ECONOMIC AND FINANCIAL ANALYSIS

1. **Background.** A vast body of empirical literature confirms that financial sector development, in its different dimensions, has a positive impact on long term economic growth and is a key enabler of macroeconomic stability.[1] The issue, however, is multi-dimensional and complex, making it problematic to use cross-country empirical work as the basis for estimating the economic impact of the financial sector development in a particular country.[2] Considerable work has been done in measuring how the relative importance of financial institutions vs. financial markets in an economy matters to economic growth and stability.[3] Recent work has recognized that:

(i) financial institutions (e.g. banks) and financial markets co-evolve and play different roles at different stages in the economic development process of a country, and

(ii) it is the complementarity between their roles and the quality of the respective supervisory institutions that enable each pillar to (a) play a supportive role in economic growth and (b) mitigate the systemic impact that financial sector problems can cause on the economy.

2. Financial institutions and financial markets in each country facilitate the overall provision of financial services in interconnected ways.[4] Even though financial institutions and financial markets can exhibit some aspects of competition, much more significant is that they complement each other, while coevolving.[5] The financial sectors across the globe that have successfully evolved into modern and sophisticated financial systems present a great diversity of financial institutions.[6] Somewhat in sequence, legal, regulatory, and institutional reforms have also helped expand the relevance of financial markets in otherwise mostly bank-dominated financial sectors.[7] Figure 1 shows about 180 countries at very different levels of development of their financial institutions on the horizontal axis), and of financial markets on the vertical axis. Figure 2 provides a detailed zoom-in into the lower left corner of Figure 1 and shows the very low level of development of Armenia's financial markets. Many small ADB developing member countries (DMCs) fall in the lower left corner of Figure 2.[8]

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[1] T. Beck and R. Levine. 2004. Stock Markets, Banks and Growth: Panel Evidence. *Journal of Banking and Finance*. pp. 423–442; E. Dabla-Norris and N. Srivisal. 2013. Revisiting the Link between Finance and Macroeconomic Volatility. *IMF Working Paper Series* No. 13/29. Washington, DC: International Monetary Fund.

[2] A challenge for all empirical literature is also that the broad measures of financial development capture only partially the various functions of finance, such as its ability to facilitate risk management, exert corporate control, pool savings, allocate capital to productive investment, and facilitate exchange of goods. R. Levine. 2004. Finance and Growth: Theory and Evidence. *NBER Working Paper* Series No. 10766. Cambridge, MA: National Bureau of Economic Research; P. Aghion and S. Durlauf, ed. 2005. *Handbook of Economic Growth, Volume* 1A. Chapter 12, pp. 865–934. Amsterdam: Elsevier.

[3] F. Allen and D. Gale. 2000. *Comparing Financial Systems*. Cambridge, MA: MIT Press.

[4] For example, banks and corporate debt markets do not develop independently or at the expense of one another.

[5] F. Song and A. Thakor. 2010. Financial system architecture and the co-evolution of banks and capital markets. *Economic Journal.* 120(547). pp. 1021–1055. For example, securitization and risk-sensitive bank capital requirements establish positive interconnections of these two dimensions of a financial system.

[6] While banks are typically the largest and most important financial institutions in most countries, investment banks, insurance companies, mutual funds, pension funds, venture capital firms, and many other types of nonbank financial institutions do develop, in sequence, into eventually playing complementary and ever-specialized roles.

[7] Financial markets depend much more on institutional quality than financial institutions, because financial investors have to be able to rely a lot more on solid financial information and on the legal protection of their property rights. If these conditions are not in place, stock markets cannot develop.

[8] For small economies, it is challenging to develop effective capital markets on the basis of their limited local investor and issuer base. B. Bossone and JK Lee. 2004. In Finance, Size Matters: The "Systemic Scale Economies" Hypothesis. *IMF Staff Papers.* Volume 51 No. 1. Washington, DC: International Monetary Fund. Other factors, like high dollarization, also tend to pose additional difficulties in the development of financial markets.

