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The Determinants of Financial Development: A Focus on African Countries.

Master Thesis in Economics

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ABSTRACT

This thesis attempts to establish what determines financial development in Africa by making use of cross sectional and panel data techniques. Financial development, the dependent variable, is measured using the banking sector indicator liquid liabilities (M3) while trade openness, financial openness and the GDP growth rates are used as independent variables. The data used in this research ranges from 1975-200, though for the cross sectional analysis particular years (1975, 1985, 1995, and 2005) are focused on.

The empirical results from both regression types generally suggest that trade openness has a significantly positive effect on Africa's financial development. Cross-sectional results show that financial openness and the GDP growth rate are significantly negative in 2005. With the panel data results, financial openness is significantly negative in explaining financial development, while the GDP growth rate is insignificant suggesting that it is not an important determinant of financial development for African countries.

Dedication

This work is dedicated to my parents Professor Francis Benyah and Josephine Augusta Prah, my siblings especially my brother Francis Papa Kwesi Benyah and my grandparents Mr. Koomson and the late Mrs. Koomson.

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1. INTRODUCTION

1.1 Background

Investigating what the determinants of financial development are has only recently become a subject of interest for researchers. The reason for this is the mounting evidence that indicates that financial development leads to economic growth (Levine, Loayza and Beck, 2000; Levine, 2003; Rajan and Zingales, 2003). Given the finance-economic growth nexus it is imperative to understand the factors that could explain the difference in the level of financial development across countries. The possible determinants of financial development have ranged from legal systems and institutions (La Porta, Lopez-de-Silanes, Shleifer and Vishny 1997, 1998; Beck and Levine, 2003) to financial and trade openness (Chinn and Ito, 2005; Huang and Temple, 2005). Despite the number of possible variables that have been outlined to cause financial development, there is no particular variable that has been found to primarily determine financial development.

The financial structure of a country determines the level its financial development as inadequate structures and policies will be incapable of supporting and maintaining financial reforms that take place, eventually resulting in ill-functioning financial markets and intermediaries. Africa's financial development has been low and in some cases stagnant for a while, and measures such as financial sector reforms that have been implemented have failed. Countries in regions such as the Middle East and Asia that initially had similar income levels as Africa have experienced extensive improvements in their financial development (Allen, Carletti, Cull, Qian and Senbet, 2010) but for Africa, the same cannot be said. This tends to make one wonder if Africa's level of financial development is inherently slow compared to that of its counterparts or whether inappropriate policies have been applied to Africa to enhance its financial development.

Policy makers and economic/ financial representatives of countries acknowledge the vital role the state plays in financial development and the importance of maintaining financial stability through the implementation of appropriate policies and regulation. For this to take place it is imperative to firstly establish which factors will promote financial development in Africa. This will then facilitate the design of policies that enable African countries to fully utilize these factors properly and receive the maximum benefit they can derive from them. Very little research has focused on what determines financial development in African countries and this has motivated this study in that area.

1.2 Purpose

In light of the above mentioned, the purpose of this thesis is to examine what determines financial development in African countries. Most literature on determinants of financial development has focused more on developed countries and less on developing countries. Financial development influences the economy and its direction it is important to investigate and understand the factors that determine it.

The study focuses on African countries over the period 1975-2005 with the model specification comprising the dependent variable financial development, which is measured as liquid liabilities (M3), and using Gross Domestic Profit (GDP) growth rate, trade openness and financial openness as the explanatory variables.

1.3 Outline

The rest of the paper is organized as follows. Section 2 focuses on financial development and what it entails and includes related literature. Section 3 introduces the data on indicators of financial development and the determinants of financial development, and provides a brief explanation of the empirical methodology. The results from the regression equation are presented in section 4, followed by a discussion of the empirical results in section 5. Section 6 summarizes the findings and makes suggestions for future research.

2. THEORETICAL FRAMEWORK

This section presents the theoretical part of financial development. The first section entails some definitions of financial development, which is followed by the importance of financial development. The subsequent sections talk about how financial development can be enhanced, African countries and their financial development and some previous studies on the determinants of financial development.

2.1 Financial development defined

There is not one common definition that fully explains what financial development is. Most definitions have focused on different measures and aspects. Some of these definitions are briefly examined below.

“Financial development is generally defined as increasing the efficiency of allocating financial resources and monitoring capital projects, through encouraging competition and increasing the importance of the financial system” (Huang, 2006). Put differently, the size, structure and efficiency of a financial system determines development. One way that such development has been known to take place is through financial liberalization, which is a process that gets rid of inefficient financial institutions and creates pressure for the financial infrastructures to be reformed, leading to a more efficient financial system. This increases the accessibility of finance as information asymmetry may be alleviated while adverse selection and moral hazard will be low.

Roubini and Bilodeau (2008) define financial developments as “the factors, policies, and institutions that lead to effective financial intermediation and markets, and deep and broad access to capital and financial services.” This entails institutional and business environments, financial intermediaries and markets that provide basic support for a financial system. This results in efficient risk diversification and capital allocation and “outputs” of the financial intermediation process, such as availability of and access to capital. These factors, policies and institutions depend on a facilitating environment, structure, size, regulations and enforcement which when absent results in financial development that cannot be well implemented, improved or sustained.

Levine (2003) explains that financial development takes place when financial instruments, markets, and intermediaries restructure the effects of information, enforcement, and transactions costs. Different types and combinations of information, enforcement, and transaction costs combined with different legal, regulatory, and tax systems have influenced financial contracts, markets, and intermediaries.

These definitions, though put differently by each author all emphasize the importance of efficient financial systems in financial development.

2.2 Importance of financial development

A financial sector that is well developed and functioning efficiently and effectively plays a major role in the economic development of a country. Financial development is important for a wide range of reasons and this section focuses on the two most important benefits of financial development, economic growth and poverty reduction.

