

Financial system mediates between those finance essay

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LiteratureThe financial system mediates between those in need of finance (borrowers) and those who have excess funds (lenders); either through direct lending or indirectly via stock markets or banks. A number of theories have been developed both at theoretical and empirical levels, with a view to explain the alliance between financial development and economic growth. Literatures can be divided between those who emphasize the benefits of financial markets (savings, capital allocation, risk management and corporate control) and others who stress that the financial system is not important for growth. Over the years, famous economists promoted the idea that a healthy financial system does encourage growth, among which are: Bagehot (1873), Bawerk (1891), Schumpeter (1911), Gershenkon (1962), Hicks (1969), Goldsmith (1969), McKinnon and Shaw (1973), Cameron (1967) and Miller (1988). These economists provided descriptions and empirical evidence of the ways financial markets promoted growth. Bagehot (1873) and Hicks (1969) examined on how financial development ignited industrialization in England by enabling capital mobilization for huge works. The literature of Schumpeter (1911), stresses that the services provided by well functioning financial intermediaries like banks can stimulate technological progress. The reallocation of capital to the highest value use without substantial risk of loss is important catalyst of economic growth. As a result, financial development encourages growth through capital mobilization and technology. Bencivenga (1991) and Levine (1997) affirmed that in the long-term, more liquid markets do create investment and hence economic growth due to falling transaction costs. However, there is the risk of a poverty trap due to insufficient financial development as specified by

Berthelemy and Varoudakis (1996) and consequently, this may obstruct growth even for well established countries. Additionally, Goodhart (2004) pointed out that information and transaction costs can be diminished by increasing the accessibility of financial instruments and that efficient financial market can aid investors trade, protect and pool risks in addition to rising their investment and growth in the economy. On the other hand, some economists just do not believe that the financial system is important for economic growth. For instance, Lucas (1988) argued that some researchers "badly over-stressed" the function of financial markets in economic growth. Similarly, Meier and Seers (1984), Stern (1989) and Chandavarkar (1992) neglected completely the role of finance in economic growth, since they viewed the financial system of being insignificant in economic development. Thus, according to these researchers financial components play a minor role in economic growth. There has also been numerous of papers like Favara (2003), Beck and Levine (2004), Loayza and Ranciere (2006), Saci et Al (2009) which postulated a negative relationship in the short-term between financial sector activity and economic growth, while the long-run provided a significant and positive one. To conclude, financial development is the key to investment and hence to growth. The financial system helps in the allocation and channeling of capital. It also assists in the distribution of investment funds and enables the sharing of risks. Thus, it provides the basis for the endless restructuring of the economy needed to support growth. The increasing focus on stock markets worldwide came up with a new path of research into the literature of financial development and economic growth, focusing mainly on the effects of stock market development. As a result, till

now there are still a lot of debates around it. Financial intermediaries were the only causative channel to economic growth in the past. However, since Bagehot (1873), this new economic development has helped us enormously in understanding this unexplored channel of causation. Demirguc-Kunt (1993) was the first to have explored this topic. Stock market development is a multi dimensional concept which takes into consideration the ever-increasing size of markets for equities and bonds in a country-wise or internationally over the years. Levine and Zervos (1996) argue that well developed stock markets offer different kinds of services than the banking system, thus providing different kinds of incentive for investment and growth. Obviously, a healthy and dynamic stock market plays an elementary part in triggering economic growth. However, till now the effect of this relationship still remains debatable since some models find a positive link between them while others established a negative one. Five factors, namely liquidity, risk diversification, information acquisition about firms, corporate control and savings mobilization are considered to demonstrate this correlation. One way stock markets may affect economic activity is through their liquidity. Liquidity can be defined as the ease and ability of converting an asset into money at any time period without great loss. Information asymmetries and transaction costs may curb liquidity and intensify liquidity risk. Financial intermediaries have been created, in order to hedge and share these risks. Liquid financial markets turn out to be a vital source of finance for high-return investment which requires long-run commitment of capital. Levine (1991) and Bencivenga, Smith and Starr (1996) pointed out that liquid financial markets help savers reduce the risks and cost of investing in long

unprofitable projects. Hence, liquid equity markets permit savers to buy financial assets which can be liquidated when need to be while simultaneously, enabling firms to get permanent access to capital. In liquid stock markets, it is relatively inexpensive to trade financial instruments and there is little uncertainty about the timing and settlement of those trades. The allocation of capital, an essential channel for economic development, can be improved by less risky assets and easy access to capital. More savings and investment further enhance long-term economic growth. Countries with well organized liquid markets tend to have larger portfolio flows. Thus, the existence of liquid equity markets facilitates capital inflow and the ability to finance current account deficits. Kyle (1984) and Holmstrom and Tirole (1993) argued that liquid stock markets push investors acquiring information on firms and improving corporate governance, thereby facilitating growth. In the research of King and Levine (1993), it has been found that a country's level of financial intermediation is an excellent indicant of long-run economic growth, capital accumulation and output. Also, they found that enhanced liquidity in stock markets can lead to accelerating productivity growth. In the recent literature, Paudel (2005) stated that liquidity in stock markets permit firms to quickly obtain capital, consequently smoothing investment, capital allocation, and growth. Furthermore, Levine and Zervos (1993) uncovered the strong correlation between stock market development and real GDP growth rate and real physical capital. From this investigation, they perceived that both liquidity in stock markets and banking developments do predict the future growth rate. Theory is unclear, however about the effects of greater liquidity on growth. Bencivenga and