Figure 1: Financial Sector Development around the World

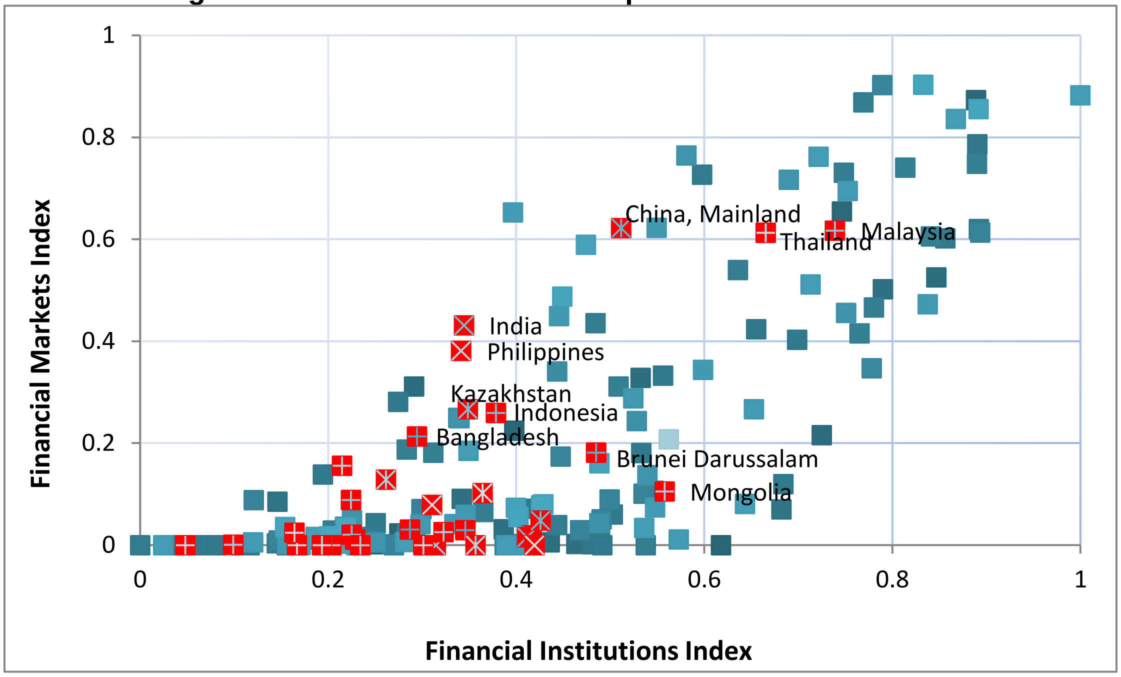
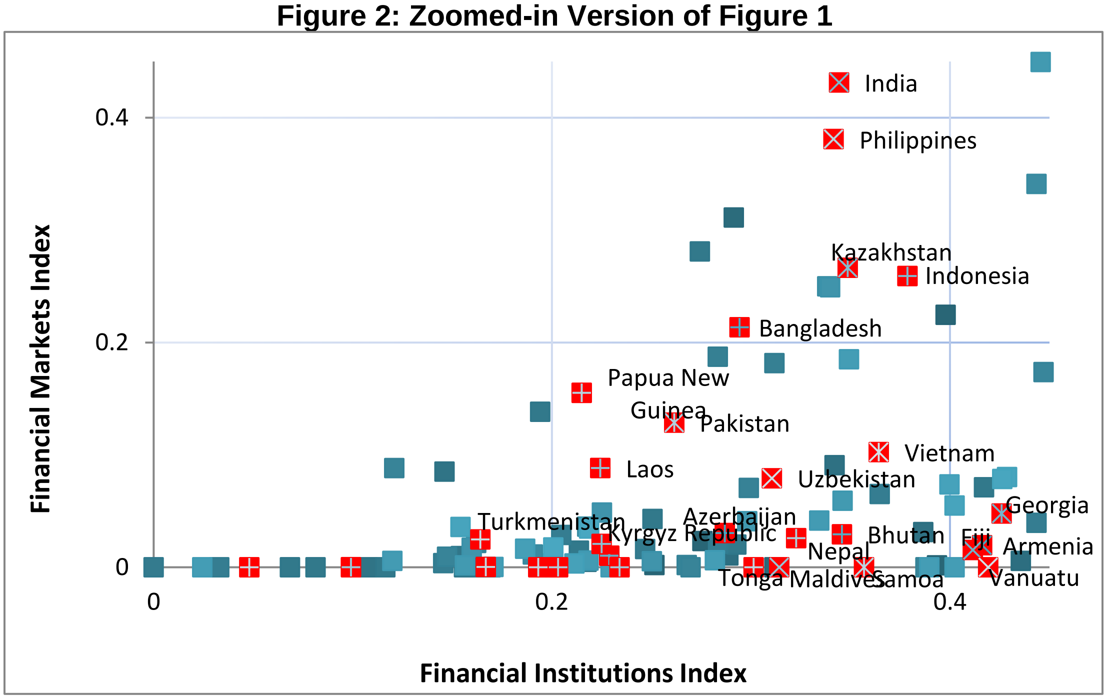