Economic growth is one of the main benefits that have been linked to financial development. Economic growth to a large extent is dependent on investment and more often than not a large number of investments are channeled through the financial sector. A fairly large number of researchers have shown that financial development leads to economic growth through means such as savings, accumulation of capital, technology, and foreign capital. Schumpeter (1911), a pioneer in the finance-economic growth theory explains that financial intermediaries and the services they provide are essential drivers for innovation and growth. Recent evidence implies that financial systems that are functioning well can lead to economic growth in the long run. It also illustrates that financial development enables the poor to become equal with the rest of the members of the economy as it grows. King and Levine (1993a) in a study of the relationship between financial development and economic growth find that financial services prompt economic growth through means such as boosting the rate of capital accumulation and improving the efficiency with which that capital is used by economies. A well-implemented financial system through its functions for capital mobilization, productivity improvements, liquidity provisions, price discovery and improved governance promotes economic growth (Allen et. al, 2010). Levine (2003) using macroeconomic-based evidence shows that well developed financial systems provide support for firms when faced with external financing constraints and this is one means through which financial development influences economic growth.

Financial development contributes to poverty eradication and helps in bridging the inequality gap. The augmented interest in the link between financial development and poverty reduction can be attributed to developing countries designing and implementing economic growth strategies that result in poverty reduction. Market failure and financial market imperfections are the main cause of poverty as they usually prevent poor people from borrowing against future earnings to invest, thus dealing with the causes of financial market failure could present better prospects for poor people (Stiglitz, 1994). Microfinance, a key player in alleviating poverty through the provision of loans and capital to the poor results in income generation which reduces the level of poverty. It removes the hurdle that prevents the less fortunate from exploiting investment opportunities as they arise. Countries that have developed policies, regulatory framework and institutional infrastructures that can assist in amalgamating microfinance into the general policy and framework of their financial sector have benefited from this. Beck, Demirgüç-Kunt and Levine (2004) show that financial development both decreases income inequality as the income of poor people grows at a faster rate and puts forth a disproportionately great positive impact on the poor. This is due to the finance-economic growth nexus even when the growth rate of average per capita GDP is controlled. Child labour, often as a result of poverty is lower in countries where financial development is high as households depend less on child labour to handle the variations in income (Dehejia and Gatti, 2002). These findings imply that if policies are designed in a way that increases the access of households to credit, the extent of child labour will decrease. This can only be done when the country is financially developed. An efficient financial

sector enables households and individuals to access basic services such as health, education and water/sanitation, leading to a decrease in poverty levels.

The proven importance and benefits of financial development has contributed to the development in a number of developing countries and implementing policies that promote financial sector development and ensure that they function effectively.

2.3 Enhancing financial development

Financial development is not a new concept and all countries do have financial systems. The problem however is that some of these systems do not function properly and to the best of their ability. Levine (2003) explains that financial development engrosses improvements in (i) production of ex ante information about possible investments, (ii) monitoring of investments and implementation of corporate governance, (iii) trading, diversification, and management of risk, (iv) mobilization and pooling of savings, and (v) exchange of goods and services. These functions are the five basic functions of financial intermediaries and though all financial systems provide them, the difference in how well the system provides these functions is great. A brief description of these aspects and the role they play are outlined below.

(i) production of ex ante information about possible investments

Costs linked with firm evaluations, managers and market conditions are generally large resulting in the inability of individual savers to collect, process and produce information on potential investments. High information costs results in capital not flowing to its peak value. Financial intermediaries that economize the cost of acquiring information improve ex ante evaluation of investment prospects and can hasten economic growth, leading to more individuals affording to work with financial intermediaries and thereby benefit from their enhanced information.

(ii) monitoring of investments and implementation of corporate governance

The average problem of corporate governance is linked to how equity and debt holders sway managers to put the interest of capital providers first. Lack of financial arrangements that augment corporate governance could hold back savings mobilization and prevent capital from reaching gainful investments (Stiglitz and Weiss, 1983). A number of researchers are of the view that financial markets will build up methods that can effectively enforce corporate control. This happens when diffuse shareholders exercise corporate governance through direct voting on important issues, for example mergers, liquidation and essential changes in business strategy. Shareholders indirectly supervise management through the selection of a board of directors that monitors managers, draws up managerial incentive contracts and reviews decisions made by management.

(iii) trading, diversification, and management of risk,

With the existence of information and transaction costs, financial contracts, markets and intermediaries possibly will arise to relieve the trading, hedging and pooling of risk with repercussions for resource allocation and growth. Using cross-sectional diversification of risks could alleviate risks connected with individual projects, firms, regions and countries. Intertemporal risk sharing involving long-lasting intermediaries can aid intergenerational risk sharing through investing with a long-run outlook and propose comparatively low return in boom periods and high returns in sagging periods. Liquidity risks occurring as a result of uncertainties linked with converting assets to a medium of exchange can produce frictions that encourage the emergence of financial markets and institutions that enhance liquidity.

(iv) mobilization and pooling of savings

Mobilizing savings, an expensive procedure of agglomerating funds from different savers for investments, encompasses overcoming transaction costs linked to accumulating individual's savings and informational asymmetries associated with individual's trusting enough to hand over their savings. Financial systems that successfully pool savings of individuals deeply affect economic growth through capital accumulation, better resource allocation and increase technological innovation. The availability of credit increases and financial intermediaries aid investment in new technologies which increase productivity.

(v) exchange of goods and services

The financial sector aids transaction procedures by making obtainable the mechanisms to make and receive payments and reducing financial costs. So by providing financial intermediation in this way, the financial sector reduces transactions costs, and helps the trading of goods and services both in businesses and households. Financial arrangements that produce reduced transaction costs promote specialization, technology innovation and economic growth. Given this, encouraging exchange among markets leads to productivity gains which give feedback to financial market development.

If African countries are able to implement means that improve these five functions they will stand a greater chance of benefiting more from financial development.