Smith (1991) pointed out that growth slows down due to a reduction in savings caused by greater liquidity which, in turn, originated from reduced uncertainty. Demirguc-Kunt and Levine (1996) identified 3 ways through which liquidity may deter growth. Firstly, it may cause a reduction in savings rate through income and substitution effect. Secondly, as a result of a reduction in investment uncertainty greater stock market liquidity may reduce the savings rate because of the ambiguous effects of uncertainty on savings. This accordingly can create a fall in the demand for precautionary savings. Thirdly, liquidity in equity markets induces investor myopia which can adversely affect corporate governance and economic growth. Risk diversification is the second factor through which stock market may affect economic growth. It is commonly associated with the dealing, hedging and pooling of risk associated with informational and transactional costs in internationally integrated stock markets. Saint Paul (1992), Obstfeld (1994) and Devereux and Smith (1994) fairly argued that opportunities to manage risks by diversifying globally make high-risk, high-return transactions more feasible. According to Atje and Jovanovic (1993) stock markets give better chances for the pooling and spreading of risks in the long-run. Since high-return projects are riskier than lower return ones and that investors are assumed to be risk averse to these kinds of investments, equity markets will tend to ease risk diversification through internationally integrated stock markets which tend towards these types of assets. Conclusively, this will accelerate the process of economic growth. Conversely, there are some theorists like Obstfeld (1994) and Devereux and Smith (1994) who showed that greater risk allocation can slow growth due to its uncertain effect on

savings. Based on their findings, a reduction in risk via international equity markets can deter savings, economic growth and economic welfare as a whole. With externalities, growth could fall sufficiently so that overall welfare falls with greater risk diversification. Carosso (1970) explained that it is difficult and costly to assess firms, managers and market conditions.

Individual savers may not have the time, capacity or means to collect and process these data, and they would hesitate to invest in activities about which there is little authentic information. Consequently, costly information may prevent capital from flowing to its highest value use. As pointed out by Boyd and Prescott (1986), the emergence of equity markets help lower down high information acquisition costs. Atje and Jovanovic (1993) suggest that a stock market positively influence the availability of firms' information to investors, thereby improving the efficiency of financial intermediation. The equity market also smoothen the flow of information from management to owners. Grossman and Stiglitz (1980), Kyle (1984) and Holmstrom and Tirole (1993) do argue that stock markets promote the acquisition and dissemination of information about firms. Intuitively, with larger liquid markets, arbitrageurs will disguise private information and make money before they become publicly available and price changes. The ability to profit from information will induce investors to research and monitor firms, hence improving resource allocation and spurring economic growth. Fama (early 1960s), affirmed that equity markets are informationally efficient and thus, earning supernormal profits is absolutely impossible, since the share price already include historical, public and insider information. In addition, to be able to earn abnormal profits from information available, investors will be

encouraged to undertake research and supervise firms. Obtaining additional data is costly and painstaking. However, as Stiglitz (1994) rightly said, efficient capital markets lessen this problem. Consequently, information efficiency will stimulate the allocation of resources and economic growth. Besides, Peres (2010) indicated that stock markets do furnish the necessary resources to share private information and that stock prices do help in capital allocation by combining isolated information and by identifying the most meriting investment opportunities. It is through published prices that stock markets aggregate and disclose information. Even agents, who do not undertake the costly evaluation process, can observe stock prices reflecting information obtained by others. Stiglitz (1985) argue that well functioning stock markets quickly reveal information through changes in price. This rapid public revelation will reduce incentives to spend in private resources, in order to acquire costly information. Thus, this may have " l'effet-contraire" on resource allocation and growth. Stock market development may also influence corporate control of firms. Meckling (1976), Diamond and Verrecchia (1982) and Jensen and Murphy (1990) are among the first researchers to talk about the efficiency of stock markets to ease the principle-agent problem. The trading of shares on stock markets allows owners to fasten managerial reward to stock prices via the efficient flow of information, which in turn, helps to bond the interests of both owners and managers. Furthermore, in well-developed equity markets, it is not complicated for larger firms to takeover smaller non-performing ones, therefore, as per Laffont and Tirole (1988) and Scharfstein (1988) threats of being taken over by larger firms induce managers to maximize the firm's

equity price. Consequently, the exertion of corporate control and supervision of managers, better stock markets facilitate the takeover of underperforming firms and lessen the principal agent problems, hence leading to efficient allocation of resources and growth of the economy. Opinions differ, however, about the importance of stock markets in corporate control, due to asymmetric information. Less well informed investors may demand a premium to purchase a firm since they generally have less information about the firm than do current owners (Myers and Majluf, 1984). Subsequently, the efficacy of takeovers in exerting corporate control is thus reduced.