Figure 2: Zoomed-in Version of Figure 1



3. While financial institutions in Armenia have improved their role over the years (predominantly banking), financial markets remain insignificant. This is the core development problem to be addressed by the Public Efficiency and Financial Markets Program, and it is both a cause and a consequence of high levels of financial dollarization in the Armenian economy.[9] It constrains Armenia's private sector development, public debt and fiscal risk management, and

[9] The Armenian financial sector is characterized by around 60% dollarization, one of the highest in the region.

macroeconomic and financial stability policies.[10] This core development problem is rooted in three different, but interconnected constraints (see Problem Tree in the Sector Assessment, accessible from the list of linked documents in Appendix 2):

(i) gaps in public debt and fiscal risk management, which overall need to become more credible, transparent, and effective;
(ii) challenges and institutional/infrastructure gaps that hold back the development of Armenia's government securities and money markets; and
(iii) a lack of instruments and corporate governance practices that constrains the broadening of the investor base in Armenia's corporate debt markets.

4. Section 1 of this Appendix discusses how proposed reforms in each of these three root constraints are important in their own specific context, and illustrates the specific benefits that the proposed reforms can produce. But the mutually-reinforcing potential benefits of the three proposed areas of intervention include: (i) significantly increasing the debt management capability of the Ministry of Finance (MOF) as well as investor confidence; (ii) raising the levels of money market liquidity and the systemic role of the government securities market; and (iii) broadening the base of domestic and foreign investors in Armenia's capital markets. While a precise quantification of this combined impact on the economy is difficult to make, Section 2 discusses it by highlighting several channels of medium-term potential economic impact (in line with the impact statement of the Design and Monitoring Framework in Appendix 1 of the RRP).

1. Direct Reform Benefits

a. Output 1 –Strengthening Public Debt and Fiscal Risk Management

5. **Improve Public Debt Management.** Giving the Public Debt Management Department a wider role in debt management and centralizing the analysis and reporting of government debt will provide operating efficiencies and a holistic and medium-term approach to debt management. Other proposed reforms[11] will also give investors greater insight and confidence in the announced public debt program. We estimate that the increased transparency and investor confidence in Armenia's fiscal management (coupled with supporting macroeconomic and monetary policies) would, over time, translate into a lower liquidity premium and therefore lower relative funding costs. Based upon a 40-point reduction in the liquidity premium, this would translate to cost savings of around $10million over 10 years on $500 million of outstanding domestic debt.[12] We also anticipate there would be efficiency gains identified, with new processes and restructures that could amount to at least $5 million over 10 years.[13]