2.4 African Countries and Financial Development

The countries included in this study are countries on the African continent. The reason for focusing on African countries is to establish what determines financial development on this continent and what policies need to be implemented for these countries to benefit from financial development. Many countries on this continent are plagued by low, sometimes stagnant economic growth which in turn leads to difficulty in poverty eradication. Africa's growth and poverty rate is one of the obstinate attributes of the global economy and Africa has for a long time been the poorest continent in the world.

A number of observers draw attention to Africa's growth during 1950-1973 and its consequent slowdown which is attributed to post-independent governments undermining the prospect of rapid growth. (Bloom and Sachs, 1998) Most African countries during the period 1950-1973 believed that economic development could be hastened through identification of potential sectors and the use of selective credit to promote such sectors (Gelbard and Leite, 1999). This resulted in interest rates being maintained at negative levels in real terms and increased bank regulations of providing credit to these sectors at subsidized rates, eventually leading to resource misallocation and credit rationing. These sectors did not perform to the expected level and coupled with growth rates that could not increase per capita income, the economies were damaged to some extent. Most banking systems during that period were nationalized and credit provision was believed to lead to economic development. Another concern that has also contributed to hindering Africa's financial and economic development is political instability. This is because building and maintaining investor protection is constantly an issue in politically unstable countries. Some African countries are emerging from conflict and the peril of conflict threatens the development of these countries and the continent given that security and development are interdependent.

Africa, unlike most industrialized countries and some emerging economies has not benefited from the positive impact of financial development on economic growth because of the low level of financial development. The majority of countries in Africa have underdeveloped financial systems with the exception of countries such as South Africa, Egypt, Botswana and Mauritius. Financial sector reforms in the form of interest rate liberalizations, removal of credit ceilings, developing and promoting money and stock markets have taken place in Africa but the continent still remains underdeveloped both financially and economically. Increasing the development of capital markets and hastening financial sector reforms will play a major role in incorporating Africa in the global financial economy and attracting more international capital. (Senbet and Otchere, 2005) There has been an increase in the flow of private capital to Africa in recent times given that developing countries grow at a much faster rate than their developed counterparts, thus stirring up the interest of private investors to this region. The recent global financial crises however have led to a decrease in the flow of private capital.

Financial systems are regularly dominated by stock markets in developed countries but not in emerging markets where stock markets are less developed, possibly inefficient and corporate governance is weak (Huang, 2006). Over fifteen countries in Africa currently have stock markets (Botswana, Cote d'Ivoire, Egypt, Ghana, Kenya, Malawi, Mauritius, Morocco, Mozambique, Namibia, Nigeria, South Africa, Swaziland, Tanzania, Tunisia, Uganda, Zambia, and Zimbabwe) and though most developed countries have well functioning stock markets which have played an important role in financial development, this is sadly not Africa's case as most of its stock markets are neither liquid nor functioning properly. As recent as 2009, Africa's stock markets were ranked among the worst performers with measures such as disclosure mechanisms, transparency and high corporate governance standards needed to improve the continent's stock markets (Minney, 2009).

Though African financial development indicators have improved during 1995-2005, it is at a much slower pace when compared to developing and emerging economies in Asia and Latin America (Allen et.al, 2010). Given that poverty is pervasive in Africa and the evidence that financial development leads to economic growth, it is imperative to understand what determines financial development in this region. The necessity and importance of having well developed and fully functioning financial

systems in Africa cannot be stressed enough. When the determinants of financial development in Africa are established, African countries can hopefully develop and implement systems to enable them benefit from the finance-economic growth nexus.

2.5 Previous Studies

Academic research that documents the determinants of financial development is minimal. A reason cited by many is that financial development in itself is a concept that is difficult to measure due to its multifaceted nature. Given this, factors that impel financial development in some countries may not yield the same results for other countries. This section highlights the main determinants of financial development that have been evidenced by researchers, most of which are relevant for this study.

Trade openness, one of the main aspects influencing globalization today is believed to contribute to financial development. Rajan and Zingales (2003) argue that unconstrained trade combined with capital flows will serve as an incentive for industrial and financial incumbents to push for financial development. This is because government's role in the financial sector declines due to unconstrained openness and industrial and financial incumbents will turn to finance from the open foreign markets to fund their projects. Incumbents will push for financial development because new opportunities emerging due to trade and financial openness could generate profits that compensate for the negative impact of increased competition. They conclude that trade openness benefits financial development positively. Baltagi, Demetriades and Law (2007), using panel data techniques and annual data, prove that trade openness and financial openness together with economic institutions determines the financial development dissimilarity across countries. These results show that countries that are least open can benefit greatly in terms of financial development if they open either their trade or capital accounts. These countries can have even greater benefits if they open both, though opening only one can still result in banking sector development. On the other hand, countries that are most open benefit the least from added openness. Results from a study conducted by Kim, Lin and Suen (2010) consisting of 88 countries over the period 1960–2005 suggest that trade openness does play a critical role in determining the level of financial development. They find positive long-run and negative short-run effects of trade openness on financial development indicating that trade openness eventually contributes to financial development. However, when the countries are grouped in terms of income and inflation levels, the findings are consistent only in low-income or high inflation economies.