According to Stiglitz (1985), a fall in the efficiency of resource allocation due to hostile takeovers may result. By reducing exit costs, stock market liquidity encourages more diffuse ownership and greater barriers to supervise managers properly (Shleifer and Vishny 1986). Furthermore, liquid stock markets may impact adversely on motivation of owners to monitor managers and this may impede the effectiveness of corporate governance (Bhide 1993). Lastly, there is expectation that stock exchanges will increase the savings rate directed to the financial sector. The works of Greenwood and Smith (1996) are proof demonstrating that large, liquid and well-developed equity markets can help in mobilizing savings through the creation of small variable instruments which gives households the chance to hold diversified portfolios of assets and this can profoundly affect economic development. Thus, with respect to Stirr and Tufano (1995), savings mobilization will lead to better resource allocation, enhance technological progress and stimulate economic growth, by improving liquidity, risk diversification and the size of firms. Agglomerations of savings through stock markets enlarge the set of

feasible investment projects. Stock markets also facilitate mobilization of resources from projects that gain from economies of scale to those that need huge capital injections. Opinions differ over the importance of stock markets in mobilizing and raising capital. According to Mayer (1988) only a small portion of corporate investment is accountable to the issuing of new shares. A liberalized stock market may help to reduce the cost of equity as well as causing a surge in the stock market valuation (Obsfeld 1994; Stulz 1997). These theories of finance considered so far, assume the existence of well-developed capital markets and therefore are mainly applicable to advanced economies. In relation to emerging economies where the capital markets are generally underdeveloped, there is another branch of neoclassical literature that is relevant. This school of thought is associated with McKinnon and Shaw who argued that in many Third World countries, the government hold the interest rates artificially low and provide subsidized credits either to favored or priority sectors. Liberalization of these repressed credit markets will foster development since raising interest rates to their equilibrium levels not only leads to higher savings but to more efficient use of investment resources. Thus, according to their theory, stock market is not important in these developing countries. However, Stiglitz and others showed that if credit markets are liberalized, because of asymmetry in information between the suppliers (banks) and users of finance (corporations), the market determined interest rates does not allocate credit efficiently. For instance, if there is an excess demand for loans at a given interest rate, the banks may ration credit rather than raise interest rates. Imperfect information thus results in some groups being totally excluded from the credit market although the expected

returns from their investments may be higher than those of the groups that get credit. To reduce or to eliminate such inefficiencies, Cho (1986) argue that credit markets need to be supplemented by a well functioning stock market. Consequently, existence of stock market enhances the allocation efficiency of capital. The interest in the compilation of historical data on stock market development and its effect on the rate of economic growth seems to be stronger than ever. Various vehicles for analysis have been used in the different studies. This section contains a review of empirical studies attempting the impact of stock market development and economic growth which is also the concern of my present work. Atje & Jovanovic (1993), in their cross sectional study of 40 countries over the period 1979-1988 show that the relative size of a country's stock market helps to explain growth in per capita gross domestic product. They found that after controlling for lagged investment, trading volume has a strong impact on growth, while bank credit did not. Conclusively, the stock markets did promote return on investment which significantly entailed economic growth. Levine and Zervos (1996) have attempted to canvass the link between stock market development and long run economic growth, using pooled cross-country for 41 countries for the period 1976 to 1993. They constructed a time-series growth regression model with real per capita growth rate as the dependent variable. The main of aim of this regression was to judge the effect of " independent partial correlation" on equity market development and growth. After analyzing the data through various tests, it could be concluded that stock markets development was positively correlated with economic growth. Moreover, some influential variables did suggest a strong

link between the elements of stock market development and long run growth. Using data for 44 industrial and developing countries for the period 1986-1993, Demiguc-Kunt and Levine (1996) conclude that countries with well developed stock markets tend to have better financial intermediaries, while countries with weak stock markets tend to have weak banks and financial intermediaries. Thus, the existence of a developed stock market leads to the expansion of the financial sector which helps to accelerate economic growth. Seetanah, Sawkut and Sannasee (2009) investigated on the banking sector development, stock market development and economic growth in developing countries using the Panel VAR model. The paper studies 27 developing countries from 1991 to 2007 and it was based mainly on past studies like that of Levine and Zervos (1998), Christopoulos and Tsionas (2004) among others. Following the various test for VAR model in the different developing countries, it could be argued that stock market development is an important factor for growth even though the importance of banking development is relatively higher. However, it was also found that both stock market development and banking development are complements to each other and that they impact on growth via the " investment channel." Many researchers have analyzed the causal relationship between stock market development and economic growth. Deb and Mukherjee (2008) evaluated the relationship for the Indian Economy taking quarterly data from 1996 to 2007. Using the stock market volatility (SMV) , market capitalization ratio (MCR) and real value traded ratio (VTR) as proxies for stock market development and real GDP growth rate, they tested for causality using the Toda and Yamamoto (1995) test. The results indicated clearly that there was

bi-directional causality between real GDP growth rate and MCR and secondly both SMV and VTR were related to real GDP growth rate in a unidirectional causality. Thus, the findings suggested that stock market development lead to economic growth during the period the study was made. From the work of Vazakidis and Adamopoulos (2009), it was evident that an increase in short-term growth had a positive impact on stock market index, while an increase in interest rate caused a fall in stock market indicator. Again in the context of stock market development and economic growth, various researches pointed out a positive significant relationship between stock market development and economic growth. Some argue that stock markets may enhance growth through liquidity, which makes investment less risky, thereby enabling companies to enjoy permanent access to capital through liquid equity issues. Others investigated the impact of stock markets and banks on economic growth and found that, both stock markets and banks positively influence economic growth. Recent studies have used vector models, however, most are country specific studies including research in Ghana (NZué 2006), Pakistan (Shahbaz, Ahmed and Ali 2008), India (Agrawalla and Tuteja 2007), and Mauritius (Nowbutsing, 2009), and they found that stock markets predict the future growth of an economy. The theoretical and empirical works of Bencivenga and Smith (1991); Ram (1999); Adjasi and Biekpe (2006) and Ghazouani (2007), are among the few studies which could not establish any relevant link in the stock market-growth nexus. Conversely, Odedokun (1996) found mixed results