6. **Increase Vetting and Monitoring of Fiscal Risks, including PPP projects**. The program will support the development of a comprehensive policy framework and methodologies

[10] Financial dollarization of banks' assets and liabilities exposes banks to foreign exchange and refinancing risks. With limited financial deepening in the dram, both fiscal and monetary policies have little maneuvering space to tackle external macroeconomic shocks or to ensure financial stability in the face of these.
[11] The publication of information on Annual Debt Sustainability Analysis, information on public–private partnerships (PPPs), and retail debt statistics will increase the transparency of MOF's fiscal and debt management and give investors greater insight and confidence in the announced public debt program.
[12] Implicit in this estimate is: savings will grow from 0 to 40points over time and the amount upon which the savings are made will grow from $0 million to $500 million as the debt matures and is reissued. These calculations exclude implicit savings on new debt to expand the debt program.
[13] This refers to efficiency gains through centralized data base and reporting. We estimate six staff could be saved as a result of centralizing operations. Cost savings of six staff is estimated at $75k per staff per annum ($25k times 3 for true cost), for 10 years = $4.5million.

to identify, analyze, and monitor the fiscal risks that stem from their fiscal operations—on-lending, budgetary lending, issuing guarantees, PPPs, and other contingent liabilities. The value at risk from these activities is high and can extend to (i) the full capital value of funds lent or loans guaranteed (credit risk); and (ii) a high percentage of the project value for PPPs and other contingent liabilities where risks relating to fair pricing, value for money, robust quality and design, and project performance on implementation and ongoing maintenance are also relevant. Fiscal risk management will be strengthened by MOF by (i) assigning responsibility for each fiscal operation to a department, (ii) implementing sound methodologies for vetting[14] and evaluating fiscal operations, (iii) monitoring and reporting on fiscal operations to manage ongoing risk exposures and limit liability and losses, (iv) introducing a PPP policy with supportive law and institutional frameworks, and (iv) ensuring that an adequately resourced PPP unit is established to perform the required functions.

7. Based upon a future PPP program of $1 billion (50% public capital and 50% concessionary) and issuing guarantees of $200m, we estimate MOF could have a future fiscal risk exposure of at least $350 million.[15] The program will provide MOF with the frameworks and methodologies to mitigate these exposures, which, if they materialized, would directly impact the budget deficit and the debt program, potentially increase the cost of funding, and adversely impact MOF's reputation for fiscal responsibility and management. The program will also provide MOF with the mechanisms to ensure that only PPP proposals that add value-for-money reach financial closure. This could bring efficiency gains versus the counterfactual of a continuation of the status-quo. The direct benefits from Output 1 reforms are estimated at (i) $415 million in savings from expected lower funding costs and broad operational efficiencies, and (ii) the effective future mitigation of fiscal risk exposures of around $350 million (Table 1).

Table 1: Direct Benefits of Output 1 Reforms
($ million equivalent)

Item	**Fiscal Value-at-Risk Mitigated**	**Amount**
Public financial management and regulation		
Transparency and efficiency		415
Operational Risk (PDMD)	1	
Fiscal Risk including PPP	350[a]	
Total Economic Benefit	**351**	**415**

PDMD = Public Debt Management Department, PPP = public-private partnership.
[a] These estimates are based upon a $1 billion new PPP program ($500m capital and $500m concession), and $200 million new lending and guarantees. Twenty percent of the PPP capital and 10% PPP concession were conservatively assumed to be at risk, and for on-lending and guarantees, 100% were presumed to be at risk.
Source: ADB estimates.

b. Output 2 – Improving Government Securities Market and Money Market Infrastructure

8. The reforms under output 2 can steer the development of the government securities market, domestic money markets, and financial infrastructure. The key reforms are:

[14] In the case of PPPs, the vetting extends to assessing the quality and performance of the partner and the exposure to legal risks.
[15] A recent case study of Chile's early experience with managing PPPs shows that the absence of an effective vetting and fiscal management framework has led to cost overruns, chronic renegotiations-related fraud, and other losses amounting to 25% of the program value.