Financial openness, another indicator positively linked to financial development is regarded as a key form of financial liberalization in a number of recent studies. Using cross-sectional studies to examine a wide range of countries over the period 1985-1995, Klein and Olivei (1999) determine whether opening capital accounts has an effect on financial development. With the ratio of liquid liabilities to GDP, the ratio of claims on nonfinancial private sector to GDP and the ratio of private bank to private plus central bank assets as the measures of financial development and capital account liberalization as the measure of financial openness, they establish a positive association between capital account liberalization and financial development. Chinn and Ito (2005), using panel data for 108 countries over the period 1980 to 2000, investigate whether financial openness results in financial development when the level of legal development is controlled. They find that financial openness can only have a positive impact on equity markets if legal systems and institutions are at a certain threshold level and are well developed; otherwise capital accounts can negatively affect equity market de-

velopment. They further show that developing general legal systems and institutions in a country, not precisely linked to financial transactions is vital to benefit from open financial markets. Their study also reveals that to increase the benefits of financial openness in emerging countries, law and order should be quite high. For a sample of 35 emerging countries during the period 1976 to 2003, Huang (2006) finds that financial openness is a key determinant of the difference in financial systems development across countries and discovers a strong link to suggest that financial openness and development exists in stock markets. He further explains that stock market liberalization is part of extensive macroeconomic reforms like inflation stabilization and trade liberalization.

Some authors have linked legal systems and institutions to financial development. La Porta et al (1997, 1999) provide evidence that the legal origins of a country's commercial/company law are imperative to form its financial structure and corporate government institutions through its laws on creditor rights, shareholder rights and the country's bank and stock market development. Having creditor rights encourage lending which on the other hand can support bank or market lending while strong shareholder rights encourages equity market development. They show that legal environments determine the size and degree of a country's capital markets, as a reliable legal environment prevents entrepreneurs from expropriating prospective financiers. This results in financiers being willing to provide funds in exchange for securities, which in turn leads to capital market expansion. The belief is that creditors and shareholders having legal protection affects financial decisions, resulting in a strong link between law and stock market development. After examining empirical evidence presented on legal institutions and financial development, Beck and Levine (2003) conclude "the law and finance theory holds that (i) historically determined differences in legal tradition influence national approaches to private property rights protection, the support of private contractual arrangements, and the enactment and enforcement of investor protection laws and (ii) these resultant legal institutions shape the willingness of savers to invest in firms, the effectiveness of corporate governance, and the degree of financial market development." Using an expanded set of legal indices, Pistor, Raiser and Gelfer (2000) provide evidence that legal institutions impact external finance more strongly than laws on the books even when legal change ensures shareholder and creditors rights are improved. They find that the nonexistence of effective legal systems puts an important constraint on financial market development.

The work of Montiel (2003) sheds light on how macroeconomic policies influence financial development. Macroeconomic policies affect the prospects for financial-sector development through income per capita and quality of institutional environment as fast growing income per capita leads to credit-worthy firms and improvement in the institutional environment to enable financial intermediation. This results in a reduction in premiums associated with external finance, thus leading to growth of financial intermediation and increasing the roles of markets such as that in securities. He further explains how certainty in the macroeconomic environment coupled with effective and efficient macroeconomic policies can accelerate the growth and development of financial markets. Kumhof and Tanner (2005) research the impact of government debt on financial intermediation and find that government debt has a positive impact on financial development. This is the case since government provides infrastructure and serves as a benchmark for private sector bond markets, which to a large extent determines the success of overall financial development. They discover that the government provides a public good to financial markets through its debts when macroeconomic volatility, espe-

cially inflation volatility is low enough for the yield curve to provide information about the real borrowing cost and when the government issues adequate amounts of debt.

Other factors that have been found to determine financial development are ethnic diversity, political power and political systems and geographic and natural endowments. Easterly and Levine (1997) show that underdeveloped financial markets are as a result of ethnic tensions and this is especially true for Africa due to the continent's high ethnic fragmentation. Haber (2002) shows that the political institutions play a major role in a country's financial development through the decisive role they play and also their need for public finance. In terms of geographical location and natural endowments, Huang (2006) explains that geography affects financial development through its demand side though it can influence financial development through its supply side as well by influencing the quality of institutions. For example, the production of certain agricultural products and exploitation of certain natural resources influences the demand for external finance.

3. MODEL SPECIFICATION AND DATA

The research in this paper is intended to establish the factors that determine financial development in Africa by using an empirical model that permits the testing of the variables of interest.

This section is divided into three parts. The initial part entails the cross sectional specification of the model and a description of the variables included in the regression equation. The second part deals with the panel data model specification and the final part explains the data and its sources.

3.1 Cross-Sectional Data Specification

The model to be used in this study can be written as:

$$\ln FD_i = \beta_0 + \beta_1 \ln TO_i + \beta_2 \ln FO_i + \beta_3 \ln Growth_i + \varepsilon_i \quad (3.1.1)$$

Where FD , represents financial development which is measured by liquid liability (M3) as a percentage of GDP, TO represents trade openness, FO represents financial openness and $growth$ represents the growth rate of GDP. β_0 is the constant, $\beta_1, \beta_2, \beta_3$ are coefficients, the error term is represented by ε and the subscript i varies with each African country in the sample.

Equation 3.1.1 assumes that financial development in Africa is potentially determined by trade openness along with financial openness and GDP growth rate. The possibility of trade openness, financial openness and GDP growth rate influencing financial development is tested by estimating equation 3.1.1 and performing hypothesis tests on various coefficient parameters. The variables are explained below.

Financial Development: This financial development indicator is measured by liquid liabilities (M3) as a percentage of GDP. This measure generally indicates the size of financial intermediaries relative to the size on the economy thus provides an overall indicator of financial sector development. An assumption used by many researchers when using liquid liabilities as a measure for financial development is the positive correlation between the financial intermediary sector size and the provision of quality financial services.

Trade Openness: a measure of total exports and imports (% of GDP). This measures how open countries are to world trade and the impact it has on the economy in terms of income generated. Countries in Africa are small economies and a number of them have trade contributing a large amount to their GDP. A number of researchers in recent times have shown that trade openness enhances financial development hence its inclusion in this study. The coefficient for the log of this variable in equation (3.1.1) is expected to be positive.

