Financial Structure and Economic Development in Africa

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Abstract

This paper explores the relationship between economic development and financial structure: that is, whether the degree of financial system structure matter for pace and character of economic development in 15 African countries for the period of 1995 to 2011. The paper utilizes the fixed effect instrument variable technique for econometric estimation. None of the financial structure indicators enters any of the economic development regressions significantly at the conventional 10% level, which is inconsistent with bank-based and market-based system view of financial system. Therefore, financial structure does not matter for economic development in these African countries. Rather, financial services are a significant determinant of economic development for our sample of 15 African countries. The overarching policy implication therefore is that relevant authorities should invest in accumulating both quantity and quality financial services in order to impact economic development in Africa.

Keywords: 15 African countries, financial structure, fixed effect instrument variable technique and economic development.

JEL classification: G15, O11.

1 Introduction and motivation

A well-developed financial market that is accompanied by financial intermediation is a vital aspect of a vibrant economy because it mobilizes savings, helps in allocating resource, and diversifying risks. There is a growing body of literature that affirms the key role of financial development to economic growth (Goldsmith, 1969; McKinnon, 1973; Shaw, 1973; King and Levine, 1993 and Rajan and Zingales, 1998; Beck et al, 2001). A key question that requires research attention is how to measure financial development effectively? This research

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utilize a measure of financial development we developed using principal component analysis. In the same vein, we consider the need to identify the key aspects of financial development that are important for economic development for institutionally different African economies. Empirical research on the comparative merits of bank-based and market based financial systems has centered on Germany and Japan as bank-based systems and the United States and United Kingdom as market based systems (Levine, 2002). To our best knowledge no such work has been carried out in relation to Africa's frontier and/ or emerging market economies.

Studies by Arowolo (1971), Jefferis (1995), Kenny and Moss (1998), Lavelle (2001), Marone (2003) and Hearn and Piesse, (2010) observes a limited role of stock exchanges in African countries due to small size of lack of liquidity in their markets. The study by Allen et al (2010) argues that financial development in Africa suffers from different underlying factors, in particular the case for banking sector development. These factors are different from those influencing growth in the banking sectors in other parts of the world. They provide evidence that there exists a financial gap in Africa, because the predicted levels of financial development exceed the actual levels experienced. The existence of a financial gap due to dominance of the banking sector in the past has resulted in new interests in the role of the stock market in African economies; such are studies by Kenny and Moss (1998), Cherif and Gazdar (2010) and Andrianaivo andYartey, (2010). . The key issue that arises from these is whether allocation of resources between banks and stock exchanges is of paramount importance to the generation of economic development for African economies with limited investable resources?

The study by Allen et al (2010) argues that financial development in Africa suffers from different underlying factors, in particular the case for banking sector development. These factors are different from those influencing growth in the banking sectors in other parts of the world. They provide evidence that there exists a financial gap in Africa, because the predicted levels of financial development exceed the actual levels experienced. The existence of a financial gap due to dominance of the banking sector in the past has resulted in new interests in the role of the stock market in African economies.

We noted that a stock exchange performs different functions to the role of resource mobilization and allocation that is predominant with banking industry. The stock exchange can mobilize resources, diversify and allow for risk of participating investors, facilitate mergers and acquisitions transactions, help in privatization of state enterprises and attracts portfolio investments. The multifaceted role of stock exchange therefore has a potential to facilitate for a unique role of stock exchanges in fostering economic development to the one of banking industry. Given this background, we investigate the role of financial structure in generating economic development for the case of 15 African countries from 1995 to 2011.

This paper therefore explores the relationship between economic development and financial structure: that is, whether the degree to which African countries financing sources mix is slanted (bank-based or market-based finance)

matters for economic development. None of the financial structure indicators enters any of the economic development regressions significantly at the conventional 10% level. The result is inconsistent with bank-based and market-based system view of financial system. Financial structure does not matter for economic development in the selected African countries. However, financial services quality is a significant determinant of economic development for these countries. This means that the level of financial development is important for economic development goals than the mode of the financing system. The overarching policy implication that emerges from our finding is that relevant authorities should invest in accumulating both quantity and quality financial services in order to impact economic development in Africa.

