretical Contribution/Originality: The novelty of the study is that the financial market depth and economic growth nexus is significantly moderated by financial and trade openness.

Keywords: Financial market depth; economic growth; financial sector; developing countries.

Introduction

The effect of financial market depth on economic growth has been the subject of numerous studies in recent years. However, most of these studies have focused on developed economies, and there is a relative paucity of research in developing countries with large financial sectors. Developing countries have experienced a significant expansion of their financial sectors over the past few decades, with many...
countries undergoing financial liberalization and deregulation. According to Akyüz (2012) economic growth stagnation should be expected from an exceptionally large financial sector. Different countries have different economic growth, policies, financial systems, institutions, culture, and legal system. Developed countries have better institutions and public policies for an enabling environment. It is however expected that developed countries will tend to have developed financial markets. What is important to economists is how the increase in the magnitude of the financial sector explain economic growth.

According to Gimet et al. (2018) this has led to concerns about the impact of financial markets on economic growth, particularly given the greater vulnerability of developing countries to financial instability. The financial sector in developing countries has grown at a faster rate than other sectors of the economy, leading to concerns about their potential negative impact on economic growth (Guru et al., 2019). Several studies have found a positive relationship between finance and economic growth in developing countries, suggesting that a well-functioning financial sector can contribute to economic development (Beck et al., 2014). However, other studies have highlighted the potential negative effects of financial market depth, including increased income inequality, financial instability, and the misallocation of resources towards unproductive activities (Tomaskovic-Devey et al., 2015; Moosa, 2018). Further research is needed to better understand the impact of financial market depth on economic growth in developing countries with large financial sectors.

Financial development can be a blessing or a curse, while it increases the allocation of resources, it also increases financial and economic shocks to the economy. Aizenman et al. (2013) found that greater financial openness reduces economic growth volatility in developing countries with developed financial markets, while worsening growth volatility in underdeveloped financial markets. According to Demirguc-Kent and Detragiache (1998) countries that have experienced liberalized financial systems in recent decades tend to be financially fragile. This can translate into fragile macroeconomic environment and therefore their economic growth trajectory should be tracked assertively. According to Levine and Zervos (1996) financial openness refers to the degree to which a country’s financial system is open to international trade and investment. Countries with more open financial markets may experience greater financial deepening, as they are more likely to attract foreign investment and participation in global financial markets. In the study by Fujii (2018) trade openness is the sum of exports and imports as percentage of GDP. It reflects the degree of a country’s orientation to international trade. According to Lane and Milesi-Ferretti (2006) developing countries with large financial sectors have high inward capital flows from various countries. Therefore, we cannot ignore the influence of the openness
nature of these economies. We recommend that financial and trade openness be the moderating effect of the financial market depth and economic growth nexus in developing countries with large financial sectors.

The objectives of this study are to examine the relationship between financial market depth and economic growth, and to identify the factors that drive this relationship in developing countries with large financial sectors; to determine the extent to which financial market depth contributes to or detracts from economic growth over the long run, and to provide empirical insight for promoting sustainable economic growth in the context of financial market depth. We carry out the empirical examination with the use of panel data econometrics, mainly the random effects model. The first hypothesis \((H_1)\) of this study is that financial market depth has a positive and significant effect on economic growth. The second hypothesis \((H_2)\) is that financial openness moderates the effect of financial market depth on economic growth positively and significantly. The third hypothesis \((H_3)\) is that trade openness moderates the effect of financial market depth on economic growth positively and significantly.