Financial Openness: The financial globalization indicator used to measure financial openness is adopted from Lane and Milesi-Feretti (2006). The measure is presented below.

$$IFIGDP = \frac{(FA+FL)}{GDP} \quad (3.1.2)$$

where $IFIGDP$ represents volume-based measure of international financial integration while FA and FL represent foreign asset and foreign liabilities respectively. GDP represents the gross domestic

product. This measure presents the summarized history of a country's financial openness and indicates the country's openness to international finance. Financial globalization presents the possibility of developing countries having more complete, stable and well-regulated financial systems and markets (Schmukler and Vesperoni, 2006). Given this, the coefficient for the log of this variable in equation (3.1.1) is expected to be positive.

Growth: This measure is the GDP growth rate and is included because the growth rate of GDP arguably is positively related to investments. An increase in investments leads to an increase the growth rate which could increase financial development. Given this, the coefficient of this variable is expected to be positive.

3.2 Panel Data Specification

The research in this paper also adopts a panel data approach by re-specifying the equation 3.1.1

$$\ln FD_{it} = \beta_0 + \beta_1 \ln TO_{it} + \beta_2 \ln FO_{it} + \beta_3 \ln GDP_{it} + \sum_{i=1}^{N-1} \beta_i D_i + \sum_{t=1}^{T-1} \beta_t D_t + U_{it} \quad (3.2.1)$$

$$i = 1, \dots, N ; t = 1, \dots, T$$

The subscript i refers to the African countries being studied and t refers to the time period 1970 to 2006. D_i and D_t represent country i and time t dummies respectively. One country and year are dropped as the base case.

A fixed effects model such as this ensures that the independent variable diverges from the group mean and overlooks variation across groups. For this paper the fixed effects model is used as opposed to the random effects model since the sample is not randomly chosen from a large population. The assumption is that the explanatory variables are independent of the error term.

3.3 Data

The analysis spans from the period 1975-2006 resulting in four time periods for the cross sectional data specification based on a ten year period (1975, 1985, 1995, 2005) and a thirty six year period for the panel data specification. The countries included in this study are all African countries although due to lack of data the number of countries varies for each year in the cross sectional regressions. The data for liquid liabilities, trade openness and GDP growth rate are obtained from the 2008 World Bank *World Development Indicators* while the data for financial openness is obtained from the *United Nations Data*.

4 EMPIRICAL RESULTS

This section presents the results that are obtained when the regression model outlined in the previous section is run to determine if there is any statistical relationship between the variables presented. This will show whether financial development in Africa is determined by trade openness, financial openness and GDP growth rate.

4.1 Descriptive Statistics

Table 4.1.1 below shows the descriptive statistics for the four periods being studied in the cross sectional analysis. As mentioned earlier, the data consists of selected African countries for the periods 1975, 1985, 1995 and 2005 and their level of liquid liabilities, trade openness, financial openness and GDP growth during these periods.

Table 4.1.1 Descriptive statistics (1975, 1985, 1995, 2005)

| Variables | N | Minimum | Maximum | Mean | Standard Deviation |
|-------------------|----|---------|---------|---------|--------------------|
| Year: 1975 | | | | | |
| Liquid | 32 | 0.1100 | 4.1200 | 2.9617 | 0.8211 |
| TO | 32 | 1.4500 | 4.8730 | 3.9613 | 0.7603 |
| FO | 32 | -2.1500 | -0.1900 | -1.0885 | 0.5897 |
| Growth | 32 | -0.7900 | 2.9500 | 1.5803 | 1.0616 |
| Year: 1985 | | | | | |
| Liquid | 36 | 0.9200 | 4.0000 | 3.0022 | 0.7570 |
| TO | 36 | 1.3000 | 5.0100 | 3.6427 | 1.0058 |
| FO | 36 | -2.1600 | -0.1100 | -1.1692 | 0.6386 |
| Growth | 36 | -0.1400 | 3.0800 | 1.7022 | 0.6156 |
| Year: 1995 | | | | | |
| Liquid | 42 | 0.8300 | 4.4700 | 2.8898 | 0.8919 |
| TO | 42 | 1.3800 | 5.1300 | 3.9435 | 0.8601 |
| FO | 42 | -2.1400 | 4.5300 | -0.7694 | 1.2834 |
| Growth | 42 | -1.8400 | 3.5600 | 1.4186 | 0.8775 |
| Year: 2005 | | | | | |
| Liquid | 48 | 0.7600 | 4.9800 | 2.8883 | 1.1263 |
| TO | 48 | 1.4500 | 8.2100 | 4.1669 | 1.0910 |
| FO | 48 | -2.1900 | 2.8000 | -0.3241 | 1.3824 |
| Growth | 48 | -0.6200 | 2.4800 | 1.3885 | 0.6655 |

The number of observations for each period of study varies and this is as a result of missing data. Since the study is based on African countries this is expected as data availability for African countries is usually a problem as they are normally not reported. This makes it extremely difficult to have consistency where the number of observations is concerned. The number of observations available increases in recent years, specifically in 1995 and 2005 and this is not surprising as there has been an improvement in data collection by most African countries. An observation made is that growth rate and financial openness for all the four periods has a negative minimum value and the mean for fi-