Overview

The SADC which has been in existence since 1992 comprises 15 member states. There are 10 SADC stock exchanges forming part of the COSSE formed in 1997. The members with

established national stock exchanges comprise of Botswana, Malawi, Mauritius, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe. What follows is a brief overview of the background of these SADC Exchanges. The first stock exchange in Botswana was established in 1989 and was known as the Botswana Share Market (BSM). Later, the Botswana stock exchange was established in 1995 following the enactment of the BSE Act 1994. It regulates the equities and fixed interest securities market, and is the third biggest stock exchange based on market capitalization in Southern Africa. The Malawi Stock Exchange was established in Blantyre in 1996. the capital market is also boosted with the help of NITL. The MSE operates under the Capital Market Development Act 1990 and the Companies Act 1984. The Namibian Stock Exchange was first established at the start of the century in the early nineteen hundreds as the diamond rush attracted hundreds of prospectors. However, within a couple of years the rush came to termination and the exchange was shut down shortly after. A second exchange opened its doors in 1992, which is the current stock exchange called the Namibian Stock Exchange. The NSX is governed by the Stock Exchanges Control Act (1985, amended 1992) and supervised by the Registrar of Financial Institutions. The first stock exchange in Zimbabwe was established in 1896 in Bulawayo. However, it discontinued all its operations 6 years later. Further attempts were made in Gwela (Gwenu) and Umtali (Mutane). However, these markets also failed and all stock exchange activity ceased to be in 1924. After the Second World War, another exchange was founded in Bulawayo in 1946 now known as the Zimbabwe Stock Exchange and by 1951 a second trading floor was inaugurated in Salisbury (Harare).

The Lusaka Stock Exchange of Zambia was established in 1994, with preparatory technical assistance from the IFC and the World Bank. The LUSE is incorporated as a non-profit limited liability company, and is seen as one of the most technologically developed exchanges in the SADC region. The Dar es Salaam Stock Exchange was incorporated in 1996 in Tanzania as a company limited by guarantee without a share capital, following the enactment of the capital markets and securities act of 1994 and the introduction of the CMSA. Trading is automatically conducted at the DSE Trading Floor. The DSE has two market segments: The MIMS meant for big companies and the EGMS, for medium growth oriented companies. The Stock Exchange of Mauritius Ltd was incorporated on 1989 under the Stock Exchange Act 1988, as a private limited company responsible for the operation and promotion of an efficient and regulated securities market in Mauritius. The SEM operates two markets: the Official Market, and the DEM. The CDS was successfully implemented in 1997. SEMATS was launched in 2001, putting an end to traditional trading patterns. In September 2012, SEM was rewarded for the second consecutive year the " Most Innovative African Stock Exchange of the Year Award" at the Africa Investor prestigious annual Index Series Awards held at the New York Stock Exchange. Mozambique Stock Exchange was incorporated in 1999. Mozambique Stock Exchange is the management entity of the securities market endowed with necessary means to ensure continuity in an open and free market, and also has competence to regulate operational matter. The trading, clearing and settlement was always executed by an electronic system. The Swaziland Stock Market is a small but booming stock exchange. The share market was

launched as an over-the-counter single broker market in 1989. All listings are included in the sole index, the SSM Index, which is un-weighted. Now called the Swaziland Stock Exchange it operates under the supervision and regulation of the capital markets development unit of the central bank. Seychelles securities exchange has recently been set-up in November 2012. It is a fully electronic exchange, in an off-shore environment, committed to develop and increase the activity of economic and financial sector of Seychelles. The Bolsa de Valores e Derivativos de Angola set up in 2011 is likely to become the third largest bourse in Sub-Saharan Africa after the South African and Nigerian Stock Exchanges. Finally, the Johannesburg Stock Exchange which was established in 1887 is not only the oldest exchange but is also the most developed and overshadows all the other SADC exchanges. JSE is licensed as an exchange under the Securities Act 2004 and Africa's premier exchange for nearly 125 years. However, while the JSE has benefited from opening its doors to foreigners, it has also become more susceptible to international shocks. Other developments include the introduction of automated trade via the establishment of the JET system in 1996, which was later furnished to the other SADC exchanges in 1998. In 2002, the JSE changed its trading system to the JSE SETS which was adopted from the London Stock Exchange. Three countries namely, the Democratic Republic of Congo, Lesotho and Madagascar do not have a stock market. DataBoth a long time-series and adequate cross-sections of data are ideally needed to model precisely the effect of stock market on a country's growth. However, the SADC region presents difficulties in that many of the region's exchanges were only recently established, and offer very little time-series data (Allen