For the purpose of this study, our sample of African countries is comprised of 15 countries: Botswana, Cote d'lvoire, Egypt, Kenya, Ghana, Malawi, Mauritius, Morocco, Namibia, Nigeria, South Africa, Swaziland, Tunisia, Zambia and Zimbabwe. Our focus on these 15 countries is due to the fact that these are only countries that have stock exchanges before 1995 and this gives sufficient length of time to allow for empirical examination and testing. The next section looks at the financial structure of the countries in our sample.

1.1 Financial structures for sample countries: Qualitative Approach

This section deals with the qualitative approach. It relies on secondary data from World Bank and International Country Risk Guide. The various index of measuring insitutions are used to compare them to GDP trends and investment. The market variable in this case the domestic credit to the private sector (% of GDP), and market information from esay of doing business report. Under this section the study reports some sampled countries with their statistics. Most of these are among the 15 countries that will be used in a panel regression on financial structure, quality of insitutions, and economic development. Results are as discussed below.

GDP per capita and Regulatory Quality

From figure 1, it is clear that there is a positive relationship between GDP per capita and regulatory quality. This is evident from Zimbabwe, where the regulatory quality was declining and GDP was declining also. Kenya's regulatory quality was increasing so was also the GDP per capita. Cote d'Ivore shows this trend also. When the regulatory quality was deteriorating, GDP per capita was also declining. This figure points to the importance of institutions to development which in this case is measured by GDP per capita. This points that regulatory quality promotes economic activity hence increase in GDP per capita

Relationship between GDP per capita and Rule of Law

On the relationship between GDP per capita and rule of law it is clear from the figure below that countries with good rule of law quality are also experiencing an increase in development. It is also an index between 0 and I with 1 being good rule of law. Botswana and Mauritius shows that the higher the rule of law

the higher the GDP per capita. Countries with low GDP per capita also shows that they lack rule of law. South Africa Africa also has higher GDP per capita and higher rule of law index though it seems its in terms of rule of law it closer to Ghana, Zimbabwe and Côte d'Ivoire. Private business flourish where there is rule of law.

Control of corruption and Investment

There is also a positive relationship between investment and control of corruption. From the figure below Cote d'Ivore show that there is a sharp positive relationship between control of corruption and investment. This is depicted in 1998 and all the 2000s years. Ghana aslo shows this relationship vividly. Zimbabwe though the later years seems to lack data it also depicts this positive trend. Corruption pose a cost to business operation and hence retards development.

This trend is also shown for the high performing economies in our sample, Botswana, Mauritius and South Africa. Surge in control of corruption in South Africa from 2001 through 2004 is also reflected in decline in investment. The trends points to the importance of institutions in shaping economic development path.

Political troubles and GDP per capita

Political troubles disturb the workings of the market and private business activities. It scares away investors and hence contributes to decline in GDP. It is clear from figure 5 below that those countries that have/is experiencing political troubles also face a low GDP per capita. Zimbabwe is the case in point. It has highest political trouble index and has a low GDP per capita. Mauritius and Botswana has zero political troubles and also higher GDP per capita.

GDP per capita and domestic credit to private Sector.

Domestic credit to the private sector as percentage of GDP is our measure of banking systems depth. Countries which have high domestic credit given to the private sector has also higher GDP per capita. South Africa, Mauritius and Namibia demonstrates this clearly. Côte d'Ivoire, Ghana and Zambia shows that the lower the credit to private sector the lower is the GDP per capita. It shows that the market mechanism affect development path of any economy. Botswana seems not to be confirming this trend, meaning that domestic credit is not what is driving developmnet in that economy, which might points to the resource endowment of diamond as the driver of development in that economy.

This is also confirmed for investment for South Africa, Mauritius, Namibia. Zambia seems to have higher investment despite low domestic credit. This is stark indication that investment in Zambia is reource seeking which is for copper and is not influenced by what is happening in the domestic economy. Côte d'Ivoire, Ghana and Swaziland shows the positive relationship.