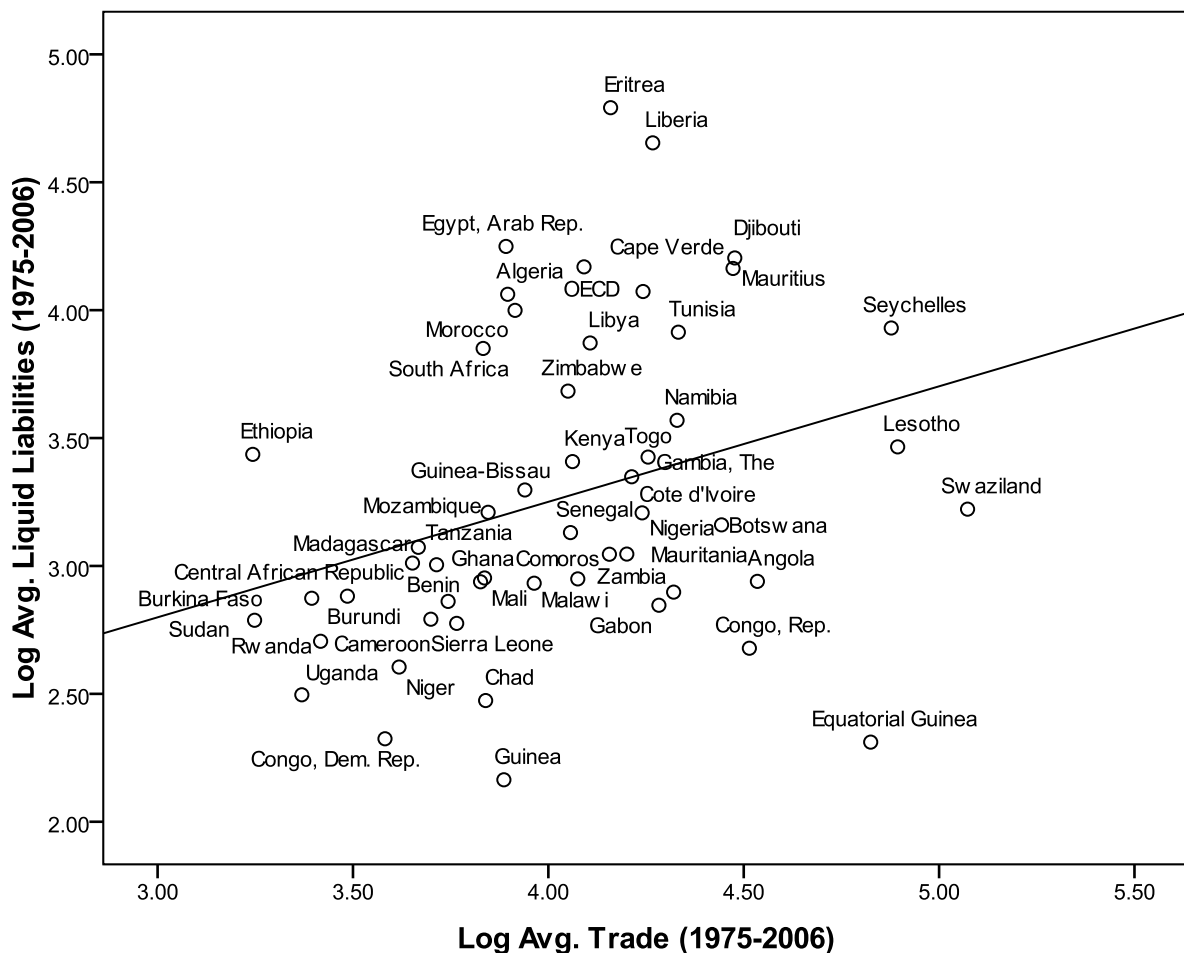
financial openness is all negative which is expected since its values were negative. Also, trade openness has the highest average value for all the periods.

4.2 Graphical Interpretation

In this section, a graphical analysis is used to establish if there is any relation between financial development, measured by liquid liabilities (M3), and trade openness and also to show the average levels of these two variables in each country.

Figure 4.2.1 below illustrates the relation between financial development and trade openness for all 53 African countries over the period 1975 to 2006. Logs were applied to both variables. The line in the graph is a regression line.

Figure 4.2.1 Relationship between liquid liabilities and trade openness



From the graph, it can be noticed that liquid liabilities, the measure of financial development is generally low for most African countries. This is in comparison to the Organization for Economic Cooperation and Development (OECD) countries included in the graph. Over the period in question,

Eritrea has the highest level of liquid liabilities followed by Liberia. Eritrea's banking sector is state owned and state owned banks collect deposits but usually do not lend efficiently (Allen et al, 2010) making the high liquid liability level somewhat expected. Also, the country has done little in terms of reforming their financial sector. In the case of Liberia, most of their commercial banks are risk averse and the sector has limited financial instruments (Central Bank of Liberia, 2009) and these are possible reasons why the sector has high liquidity levels.

The level of trade openness for most of the African countries when compared to the OECD countries is not too low and the graph shows that a number of African are more openness to trade than the OECD countries. Swaziland has the highest level of trade openness during the period being analysed. The country is known to have benefitted from increased exports of textiles and sugar products between 2000 and 2005 (Mkhonta and Dlamini, 2005) and this could to some extent explain their high level of trade openness. Sudan is the least open to trade based on the averages calculated. The country has been severely affected by the civil war and their history of international isolation (Ati, 2006) which restricted foreign trade. These are possible reasons why the country scored the lowest value in terms of trade openness. Foreign trade in the country is however on the increase in recent times.

It can be observed that there is to some extent a positive relation between liquid liabilities and trade openness. The extent to which this is true will be established by the regression results presented in the next section.

4.3 Cross-sectional data results

What determines financial development in African countries? To measure this, the regression equation (3.1.1) is estimated and is run for each of the four time periods. The results are compared over the periods in question to establish if there is a trend. The results for the estimation of the regression equation (3.1.1) are presented in table 4.3.1.