and Ndikumana, 2000). The primary data source for this study is the World Bank (Appendix 3). By being able to draw data from a single source we surmount the consistency and measurement problems associated with Levine and Zervos's (1998) use of two different data source. Nine out of the ten SADC countries with stockexchanges have the relevant data (Appendix 4). The analysis covers the period from 1980 to 2011. So there are nine cross-sectional units and 32 time periods. In all there are 288 observations. The variables used in the stock market development and growth nexus are described as follows. GDP growth rate is the annual percentage growth rate of GDP at market prices based on constant local currency. It is used as the dependent variable as a proxy for economic growth. It is expected that as the economy grows, it should create new demand for financial services, while also offering a better business environment, thus it will produce a positive effect on stock market development and as such it is also expected that the stock market will grow (Mohtadi and Agarwal 2000; Naceur et al. 2007; Yartey 2008). The stock market development index comprises of two measures, namely SIZE and LIQUIDITY. These measures of the index have been widely used in previous studies including (Levine 1996; Rousseau and Wachtel 2000). SIZE comprises of the concentration ratio, also known as the market capitalization ratio. The second measure LIQUIDITY includes trading value ratio or the total value of shares traded ratio and the turnover ratio. Concentration ratio is measured by dividing market capitalization over GDP. Highly concentrated markets are mostly found in poor economies. Market concentration is assumed to be negatively correlated with market size and market liquidity. The trading value ratio which equals the value of shares

traded on the exchange divided by GDP (Mohtadi and Agarwal 2000) is taken as the indicator for stock market development. This ratio measures the stock market size, and shows ability to mobilize the capital through diversification of risk. It represents organized trading of firm equity as a share of national output and therefore should positively reflect liquidity in the economy (Garcia 1999). Though the presence of a large market there may be little trading occurring. Hence, it can be deduced that the total value traded ratio complements the market capitalization ratio. The turnover ratio, second component of liquidity, is measured as the volume of total shares traded divided by market capitalization. As per Levine and Zervos (1996), the liquidity of the stock markets may impact on economic activity such that investors are unwilling to relinquish control of their saving for long periods. This ratio measures the ability to trade economically significant positions on the stock market. The turnover ratio complements both the market capitalization ratio and the total value traded ratio. A large but inactive market will have a big market capitalization ratio but a small turnover ratio. A small liquid market on the other hand will have a high turnover ratio but a small total value traded ratio. As such liquid stock markets allow investors to change their financial positions relatively quickly and cheaply, while also facilitating investment projects and making them less risky (Levine, 1991). As both banks and stock markets intermediate savings towards investment, they can either be seen as substitutes or complements (Boyd and Smith 1996; Garcia and Liu 1999). In this study we use two indicators of banking development. The first one is the domestic credit provided by financial intermediaries to the private sector over GDP, which has been followed from

Beck and Levine (2003). This indicator has been popularly used since it excludes credit to the public sector and thereby measures more specifically the contribution of financial institution in funding private sector. Secondly, liquid liabilities to GDP are used to show the effect the financial sector has on both growth and stock market development. Liquid liabilities are also known as M3. Liquid liabilities consist of demand deposits and interest bearing liabilities and non-bank financial intermediaries. It has been empirically shown by Demirguc-Kunt and Levine (1996) that stock market development and bank development are positively correlated and that they grow simultaneously. Inflation reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at particular time intervals. Various studies including Fischer (1993) and Barro (1996) concluded that inflation is not good for long-term economic growth. It is expected that the higher the inflation variable, the less incentive investors or companies would have in investing in the stock market. Thus it is estimated to have a negative correlation between inflation and economic growth (Garcia and Liu 1999). However, according to Yartey (2008), stock markets provide some form of a hedge against inflation, hence indicating a positive relationship between stock market development and inflation. Gross capital formation (formerly gross domestic investment) consists of outlays in additions to the fixed assets of the economy plus net changes in the level of inventories. Gross capital formation as a percentage of GDP is used in this study as a proxy for the investment rate. It is believed that the investment rate plays an important role in economic growth (Agarwal, 2000). Furthermore, since stock markets are in retrospect financial

intermediaries that intermediate savings to investment projects, it is rational to expect that the investment rate will be an important determinant of stock market development. As such, we expect the investment rate to have a positive impact in the model (Yartey, 2008). In all estimated models, we add to the set of regressors the lagged dependent variable in order to capture the dynamic effect in the stock market development and to get rid of a possible autocorrelation. In our case, the lagged dependent variable is known as GDPLAGA. A panel data approach is employed in this study that covers nine countries within the SADC region for the period 1980 to 2011. The RE model is used. Based on the principles of various studies (King and Levine 1993; Ram 1999; and Seetanah 2008), the following model is used to examine the stock market development and economic growth nexus. Where i stand for the different countries in the sample, t denotes the time dimension and ϵ_{it} is the error term. The small letters denotes the natural logarithm of the variables. The model used in this paper is a linear-logarithmic one and the available panel data for the nine countries is balanced. The variables are: the log of real per capita GDP growth rate (y) set as a proxy for economic growth; the log of stock market development ($smdex$) which consists of the market capitalization ratio, the total value of shares traded ratio and the turnover ratio; two indicators of bank namely domestic credit and liquid liabilities; the log of inflation (inf) , the log of gross capital formation which was measured as a proxy for the investment rate (inv) and finally, the lag of gdp ($gdplag$) In constant coefficient model all intercepts and coefficients are assumed to be same (that is there is neither significant country nor significant temporal effects), in this way space and time dimensions of the