(i) Increase benchmark bond issuances and enhanced primary dealer responsibilities to stimulate secondary market activity and increase liquidity. The implicit liquidity premium for bonds can typically vary between 25 to 100 basis points or more for long bonds. If the liquidity premium drops by 50 basis points for future bond issuances, there would be a saving of $15 million over 10 years.[16]

(ii) Harmonize the treasury bill program with monetary and debt management policies. Coupled with a safe repo instrument and efficient settlement processes[17], banks would be incentivized to manage liquidity using short term instruments rather than bank deposits or repo facilities of the Central Bank of Armenia (CBA). This would activate the interbank market and deepen the short-term yield curve. Coupled with the MOF improving government cash flow projections and cash management, the CBA reducing volatility in systemic liquidity would indirectly lower banks' holding costs for unremunerated cash balances. Substitution of excess cash holdings for treasury bills provides banks/corporates with estimated savings of 150 basis points ($15,000 per annum) for each million of excess cash held.[18]

9. The above measures combined will help develop the government securities and money markets, which in the future will support (i) development of the capital market with a deepened transparent government security yield curve that corporate issuers can use to price risk, (ii) increased efficiency of fiscal and monetary tools more for operations and higher effectiveness in times of crisis, (iii) provision of alternative funding options for MOF as access to concessional lending is reduced, and (iv) substitution of foreign currency risk exposures for domestic interest rate risk exposures by borrowers and lenders leading to reduced dollarization.[19] Assuming interest rate risk to be 10% against a foreign currency risk of 20%, there is 10% less risk exposure for funding in the domestic market over time. Based on the domestic debt program increasing from 20% to 25% of total debt over 2 years (an increase of $125m), the debt portfolio risk exposure would fall by $12.5 million.[20]

10. Putting in motion these two mutually-reinforcing processes, i.e., the establishment of a market development-friendly public debt issuance program and management, and the development of the institutional and technological infrastructure for money-markets development, will enable accelerated financial deepening in dram, the development of variable-interest rate instruments, and overall more maturity transformation in the banking sector.[21] These will also enable the development of corporate debt and equity markets. These are systemic benefits that are significant but hard to precisely estimate.[22] For reforms under output 2, direct benefits are

[16] The initial saving is on all future bonds issuance. Based on 80% of the total outstanding new bonds reaching $400m in 5 years there is an implicit average saving of $1.0 million per annum for 5 years and $2 million thereafter; $15 million over 10 years.

[17] Safe and efficient settlement of repo and other money market transactions though CBA-Nasdaq

[18] For example, banks currently invest surplus liquidity in cash deposits with the CBA at 4.5%, whereas holding liquid T-bills at over 6% would be more cost effective.

[19] Foreign currency risk is considered higher than interest rate risk but the level of risk is specific to each country's situation. We have assumed interest rate risk of 10%, to be lower than the currency risk of 20%. Interest rate risk affects only the interest payment cash flows, but unlike currency risk, it does not affect the principal repayment.

[20] Other benefits such as taxes and seigniorage from the issue of currency have not been evaluated here.

[21] Banks will be less reluctant to take on, and will have more options to manage, the liquidity risk in dram loan origination at longer tenors.

[22] For example, as the interest rate transmission mechanism in dram develops, pricing of government securities will become fundamentally determined by arbitrage and expectations of future short-term rates, and much less on exchange-rate depreciation expectations. The potential interest savings to the government and the private sector that can accrue from this structural shift would be a multiple of the illustration in para. 9 point (i), but are not included in Table 2.

estimated at (i) $17 million savings from expected lower funding costs and operating efficiencies; and (ii) the future mitigation of financial market risk exposures around $12.5 million.