Table 4.3.1 Estimated Coefficients (1975, 1985, 1995, 2005)

| Model | Unstandardized Coefficients | | | |
|----------------------|-----------------------------|---------------------|---------------------|----------------------|
| | 1975 | 1985 | 1995 | 2005 |
| Constant | 0.303 (0.788) | 2.465 (0.001)*** | 4.020 (0.000)*** | 2.176 (0.001)*** |
| ln TO | 0.644 (0.025)** | 0.224 (0.102) | -0.233 (0.166) | 0.297 (0.022)** |
| ln FO | 0.102 (0.779) | 0.237 (0.285) | -0.106 (0.336) | -0.321 (0.003)*** |
| ln Growth | 0.123 (0.519) | 0.046 (0.835) | -0.206 (0.218) | -0.454 (0.034)** |
| R² | 0.248 | 0.138 | 0.086 | 0.357 |

a. Dependent Variable: Liquid liabilities

b. P values in parenthesis

c. ** and *** indicates significance at 5% and 1% respectively

From the results, it is observed that there is a positive relation between trade openness and financial development. The associated coefficient has a statistical significance of 5% in 1975 and 2005 and a close to 10% significance in 1985. The coefficient estimates for the log of trade openness found in 1975, 1985 and 2005 are all positive with their values being 0.644, 0.224 and 0.297 respectively. The interpretation is that for each year, a one percent increase in trade openness leads to 0.644%, 0.224% and 0.297% increase in financial development respectively. In 1995 however, a negative coefficient of -0.233 is found indicating that for that year a one percent increase in trade openness affects financial development by -0.233%.

The GDP growth rate and financial openness are not significant in explaining financial development even at the 10% level for any of the years this study is based on except for year 2005 when both independent variables are significant. In 1975 and 1985 the logged GDP growth rate yields a positive coefficient estimate of 0.123 and 0.046 respectively while that coefficient estimate for the other two years has a negative sign with the values being -0.206 (1995) and -0.454 (2005).

The coefficients for financial openness have a similar relation with financial development as GDP growth. Logged financial openness positively impacts financial development with a coefficient estimate of 0.102 (1975) and 0.237 (1985) and negatively in the last two year year with a coefficient estimate of -0.106 (1995) and -0.321 (2005). The indication is that towards the late 1990's and early 2000's GDP growth rate and financial openness has had a negative impact on financial development. Another observation is that 2005 is the only year when all the independent variables have statistical significance in explaining financial development.

The R² of 0.357 for the 2005 regression is the highest obtained so far in these cross-sectional results. It indicates that approximately 35.7% of the variation in the dependent variable can be explained by the model for that year. Despite being the highest it is still low and explains only a small percentage of the variation. The data has been tested for multicollinearity to determine if there is any strong cor-

relation among the independent variables. The results, presented in Appendix A suggest that this study does not have a serious problem of multicollinearity.

4.4 Panel Data Regression

The results of the panel data regression are presented in table 4.4.1 below after running the regression for equation 3.2.1.

Table 4.4.1 Estimated Coefficients

| Model | Unstandardized Coefficients | P Value |
|----------------|-----------------------------|-----------|
| Constant | 3.210 | (.000)*** |
| lnTO | 0.191 | (.000)*** |
| lnFO | -0.057 | (.000)*** |
| lnGrowth | 0.000 | (.981) |
| R ² | 0.818 | |
| DW | 0.944 | |

a. Dependent Variable: Liquid liabilities

b. P values in parenthesis

c. *** indicates significance at 1%

The results show that trade openness is important for Africa's financial development with a significance level of 1% and a positive coefficient estimate of 0.191, implying a positive relation between this variable and the dependent variable. According to this estimate, one percent increase in trade openness will result in a 0.191% increase in financial development. Financial openness is also significant at the 1% level but has a negative coefficient estimate of -0.057 implying a negative relationship with financial development while GDP growth rate on the other hand is not statistically significant in explaining financial development with a positive coefficient estimate of 0.000. It appears to have hardly any estimated impact on financial development.

The R² for this model is 0.818 indicating that 81.8% of the variations in financial development can be explained by this model. The Durbin Watson (DW) result is included to determine if the results are auto correlated and its value of 0.944 implies that positive autocorrelation is present. One way of dealing with the issue of autocorrelation is to include the lagged dependent variable, in this case the lag of liquid liabilities as an independent variable in the regression equation. This however presents an issue of bias, often referred to as Nickel (1981) bias since the error term is correlated with the lagged dependent variable. The size of the bias decreases as time increase. For the purpose of this study the autocorrelation detected is not corrected.

5 DISCUSSION

This section discusses the results from both types of regression analysis. The general implication is that trade openness is the main determinant of financial development in Africa while financial openness and the GDP growth rate are significantly negative in year 2005 in the cross sectional results. In the panel results financial openness is significantly negative while the GDP growth rate is not significant in explaining financial development in Africa.

Trade openness is positively associated with financial development for most of the years being analysed in the study. The results from the cross sectional regressions are as expected with the exception of 1995 when the coefficient estimate is negative. The coefficient estimate for logged trade openness decreases from 1975 to 1995 after which it increases in 2005. One possible reason why there is the decrease in the coefficient estimate is the lack of strong institutions that are needed to ensure that the benefits of increased trade openness are channeled in the right direction to ensure an increase in financial development. Good economic governance linked with institutions that are of high quality and transparent ensures that appropriate strategies are put in place to manage export revenues (Balioune-Lutz and Ndikumana, 2007) in such a way that it has an increased impact on financial development and economic growth. Another potential reason for the decreasing trend in the coefficient estimate is because as African countries participate in international trade there is an increase in their exposure to competition, technology as well as the changes in factor and product prices that go along with trade openness. The result of this is an increase in uncertainty as well as less investments which slows down financial development though eventually the costs and risks associated with trade liberalization results in trade openness having a higher impact on financial development (Kim, Lin and Suen, 2010). This reason, along with the fact that most African countries in recent years have begun to improve the quality of their institutions is likely why in 2005 the coefficient estimate increases after experiencing a decreasing trend in preceding years analysed in this study. The result from the panel data regression indicates that trade openness positively affects financial development, which is similar to most of the cross sectional results. The extent to which trade openness can have an even greater impact on financial development in African countries depends to some extent on the effective management of institutions as well as good governance and policies. Trade openness in itself is to a large extent a policy choice that is made by governments and policy makers, as the case of Sudan mentioned earlier has shown, and the choice to engage in international trade should be supplemented with the necessary tools to ensure its yields increasing positive results.