pooled data are disregarded, data is pooled and an ordinary least squares (OLS) regression model is run. Regardless of the simplicity of the model, the pooled regression may disfigure the true picture of the relationship between Y and X's across the cross-sections. To correct for any possible heteroskedasticity we run the POLS regression with robust standard errors. The distinction between POLS and RE model is possible through the LM Test. The Breusch-Pagan LM statistic, tests the null hypothesis that the POLS estimator is adequate against the random effects alternative. The specific hypothesis under investigation is the following: The Hausman specification test is to determine whether to use the fixed or random effects model. Under the null hypothesis, both models are consistent when their estimates do not differ significantly, (that is, correlation between the unobserved person-specific random effects and the explanatory variables do not differ significantly). In case there is no such correlation, it will be most appropriate to use the random effects model. However, if there is such a correlation, the random effects model would be inconsistently estimated, and therefore the fixed effects model will be more powerful (Verbeek 2000 and Greene 2003) [1]. After the Hausman Test, either a robust RE regression or a robust FE regression will be performed. If the p-value is less than 5%, then the FE model is model appropriate. However, with a p-value greater than 5%, the RE model is used. The term robust is used in the regression in order to control for heteroskedasticity, so as to avoid making erroneous inferences. In our case the Random Effects model was found to be the most appropriate one. The deviation from the constant of the cross-sectional unit (country) has to be uncorrelated with the errors of the variables. The benefit of such model

is that it allows for time-invariant variables to be included among the regressors. Based on the model used after the Hausman Test, the same model was repeated again. However, this time South Africa was excluded from the analysis as it was assumed that South Africa could influence the estimations significantly enough to produce misleading results given the relative size of South Africa vis-à-vis the other SADC countries. The following regression below was estimated to assess the impact of the various factors that have been noted to impact on the development of the stock market. This regression was estimated in an effort to determine which control variables played the biggest role as a determinant of stock market development. This model was then repeated with the exclusion of South Africa.

While the previous chapter discussed the analytical framework of the study and the panel data procedures, this chapter employs the panel data methodology. This is done using pooled data, to empirically examine the relationship between economic growth and stock market development, for nine countries. The remainder of this chapter presents the results as well as interprets and evaluates them against theory and results from other studies. The use of Stata version 11 has been made to generate the results in the analysis part. This section represents the graphical statistics for all countries under study by taking into consideration the relationship between stock market development, banking development and GDP growth. There was a hike in the stock market development of Botswana in the year 2007 (50%). Over the years, the GDP growth rate and banking development experienced a general increase. Since 1980 till 2001, the stock market development indicator remain constant and started to rise slowly till

it encountered a drastic fall in 2007, mainly because of the Great Depression. However, it is noticed that Malawi took control of the situation as illustrated by the rapid rise in the indicator. During this period, even the banking sector encountered a fall. This as a result had an impact on GDP growth rate as can be clearly seen in Figure 2. The GDP growth rate of Mauritius remained stagnant throughout the whole period under study. On the other hand, the banking sector knew a drastic fall in 2006; but gradually the rate recovered. Even the stock market development indicator performed well since the establishment of the SEM in 1989. The banking sector of Namibia is flourishing rapidly since 1989 as can be clearly seen in the graph. Even the stock market developments show some growth between 1993 and 2000. However, as from 2001, we can notice a slight fall explained mainly due to the 11th September 2001 attacks. Throughout the whole period, the GDP growth rate was stagnant implying that stock market development and banking sector development had a good impact on economic growth. The stock market development started to rise slowly since 1986. This indicates that the stock market is over-powering the banking sector of South Africa. Between 1980 and 1983 the banking indicator declined, due to financial turmoil in Swaziland. On the other hand, the stock market development rate demonstrated a positive upward trend during the period 1992 to 1998. However, a slight fall was noted in GDP growth rate since 1990 which almost stagnated. Figure 7 show that the GDP growth rate has experienced a general increase over the years. Stock market development averages about 30% over the period. There was a hike in this figure in the year 200 (920%). While the general trend is upward sloping for banking development during

the period 1986 to 2007, there have been period of decline during that time. We notice a fall in the banking sector from the period 1980 to 1989. Later on, it showed a slight increase in this figure. The movement of stock market development is more like a random walk experiencing upward swings and downward swings. On the other hand, GDP growth rate experienced a general increase over the years. In 2002, both the stock market development and banking sector development of Zimbabwe demonstrated a positive upward trend. This rise was again felt in 2006 by the stock market development. This is mostly due to more investments since the stock market regulatory framework of Zimbabwe is more stylized. Table 1 reports some descriptive statistics in terms of mean, standard deviation, minimum, maximum, coefficient of variation, standard error and number of observations for each variable used in this study. The mean level is highest for BANK at 51. 863 while the lowest mean is INF of 1. 023. It is also found that for a minimum of 0. 000, a maximum of 510. 5 and 288 observations, the standard deviation of SMDEX is 85. 334. The mean of GDP is 3. 879 while its standard deviation is estimated to be 4. 762. Two variables were found to have negative coefficients, namely inflation and banking development, -0. 669 and -0. 019 respectively. In order to test the stationarity of variables within our panel data, the Im-Pesaran-Shin Unit Root Test (2003) has been performed. The IPS test has as the null hypothesis that all the panels contain a unit root. In our case, all p-values except the total shares traded, private credit and liquid liabilities were found to be stationary at level forms, indicating that no unit root is present. As pointed out by Engle and Granger (1987), regressing non-stationary data produces regressions that are