**Literature Review**

King and Levine (1993) found that financial market depth has a positive and significant effect on economic growth in 80 countries from 1960 to 1989. The design of their study followed the augmented Solow model by Mankiw, Romer, and Weil (1992). They implicitly incorporated the financial sector development variables, which necessitated financial capital as addition to the augmented Solow model that includes human capital, physical capital, and labour. GANIC (2023) found that financial market depth has a negative effect on economic growth in 11 new member states of the European Union. The study utilized the finance value added to total value added as a proxy of financial depth with sample period from 1995 to 2021. Cooray (2009) finds that financial market depth has a significantly positive effect on economic growth. The study used financial depth proxies which includes the ratio of money supply as percentage of GDP, domestic credit to the private sector to GDP, and private credit by deposit banks and other financial institutions. The study also utilized the financial sector augmented Solow model which recognize the role of financial capital as the driver of economic growth.

Using a similar framework, Cooray (2010) finds that stock market capitalization, stock market liquidity, and stock market turnover ratio have positive and significant effect
on economic growth in 35 countries. These are finance proxies also utilized by Beck, Demirgüç-Kunt, and Levine (1999). The study by Beck and Levine (2004) finds that stock markets and banks positively and significantly affect economic growth in 40 countries from 1976 to 1998. They reject the notion made other scholars that financial development is harmful to economic growth. Atje and Jovanovic (1993) finds that stock markets have a large effect on economic growth. Even when this is true, they postulate that there are many countries which does not take initiative to develop their stock markets quickly to accelerate economic growth. They also utilized the financial sector augmented Solow model which includes financial capital amongst other forms of capital. Studies by Apergis et al. (2007) postulate that there is an existence of a long-run relationship between financial depth and economic growth. Levine and Zervos (1998) studied if well-functioning stock markets and banks promote long-run economic growth. With a sample period of annual data from 1976 to 1993, they found that stock markets and banking development had positive and significant effect on economic growth, capital accumulation, and productivity.

In contrast, Gimet et al. (2018) tested the link between finance and the macroeconomy for 26 high-income countries. They found that excessive leverage decreases wages, real-sector investment, and economic-growth, and increases financial fragility. The study found that financial deepening had a significantly negative effect on real sector of the economy. Moosa (2018) found that finance retard economic growth when utilizing publicly traded share as percentage of GDP and credit-to-GDP as proxies from 2001 to 2014. Comparatively, Tomaskovic-Devey (2015) postulate that the rapid increase in financial services in the USA through past 30 years have lowered the standard of living, state investment in citizens, and infrastructure. In this case, the financial sector did not promote investment in production and employment. Positive outcomes were expected as the Financial Assets as a Percent of Total Assets rose rapidly from 1970 to 2003. Hence, few years down the line the 2008 global financial crisis occurred which led to financial institutions and markets historical losses.

According to Bonizzi et al. (2022), developing countries can be conceptualized as subordinate to financialised capitalism. They postulate that there is a relationship between global production and global finance. They assert that there is a value extracted from the global south to the global north which is engineered by the lead capitalist economies. This extraction undermines the effect of finance on economic growth in developing countries. For example, Bastos and Young (2022) contributes that the U.S. is the lead in setting rules of financial globalisation. This ensures that the global north gain more from the global financial system. According to Vielma and Dymski (2022) the global north is the core, and the global south is the periphery. The symmetry of global financial architecture was inspired by the Chick-Dow core-
periphery framework and focused on the role of finance in the macroeconomy (Chick and Dow, 1988). The developing countries tend to be on the global periphery and gain less than the global core. The financialised extraction of value further gives finance a more prominent role. According to Lapavitsas and Soydan (2022) financial depth in developing countries with large financial sectors should be differentiated from the developed countries.

Findings by Karwowski and Stockhammer (2017) states that foreign capital inflow is a significant driver of financial depth in certain developing countries. They also postulate that financial integration is more important than financial liberalization. The rise of cross-border financial flows has been made successful by financial globalization and deregulation in developing countries. According to Aizenman et al. (2013) there was an increase in foreign capital flows to emerging markets during the 1990s and largely in the 2000s which led to an increase in the size of their financial liabilities. They found evidence of volatility and fragility of financial markets in emerging economies. Regardless of this business cycle, foreign trade and foreign finance are correlated in developing countries. This means that finance can follow production. Both foreign trade and foreign finance play significant roles in the economic development of nations, especially in developing countries that often rely on external sources to fuel their growth. According to Brandi and Schmitz (2015), foreign financing strengthens international trade by facilitating transactions, managing risks, and provision of information about payments and shipments. An integral understanding of financial flows is that developing countries with large financial sectors are injected with large amounts of foreign capital. However, Wang et al. (2021) contributes that these capital injections are susceptible to reversals during crises periods, weakening their financial systems.