Table 2: Direct Benefits of Output 2 Reforms
($ million equivalent)

Item	**Risk reduction in the financial system**	**Amount**
Financial Sector		
Clear strategy for financial market development		1
Increased liquidity in government security markets		15
Liquid Money market and efficient cash Management		1
Decrease in dollarization	12.5	
Development of the Corporate capital market		
Total Economic Benefit	**12.5**	**17**

Source: ADB estimates.

c. Output 3 –Broadening the Base of Instruments and Enhancing Corporate Transparency

11. **Strengthening the legal and regulatory framework and corporate governance practices.** Introduced law changes will strengthen consumer protection in the Mortgage Lending Law. Changes to the Covered Mortgage Bond Law and proposed amendments to the Securitization Law will also promote transparency and protections for both creditors and investors and should encourage increased domestic and foreign investor participation in the dram capital market. Increased participation in the market should lead to increased demand for and supply of financial instruments and improve confidence in the domestic market. The conservative estimate of the benefits for both investors and borrowers (households and corporates) as a result of the improved framework in the lending market is in the order of US$44 million—part in risk reduction and part in lower administration and interest rate costs due to market efficiencies. [23]

12. Amendments to laws on Accounting and Audit will be introduced to strengthen corporate transparency requirements, the financial information practices, and oversight of accounting and audit practitioners. Sound, transparent law provides an environment for foreign and domestic investors to confidently assess the credit risk and quality of Armenian corporate risk and increase their willingness to participate in the dram capital markets. This is another step towards de-dollarization and the deepening of financial intermediation in dram and increased mobilization of long-term dram financing for investment by the private and public sectors. The direct benefits from the output 3 reforms that are shown in Table 3 have been estimated based on the level of commercial bank loans to the non-bank sector as at 31 May 2017.[24] The benefits have been estimated as follows:

(i) Lower borrowing costs for issuers. Over time, corporate borrowing interest rates are estimated to fall by 50 points as corporate governance and financial transparency improves. (The fall in interest rate reflects a lower credit risk premium applied by lenders). Based on total lending to non-bank corporations ($2.5 billion), annual funding cost savings are estimated at around $12.5 million.

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[23] The estimate is based on 1% of total bank loans (US$4.4 billion) which is a proxy for the market size.
[24] CBA Statistics - Commercial Bank Loans by Sectors of Economy 1.

(ii) Reduced currency risk for borrowers. As the dram market develops, borrowing in dram should become more favorable and corporates can switch borrowing from dollars to dram. We estimate non-bank corporate currency risk exposure could decrease by up to $50 million assuming foreign exchange lending decreases from 85% to 65%.[25]

(iii) Reduced credit risk exposure for lenders to Armenian corporations. We estimate the credit risk on lending to fall by 10% over time as measures to improve transparency and the quality of audits are introduced. Based on the current level of lending to corporations ($2.5 billion), we estimate the credit risk exposure to reduce over 10 years by $250 million.

Table 3: Direct Benefits of Output 3 Reforms
($ million equivalent)[a]

Item	Fiscal Value at Risk Mitigated	Amount
Increased legal protections for consumers and foreign investors	22	22
Laws to enhance corporate accounting and audit practices and transparency		
- Lower interest rate risk premium for borrowers		125
- Reduced currency exposure for borrowers	50	
- Reduced credit risk exposure for lenders	250	
Total Economic Benefit	**322**	**147**

[a] Estimated benefits to materialize over 10 years.
Source: ADB estimates.