misspecified or spurious in nature. However, the stationary test does not matter much in panel data. The FE model analyzes the impact of variables that vary over time. RE model assumes that the entity's error term is not correlated with the predictors which allows for the invariant variables. To determine whether to use the FE model or the RE model, the Hausman test may be performed. The Hausman specification test is used to test the null hypothesis of no correlation between the individual specific effects and the regressors. Under this hypothesis the RE model is valid but if it is not fully respected, the estimators of the RE model are inconsistent and we have to use the FE model. The Hausman specification test, as shown in Table 2 has been used to determine whether to use FE model or RE model. In case of a small p-value, less than 5%, the Hausman test shows that the coefficient estimated by RE model and FE model are not same. As per Table 2, the $\text{Prob} > \chi^2 = 0.3396$ is insignificant at 5% level of significance. Since they are insignificant, that is being greater than 0.05, we can't reject the null hypothesis and we can assume that the unobserved individual effects are not correlated with the observed regressors. We can consequently use the RE model. The rationale behind RE model is that, unlike the FE model, the variation across entities is assumed to be random and uncorrelated with the predictor or independent variables included in the model: "...the crucial distinction between FE and RE is whether the unobserved individual effect embodies elements that are correlated with the regressors in the model, not whether these effects are stochastic or not," (Green 2008 p. 183). Based on the Hausman specification observations, the RE model has been applied and its results are shown in Table 3. The term "vce(robust)" has been added to

control for heteroskedasticity[2]. Inflation and banking development had negative coefficients of 0. 669 and 0. 019 respectively. In addition, inflation showed an insignificant relationship with GDP growth at $p= 0. 549$. The remaining indicators on the other hand were found to have significant relationship with economic growth. The R2 showed a variance of 0. 2709 between economic growth and the other indicators. When considering the Wald Chi2 (5) = 239. 17, we observed that it is greater than 0. 05, indicating that our RE model is not good. This is a test (F) to see whether all the coefficients in the model are different from zero. The regression produces a positive and significant result in terms of stock market development indicator, notably the market capitalization ratio, the total value of shares traded ratio and the turnover ratio at the 5% level of significance. However, the coefficient was found to be very low. An explanation for this may be that the SADC stock exchanges are either too small, inefficient, or not well developed to actually have a big impact on economic growth. The positive significant relationship between stock market development and economic growth is consistent with other findings by Levine and Zervos (1998) and Rousseau and Wachtel (2000) and Caporale et al. (2004). Inflation was found to have a negative and highly insignificant relationship with economic growth. In fact, it is expected to have a negative and highly significant relationship with economic growth in the regression, as an increase in the inflation rate is generally accompanied by an increase in financial intermediation as people and companies are less inclined to invest their money in the financial system (Aziakpono 2004). However, this low rate of inflation is more likely to contribute to stock market development and

economic growth[3]. Both domestic and foreign investors will be unwilling to invest in the stock markets where there are expectations of high inflation. The regression also shows a strong positive and highly significant result between investment and economic growth. This conforms to expectations, as the higher the rate of investment, the greater the supply of funds flowing through the financial system, which in turn opens up opportunities for growth. It is expected that as savings increases the amount of capital flowing through the stock markets also increases as these funds are put towards profitable investment schemes (Garcia and Liu 1999). In terms of financial intermediaries, the results from Table 3 show that the banking sector development has a negative and significant relationship with economic growth. This result is surprising as one would expect a positive and significant relationship to exist. An explanation for this could be that the results are indicative of distortions within the credit supply process which in turn results in lax credit to unproductive business opportunities, thus negatively affecting economic growth (Allen and Ndikumana, 2000). It is expected that as the banking sectors develop, the finance generated through this intermediation would influence growth positively by stimulating real economic activity, particularly through investment and consumption. Quite fully proofs of the literature, De Gregorio and Guidotti (1995) and Ram (1999) showed that financial development and economic growth are negatively correlated. Support services from the banking system can contribute significantly to the development of the stock market. Conversely, a weak banking system can constrain the development of stock market. As explained earlier the lagged growth rates capture the autoregressive nature

of growth, and their inclusion follow the recent contribution in this area, including the work of Islam (1995)[4]. The last control variable, the lag of the GDP growth rate produced a positive and significant result. This result concludes that lagged growth of the country contributes positively towards the current level of economic growth. It is consistent with studies done by Li and Liu (2005) and Seetanah (2007). Table 4 reports the estimation results of POLS regression with robust standard errors. The POLS model does not take into account the special features of the panel data, and it runs a simple linear regression. In the POLS model, space and time dimensions of pooled data are ignored, data is pooled and an OLS regression model is run. All the variables are believed to have an impact on economic growth. It is crystal clear that all variables except for inflation all have a significant relationship with economic growth (p-value less than 5%). Stock market development, investment and `gdplag` are found to be positively correlated with economic growth (coefficients equal to 0.006, 10.894 and 0.202 respectively.) However, the banking sector development rate seems to have a negative impact on growth (coefficient = -0.019.) In addition, the R² and Root MSE are estimated to be 0.2709 and 4.0032 respectively for a confidence interval of 95%. The p-value of the model, indicates the reliability of Xs to predict Y. since our p-value equals to 0.000, it shows a statistically significant relationship between the five independent variables and the dependent GDP. The Breusch-Pagan Lagrange Multiplier (LM) Test helps in the decision between a RE regression and a simple OLS regression. It tests the null hypothesis that the variances across entities are zero, which is to say that there are no random effects. The command in Stata is " `xttest0`"