**Method**

Our point of departure is from the Solow growth model which we utilize to understand the sources of economic growth in the long run. This is a vanilla framework the help macroeconomics scholars identify causes of growth and their process. The Solow model, also known as the neoclassical growth model, is one of the most widely used frameworks for understanding economic growth (Solow, 1956). Economists continue to debate and refine growth frameworks, seeking to improve our understanding of economic growth and inform policy decisions. We use this framework to include the financial variable as a source of growth not addressed by the basic Solow model. We call this adjustment the finance-augmented Solow growth model. According to Cooray (2009) the inclusion of financial factors allows the finance-
augmented Solow model to explore how changes in financial conditions, such as improvements in financial markets and institutions, can affect economic growth. It recognizes that financial factors can amplify or dampen the effects of capital accumulation and technological progress on economic growth. The finance-augmented Solow model provides a framework to analyse the interplay between finance and economic growth, acknowledging the importance of financial factors in shaping long-run economic outcomes. The framework utilizes the Cobb-Douglas production function which states that total production is function of labour inputs, capital inputs, and total factor productivity (Cobb and Douglas, 1928). The contribution by Solow (1956; 1957) were able to decompose the determinants of economic growth and make use of growth accounting which can explain to us by how much of a country’s economic growth can be explained by its determinants. Equation 1 states the general form of the aggregate production function used by the Solow model. It has been realised that this is a very parsimonious framework that should be expanded to include other sources of growth. In response to this limitation, Mankiw, Romer, and Weil (1992) added human capital in the framework to account for the aggregate contributions of education, skills, and work experience of the employed people. The expanded version of Equation 1 is depicted by Equation 2.

To show the importance of finance in the development of economic growth, Atje and Jovanovic (1993) was the first to explicitly add the financial variable to the initial Solow model as described by Equation 3. Thereafter, other scholars utilized the finance-augmented Solow model (Cooray, 2009, 2010; Haibo, Manu, and Somuah, 2023). In early years, some scholars implicitly incorporated the finance-augmented Solow growth model (King and Levine, 1993; Levine and Zervos, 1998). Therefore, we can show that financial market depth directly affects economic growth rate by utilizing this framework.

\[
Y(t) = K(t)^a[A(t)L(t)]^{1-a}, \quad 0 < \alpha < 1
\]

\[
Y(t) = K(t)^aH(t)^\beta[A(t)L(t)]^{1-a-\beta}, \quad 0 < \alpha, \beta < 1, \quad \alpha + \beta < 1
\]

\[
Y(t) = F(t)^aK(t)^\betaH(t)^\gamma[A(t)L(t)]^{1-a-\beta-\gamma}, \quad 0 < \alpha, \beta, \gamma < 1, \quad \alpha + \beta + \gamma < 1
\]

, where \(Y\) is economic growth, \(F\) is the financial market depth variable, \(K\) is capital, \(H\) is human capital, \(A\) is the level of technology, \(L\) is the labour force, \(\alpha\) is the elasticity of economic growth with respect to financial capital, \(\beta\) is the elasticity of economic growth with respect to physical capital, and \(\gamma\) is the elasticity of economic growth with
respect to human capital. Equation 3 culminates with three forms of capital which is financial, physical, and human capital. We therefore utilize the panel data econometrics to study the relationship between financial market depth and economic growth. All the variables in the model have data availability and making our panel balanced. To conduct a panel data analysis of the effect of financial market depth on economic growth we applied necessary panel data steps as scientifically demonstrated by Angrist and Pischke (2009). Firstly, we identified seven developing countries with large financial sectors. Secondly, we collect data on financial market depth, economic growth, and control variables. Thirdly, we utilize a linear panel data model, the random effects model. According to the theoretical and empirical literature we estimate Equation 4, which reflects the random effect model.