The cross sectional results for financial openness are not quite as expected though they do highlight some interesting things. Initially, there is a positive relationship between financial openness and financial development with an increase in the associated coefficient estimate between 1975 and 1985. As the years progress, the relationship becomes a negative one with the coefficients decreasing. The possible reason for this is the lack of the required minimum level of legal systems and institutions that is needed for financial openness to impact financial development positively. Researchers such as La Porta et al (1997, 1999) and Pistor, Raiser and Gelfer (2000) have provided evidence of the link between legal systems and the important role they play in a country's financial development. The positive relationship found for the first two year suggests that African countries probably did have the required level of legal systems and institutions at some point but as is often the case, it is likely that these systems and institutions have not been run effectively and efficiently. The consequence of

this is what is evidenced in the latter two years being studied when financial openness begins to affect financial development negatively. These results are to some extent validated when results from the panel data produces a significant but negative coefficient for logged financial openness. The basic functions that these legal institutions and systems need to perform to ensure that financial openness has a positive impact on financial development include ensuring creditors, shareholders and investors receive adequate legal protection as well as having enforcement of private property rights. When investors have faith in a country's legal system, their willingness to invest is quite high and for developing countries like Africa, this will play a great role in their economic growth. It is very likely that financial openness may have an even greater positive impact on Africa's financial development in years to come if legal systems and institutions are improved to include the appropriate structures and run efficiently.

The GDP growth rate results from the cross sectional study also presents some interesting findings. Over the four time periods being studied, the coefficient of the logged GDP growth rate follows a decreasing trend. Unlike the other two independent variables discussed above, the pattern here is consistent and does not change. In 1975 and 1985 there is a positive relationship between the GDP growth rate and financial development as seen from the coefficient estimate but this changes to a negative relationship in 1995 and 2005. One possibility for the decrease in the coefficient estimate from 1975 to 1985 is because of the lack of sound macroeconomic policies and favourable legal and economic environment (Huang, 2006) which is needed for the GDP growth rate to have an increasing positive impact on financial development. The exact reason why the coefficient estimates become negative in 1995 and 2005 in the cross sectional results is unknown and further research to determine the reason may be needed. The panel data result has an associated coefficient of 0.000 indicating that the GDP growth rate has no estimated impact on financial development.

6. CONCLUSION

This study has used cross sectional data specification and panel date techniques to establish what determines financial development in Africa. The variables used are liquid liabilities as the measure of financial development and trade openness, financial openness and GDP growth rate as the independent variables.

The results presented in this study imply that trade openness is a statistically important determinant of financial development in Africa and positively impacts it. These findings are derived from running regressions at four different time points (1975, 1985, 1995, 2005) with the aim of establishing if there is any time trend. With the exception of year 1995, the results for the other years provide evidence that trade openness does indeed contribute to Africa's financial development. Similar results are arrived at when panel data regressions are run also with the same aim of establishing what determines financial development in Africa. The associated coefficient estimate for financial openness and the GDP growth rate are insignificant for all years in the cross sectional study with the exception of 2005 when they are significant but negative. The panel data results indicate a significant negative coefficient for logged financial openness while the effect from the GDP growth rate is insignificant.

The finding that trade openness is important in financial development is consistent with a number of studies conducted on developing countries and their measures of financial development. These findings illustrate the importance of strong institutional development and the role they play in ensuring that trade openness positively impacts financial development. African countries that are relatively not open to international trade now have an incentive to open their borders in order to stimulate their financial development while those countries already open can improve their trade and institutional infrastructure which will lead to well functioning financial sectors.

The significantly negative results for financial openness in the 2005 cross-sectional results and in the panel results could be an indication that the level of legal development in a country is necessary for its financial development. For countries to benefit from financial openness they need legal systems that protects investors and shareholders, thus giving them the assurance of security and attracting more investments. African countries need to ensure that their macroeconomic and legal environments are sound and well functioning in order possibly result in the GDP growth rate having an increasing positive impact on financial development.

Further research can be conducted to establish why the GDP growth rate negatively impacts financial development since reasons why this happens have not been fully established in this paper.

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APPENDIX

Appendix A: Multicollinearity Test

Studies similar to this one usually have a problem of multicollinearity, which occurs when the independent variables in a regression model are strongly correlated. To check the extent which multicollinearity exists in this model the Variance Inflation Factor (VIF) and Tolerance level is constructed and presented in Table A. It shows if there is any multicollinearity and to what extent. The rule of thumb is that a VIF >5 indicates severe multicollinearity while a tolerance level less than 0.20 indicates a problem of multicollinearity.

The values in Appendix A shows that the cross sectional regression does not have a serious problem of multicollinearity as the VIF for all the years is quite below 5 and the tolerance level is far greater than 0.20 For panel data regression there is some extent of multicollinearity but this is not corrected because excluding some variables could lead to omitted variable bias.

Table A: Test for Multicollinearity

| Model (Cross Sectional) | Collinearity Statistics | |
|-------------------------|-------------------------|-------|
| | Tolerance | VIF |
| Year: 1975 | | |
| lnTO | .989 | 1.012 |
| lnFO | .803 | 1.245 |
| lnGrowth | .800 | 1.250 |
| Year: 1985 | | |
| lnTO | .947 | 1.056 |
| lnFO | .962 | 1.039 |
| lnGrowth | .981 | 1.020 |
| Year: 1995 | | |
| lnTO | .947 | 1.056 |
| lnFO | .971 | 1.030 |
| lnGrowth | .921 | 1.086 |
| Year: 2005 | | |
| lnTO | .994 | 1.006 |
| lnFO | .967 | 1.034 |
| lnGrowth | .972 | 1.029 |
| Model (Panel) | | |
| lnTO | .191 | 5.242 |
| lnFO | .475 | 2.105 |
| lnGDP | .832 | 1.202 |