typed right after running the RE model. $\chi^2(1) = 0.88$ and $\text{Prob} > \chi^2 = 0.3474$ (Table 5), meaning that the p-value is greater than 5%. Here we failed to reject the null hypothesis that the POLS are adequate and conclude that a RE is not appropriate. In other words, there is no evidence of significant difference across countries; therefore, a simple OLS regression can be run. Serial correlation test apply mostly to macro panels with long time series (over 20-30 years), and is not considered to be a problem in micro panels (with very few years). Serial correlation causes the standard errors of the coefficient to be smaller than they actually are, and higher R-squared is expected. A Wooldridge test for serial correlation is available to test the null hypothesis of the absence of first order autocorrelation in the errors. The null hypothesis posits that no serial correlation is present. Above (Table 6), the null value of the p-value leads us to reject the null hypothesis and to validate the presence of autocorrelation of first order. This model was then re-estimated; however, this time we excluded South Africa. The reason for the exclusion of South Africa was due to the thought that its inclusion may produce misleading results for the rest of the SADC countries. Table 7 presents the results for the regression when South Africa was eliminated. The stock market development indicator offered a negative correlation with economic growth; it was found to be insignificant with the highest p-value of 0.565. This may be due to the small size of SADC markets. Inflation produced a negative and insignificant coefficient, while the investment variable produced a very strong positive and significant coefficient. The lag of the GDP growth rate also produced a positive and insignificant value. It should be noted here that banking sector development again presented a

negative and significant correlation with economic growth. We notice a slight fall in R^2 (0.2703) as compared to $R^2 = 0.2709$ when South Africa was included. Table 8 above summarizes the results for the determinants of stock market development, based on the model (2). The model proved to perform exceptionally well, which may be seen by the high R^2 value ($R\text{-sq} = 0.5139$; greater than 5%). In addition, the "rho" (the intra-class correlation), indicates a 32.2% variance which resulted from differences across panels. From Table 8, we find some interesting results in terms of the lag of GDP growth rate. It was found to be statistically insignificant, and with a negative coefficient of 10.807. It is normally assumed that as last year GDP growth rate increases, it will positively affect stock market development. The result is against that of Garcia and Liu (1999) and Yartey (2008), in that they found a positive but significant coefficient between last year's GDP growth rate and stock market development. Another variable that enters the regression was investment rate (INV) in an effort to analyze its effects on stock market development. This variable produces a surprising result in that it was found to have a negative and insignificant coefficient with market development in the regression. This result is not consistent with theory, as one would normally expect a positive relationship to develop. However, Naceur et al. (2007) also found a negative relationship to exist between investment rate and stock market, and concluded that this result was inconsistent and found it not to be a good predictor of stock market development. As such, we find that investment rate is not a good indicator of stock market development in the SADC region. This is explained by the fact that stock markets are relatively young and small in size; hence their trading volumes are very low.

From Table 8, it can be seen that banking development (measured by private sector credit divided by GDP and liquid liabilities), has a positive and significant relationship with stock market development. This is consistent with our expectations and other authors including Garcia and Liu (1999) and Naceur et al. (2007), of a positive effect of financial intermediary development on stock market development. SADC member states should foster the growth of their banking sector in an effort to further boost their stock market development. The variable inflation is used to control for the impact of macroeconomic instability in the regression. It produced rather surprising result, as it was found to have a negative and statistically insignificant impact on stock market. This is contrary to our expectation, as one would expect a negatively significant correlation to exist between the two variables. This model was then also re-estimated with the exclusion of South Africa from the data set. The reason for the exclusion of South Africa was to determine whether South Africa had an over-riding impact on the results of the model. This is also supported by the belief that South Africa's stock market is considerably larger than the others in the SADC region; its inclusion may present misleading results for the region as a whole. The "rho" indicated a variance of 25.5% across the panels. The R² was 24.8% of the variance in smdex. However, the test (F); Wald Chi² (4) = 233.25 greater than 0.05) indicates that the model is not ok. As can be seen in Table 9 above, the results are very similar to those found when South Africa was included. That is, we find a negative and statistically insignificant coefficient for the investment and inflation. This time, the banking development (BANK) showed a positive and significant relationship with the

stock market development (SMDEX). This proves the assumption of Demirguc-Kunt and Levine (1996) who said " stock market development and banking development are positively correlated, as they are expected to grow simultaneously." As such, this result proves that banking sector development acts as a complement to stock market development. Hence, SADC members are encouraged by the World Bank and the IFC throughout technical assistance to boost the development of their banking system and stock markets. The reasons for these results have already been explained earlier. However, we can conclude that by excluding South Africa from the model has little or no effect on the outcome of the results.