\[
GP_{i,t} = \sum_{i=1}^{n} \beta_1 FMD_{i,t} + \sum_{i=1}^{n} \beta_2 X_{i,t} + \alpha_i + \epsilon_{i,t}
\]

where \(GP_{i,t}\) is the GDP growth for country \(i\) at time \(t\), \(FMD_{i,t}\) is the vector of financial market depth variables, \(X_{i,t}\) is the vector of control variables, \(\alpha_i\) is the country-specific intercept that captures the unobserved heterogeneity, and \(\epsilon_{i,t}\) is the error term. According to Hausman and Taylor (1981) \(\alpha_i\) is the individual-specific intercept that is randomly distributed across individuals in the random effects model. According to Joshi and Wooldridge (2019) the random effects model assumes that the coefficients of the independent variables are the same for all countries but allows for individual-specific intercepts that are randomly distributed.

Table 1 presents a list of variables for the financial market’s depth and economic growth analysis. In this case we utilize the stock market capitalization as a proxy for financial market depth. Stock market capitalization is a measure of the total value of a country’s publicly traded companies, representing the market’s perception of the overall value and potential profitability of these companies (World Bank, 2022). Stock markets provide a platform for companies to raise capital by issuing shares to investors. According to Khanh (2019) when stock market capitalization is high, it indicates that there is a significant pool of funds available for investment in companies. We postulate that the stock market capitalization is moderated by financial and trade openness. Hence, we interact stock market capitalization with financial and trade openness. We control for effect of major financial crises and include them in the model. The 1997 Asian financial crisis had a significant impact on economic growth in the affected countries. According to Chakrabarti and Roll (2002) the crisis led to a sharp decline in GDP growth and caused widespread social and economic dislocation in the region.
The 2001 Dot-com bubble burst was a major economic event that had a significant impact on economic growth in the United States and around the world. The Dot-com bubble was a period of rapid growth in the technology sector, fuelled by the growth of the internet and the proliferation of technology start-ups. According to Wheale and Amin (2003) the bubble was characterized by a frenzy of speculative investment in internet-based companies, many of which had little or no revenue and were not profitable. As the bubble grew, investors became increasingly concerned about the underlying value of these companies. However, this was followed by a sharp decline in the value of technology stocks, which began in March 2000 and continued for more than a year, leading to the Dot-com bubble burst in 2001. The 2008 Global financial crisis had a significant and far-reaching impact on economic growth in the United States and around the world. The crisis was triggered by the collapse of the U.S. housing market, which had been fuelled by a speculative bubble in the housing sector. According to Afonso and Blanco-Arana (2022) when the bubble burst, it led to a widespread collapse of the housing market and a sharp decline in the value of mortgage-backed securities and other financial instruments that were tied to the housing market. This led to a major financial crisis, as banks and other financial institutions faced large losses on their investments in these securities.