2. Medium-Term Potential Impact

13. This section illustrates the overall medium-term potential economic impact on the economy by a sustained reform effort like the one initiated and promoted by the program. Financial/capital markets can improve risk sharing and the risk-management efficiency with which financial resources are allocated in the real economy, boosting economic growth and welfare. The development of the financial markets is important for Armenia to

(i) support government funding in the domestic market and reduce foreign currency exposure;
(ii) support the conduct of monetary policy and provide suitable instruments to deal with macroeconomic shocks and the increased risks to financial stability due to high dollarization;
(iii) develop local capital markets on the back of the government securities market, which enables companies and households improved access to local borrowing and reduced foreign currency exposure;
(iv) improve the efficiency of capital allocation and intermediation between investors and borrowers, particularly where adequate disclosure and legal framework to protect investor and borrowers are in place;
(v) provide financial stability to manage risk and adequate instruments to hold as a liquidity buffer and forward transactions to mitigate risk;

[25] This estimate is based upon increased non-bank corporate domestic borrowing substituting $0.5 billion of foreign currency borrowing, i.e., reducing foreign currency borrowing from $2.1 billion to $1.6. The foreign exchange risk weighting applied is 10%, refer footnote 18.

(vi) mobilize and channel savings in the economy into productive investments; and
(vii) reduce dollarization.

14. Recent work by Pradhan et al[26] has examined causal relationships between bond market development, economic growth, and four other macroeconomic variables in 35 countries for the period 1993–2011. Bond market development was defined in terms of the significance and presence of public sector, private sector, and international bond issues, and additional covariates considered were the inflation rate, the real effective exchange rate, the real interest rate, and a measure of openness to international trade. Using a panel vector auto-regression model to reveal the nature of Granger causality among these variables, the authors found that bond market development and the four macroeconomic covariates may be long-run causative factors for economic growth. [27]

15. In sum, extensive literature provides empirical evidence that financial markets promote economic growth: Better functioning or efficient financial markets can stimulate higher economic growth. Findings of past studies show positive impact of the banking sector, stock market and bond market on economic growth for the countries under study providing evidence that better functioning financial systems play an important role in promoting economic growth.

[26] R.P. Pradhan, M.B. Arvin and S.E. Bennett, et al. 2016. Bond Market Development, Economic Growth and Other Macroeconomic Determinants: Panel VAR Evidence. *Asia-Pacific Financial Markets*. 23 (2). pp. 175-201.

[27] Previous studies provide evidence on the relationship between financial markets and economic growth (R. Levine and S. Zervos. 1998. Stock markets, banks, and economic growth. *American Economic Review*. 88(3). pp. 537-558; R. Levine, N. Loayza and T. Beck. 2000. Financial intermediation and growth: Causality and causes. *Journal of Monetary Economics*. 46(1). pp. 31-77; P. Arestis, P.O. Demetriades and K.B. Luintel. 2001. Financial development and economic growth: The role of stocks markets. *Journal of Money, Credit and Banking*. 33. pp. 16-41; A.A. Enisan and A.O. Olufisayo. 2009. Stock market development and economic growth: Evidence from seven sub-Sahara African countries. *Journal of Economics and Business*. 61. pp. 162-171; W.N.W. Azman-Saini, S.H. Law, and A.H. Ahmad. 2010. FDI and economic growth: New evidence on the role of financial markets. *Economic Letters*. 107. pp. 211-213; P. Thumrongvit, Y. Kim and C.S. Pyun. 2013. Linking the missing market: The effect of bond markets on economic growth. *International Review of Economics and Finance*. 27. pp. 529-541; E. Ngare, E.M. Nyamongo and R.N. Misati. 2014. Stock market development and economic growth in Africa. *Journal of Economics and Business*. 74. pp. 24-39; Y. Bayar, A. Kaya and M. Yildirim. 2014. Effects of stock market development on economic growth: Evidence from Turkey. *International Journal of Financial Research*. 5. pp. 93-100). They show that a country's economic activities are significantly influenced by the development of the banking sector, the bond market, and the stock market. A study by King and Levine (1993) find that financial development has significant positive relationship with economic growth, where financial development refers to the development of a banking sector. Levine et al. (2000) find that well-functioning financial markets lead to higher economic growth. Specifically, they examine how financial development affects the factors that are believed to cause economic growth.