Table 1: Variables, 1996-2022

<table>
<thead>
<tr>
<th>Code</th>
<th>Variable description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dependent variable: Economic growth</strong></td>
<td></td>
</tr>
<tr>
<td>gdpgr</td>
<td>Real GDP growth, annual %</td>
</tr>
<tr>
<td><strong>Independent variable: Financial Market Depth</strong></td>
<td></td>
</tr>
<tr>
<td>mcap</td>
<td>Stock market capitalization, % of GDP</td>
</tr>
<tr>
<td>mcfx</td>
<td>Interaction: Stock market capitalization × Financial openness index</td>
</tr>
<tr>
<td>mctx</td>
<td>Interaction: Stock market capitalization × Trade openness, % of GDP</td>
</tr>
<tr>
<td><strong>Independent variable: Control variables</strong></td>
<td></td>
</tr>
<tr>
<td>fox</td>
<td>Financial openness index</td>
</tr>
<tr>
<td>tro</td>
<td>Trade openness, % of GDP</td>
</tr>
<tr>
<td>caf</td>
<td>Fixed capital formation, % of GDP</td>
</tr>
<tr>
<td>labgr</td>
<td>Total labour force, % change year-on-year</td>
</tr>
<tr>
<td>y1997</td>
<td>Year dummy, 1997 Asian financial crisis, 1=Crisis, 0=No crisis</td>
</tr>
<tr>
<td>y2001</td>
<td>Year dummy, 2001 Dot.com bubble burst, 1=Crisis, 0=No crisis</td>
</tr>
<tr>
<td>-------</td>
<td>---------------------------------------------------------</td>
</tr>
<tr>
<td>y2008</td>
<td>Year dummy, 2008 Global financial crisis, 1=Crisis, 0=No crisis</td>
</tr>
</tbody>
</table>

Source: Compiled by the author. Note: Data collected from Fitch Connect, World Bank, KAOPEN, Penn World Table, and own construct of dummy variables.

**Result and Discussion**

*Figure 1* depicts the correlation matrix for the financial market depth and economic growth analysis. The correlation between real GDP growth and stock market capitalization is positive yet low. This reflects the complexity of the financial depth and growth nexus. The additional covariates are weakly correlated to real GDP growth except for fixed capital formation and labour force growth, which are moderately correlated. We also find that the stock market capitalization is moderately correlated with financial and trade openness which are its interactions. There is a negative correlation between real GDP growth and financial crisis dummy of 1997, 2001, and 2008.
Figure 1: Correlation matrix, 1996-2022

Source: Compiled by the author. Note: Data collected from Fitch Connect, World Bank, KAOPEN, Penn World Table, and own construct of dummy variables.

Table 2 provides a summary of the empirical results obtained by applying the random effects model of panel data econometrics model and explains the effect of financial market depth on economic growth.

Table 2: The Effect of Financial Market Depth on Real GDP Growth

<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$gdpgr$</td>
<td>$gdpgr$</td>
<td>$gdpgr$</td>
</tr>
<tr>
<td>$mcap$</td>
<td>0.0871***</td>
<td>0.0536***</td>
<td>0.0505***</td>
</tr>
<tr>
<td></td>
<td>(0.00371)</td>
<td>(0.00365)</td>
<td>(0.00306)</td>
</tr>
<tr>
<td>Variable</td>
<td>Coefficient</td>
<td>Standard Error</td>
<td>Coefficient</td>
</tr>
<tr>
<td>------------</td>
<td>-------------</td>
<td>----------------</td>
<td>-------------</td>
</tr>
<tr>
<td>mcfx</td>
<td>0.0107***</td>
<td>(0.00570)</td>
<td>0.0500***</td>
</tr>
<tr>
<td>fox</td>
<td>0.764**</td>
<td>(0.777)</td>
<td>0.0143**</td>
</tr>
<tr>
<td>caf</td>
<td>0.197***</td>
<td>(0.0392)</td>
<td>0.212***</td>
</tr>
<tr>
<td>labgr</td>
<td>0.150***</td>
<td>(0.0168)</td>
<td>0.147***</td>
</tr>
<tr>
<td>y1997</td>
<td>0.598</td>
<td>(0.491)</td>
<td>0.830</td>
</tr>
<tr>
<td>y2001</td>
<td>0.762</td>
<td>(1.531)</td>
<td>0.920</td>
</tr>
<tr>
<td>y2008</td>
<td>-0.107***</td>
<td>(1.018)</td>
<td>-0.225*</td>
</tr>
<tr>
<td>tro</td>
<td>-0.00811</td>
<td>(0.0190)</td>
<td>0.0053***</td>
</tr>
<tr>
<td>mctx</td>
<td>0.5905</td>
<td>(0.000145)</td>
<td>0.0706***</td>
</tr>
<tr>
<td>Constant</td>
<td>0.717***</td>
<td>(0.111)</td>
<td>0.677***</td>
</tr>
<tr>
<td>Observations</td>
<td>162</td>
<td>162</td>
<td>162</td>
</tr>
<tr>
<td>Number of countries</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

Source: Compiled by the author.
Note: Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Model 1 states that the effect of stock market capitalization on economic growth is moderated by financial openness. Hence, the effect of financial market depth on economic growth is 0.0978 [= 0.0871 + 0.0107]. A large financial sector, including a developed stock market, provides better access to capital. It allows companies to raise funds through equity issuance, initial public offerings, and secondary offerings. This increased access to capital can support investment in productive activities, such as infrastructure development, technological advancements, and expansion of businesses, which can contribute to higher GDP growth. A well-functioning stock market encourages individuals and institutional investors to participate in financial markets, including investing in stocks. This mobilizes savings from households and
other investors and channels them towards productive investments. Mobilizing savings and directing them towards productive sectors helps finance economic activities, stimulates investment, and supports economic growth. Financial openness allows for the free flow of capital across borders, including foreign investment in domestic stock markets. This increased capital flows can contribute to higher stock market capitalization as foreign investors bring in additional funds to invest in domestic stocks.

*Model 2* states that the effect of stock market capitalization on economic growth is moderated by trade openness. Hence, the effect of financial market depth on economic growth is $0.64365 = 0.0536 + 0.5905$. Opening to international trade provides access to larger markets, enabling businesses to expand their customer base beyond domestic borders. This can lead to economies of scale, increased production, and potentially higher growth. Trade openness can improve financial intermediation by encouraging the development of efficient financial markets that facilitate trade-related transactions, currency exchange, and cross-border capital flows. These well-functioning financial markets can support economic growth by providing essential services to businesses engaged in international trade. However, overreliance on international trade can make a country vulnerable to external shocks such as changes in global demand, supply chain disruptions, or fluctuations in commodity prices. This dependency can lead to economic instability. When managed carefully, trade openness can be a powerful driver of economic growth, but it requires supportive policies and strategies to maximize its benefits while mitigating potential downsides.

*Model 3* provides a full sample and states that the effect of stock market capitalization on economic growth is moderated by both financial and trade openness. Hence, the effect of financial market depth on economic growth is $0.1711 = 0.0505 + 0.05 + 0.0706$. Financial openness allows developing countries to attract foreign capital. This influx of capital is be channelled into the financial sector, promoting its growth. A larger financial sector supports economic growth by facilitating savings mobilization, investment, and efficient allocation of resources. Trade openness opens international markets for a country’s goods and services. For countries with large financial sectors, this means that financial deepening can expand their reach to a global customer base. This access to international markets can boost revenue for these sectors and contribute to economic growth. Trade and financial openness encourage diversification of the economy. Developing countries with a heavy reliance on a single industry, such as commodities or agriculture, benefits from diversifying into the financial sector. A diversified economy is less susceptible to external shocks and can experience more sustained growth.
Conclusion

This study estimated the effect of financial market depth on economic growth in developing countries with large financial sectors. The economic growth measure used is the annual percentage change of real GDP growth, and the financial market depth measure is the stock market capitalization as percentage of GDP. We utilized the finance-augmented Solow framework that allows for incorporation for financial variables as determinants of economic growth. The random effects model enabled the calculation of the net effects. The novelty that we fill in this study is that the effect of financial market depth on economic growth is moderated by financial and trade openness. From the sample period 2006 to 2022 we can conclude that financial market depth increases economic growth in the six developing countries considered. Financial market depth has a causal effect on economic growth. Financial markets are variegated and can be measured from various key indicators. Therefore, further research can consider the dimensions of financial markets deepening.

References