Most of these countries in our sample have relatively big stock markets as compared to the size of their banking system. Botswana, Cote d'lvoire, Egypt, Kenya, Malawi, Nigeria, South Africa and Zimbabwe have relatively bigger stock markets relative to their banking sector's size as shown in Table 1. The banking sectors of our sample countries have higher liquidity compared to their stock markets' activities. The exceptions are South Africa, Egypt, Morocco, Nigeria

and Zimbabwe which have relatively better liquidity, but these are still less than 50% of their banking system liquidity as shown in Table 1.

The results in Table 1 show that African countries have extreme levels of illiquidity in their stock markets compared to their banking sectors. Many countries in our sample have large stock market capitalization with little trading. Thus, Botswana, Cote d'lvoire, Egypt, Kenya, Nigeria, South Africa and Zimbabwe are market-based systems according to financial size measure. This measure has some anomalies. Countries like Zimbabwe, Botswana and Cote d'lvoire are regarded as having highly market-based financial systems but this is because they have small banks, not particularly that their stock markets are well developed. Egypt, Nigeria and South Africa have market-based financial system (as shown by Financial Size 2 in the Table 1) because they have high number of listed companies but relatively low level of trading on those listed companies as shown by the measures of financial structure of the liquidity dimension (Financial Activity1 and Financial Activity 2 in Table 1).

2 Related Literature

The purpose of this section is to highlight the observed key functions of stock markets in the world whilst making special reference to sample countries of our study. The shortage of resource mobilization, marginalization of African stock markets in the global financial capital market, coupled with shrinking official aid are central parts of the tremendous financial gap facing the region. The value of stock markets to Africa can be appreciated by understanding the multiple functions that stock markets perform.

2.1 Empirical evidence on key functions of the stock markets

At a deep level, stock markets help to improve corporate governance, because management can be disciplined through a threat of raid from an arbitrageur motivated by the potential value creation that would arise from taking over and changing management of a badly managed firm; thus, markets for corporate control are enhanced through stock markets (Bizjak et al, 1993). Fama and Miller (1972) provide some insights about the notion that managers are motivated to maximise current stock price because such a provision has a ripple effect of producing optimal investment incentives in perfect markets with homogeneous expectations.

Stock markets have a major role in allocation of resources (Michie, 1987). In the nineteenth century, the stock market played a significant role in financing capital needs of United Kingdom. Many models have emphasized that well-functioning financial intermediaries and markets ameliorate information and transaction costs, thereby fostering resource allocation and hence faster long-run growth (Bencivenga and Smith, 1991; Benvivenga et al, 1995; King and Levine, 1993a). Stock markets act as a vehicle for successive mergers and acquisition

transactions (e.g. Borg et al. 1989; Croci and Petmezas, 2010 and, Shleifer and Vinshy, 1997).

Stock markets have a multi-faceted role in propelling growth in participating firms. In theory, stock markets can be used as a vehicle for capital mobilization and help in providing key information on the firms' growth prospects through compulsory information disclosure requirement for all listed firms. The stock exchange provides companies with the facility to raise capital for expansion through selling shares to the investing public.

Stock markets also help to facilitate company growth through acquisition or merger agreement. Companies view acquisitions as an opportunity to expand product lines, increase distribution channels, hedge against volatility, increase their market share or acquire other necessary business assets. By giving a wide spectrum of people a chance to buy shares and therefore become part owners (shareholders) of profitable enterprises, the stock market helps to reduce income inequalities. Stock markets provide an extra source of income to small investors. They create investment opportunities to small investors as individuals participating in the stock exchange (essentially via mutual funds); buy the number of shares they can afford instead of participating in other businesses that require huge investment outlay.

Central governments and municipalities may raise capital for developmental projects by selling to the public debt securities known as bonds through the stock exchange. When government gets this alternative source of funds, it has less need to overtax people for financing these developmental projects, (e.g., huge infrastructure projects of sewage and water treatment work).

Stock markets help investors to pool and trade risk by accommodating investors with different wealth portfolios and trading firm shares of different industrial categories. Stock markets act as a platform where domestic and foreign investors interact which helps in increasing global integration of financial markets in Africa. The rate of return, which reflects risk premia of all sorts, can be reduced by diversifying wealth portfolios holdings through securities markets. Well-developed stock markets can enhance corporate control by mitigating the principal-agent problem through aligning the interests of managers and owners, with managers striving to maximise firm value (Diamond and Verrecchia, 1982; Jensen and Murphy, 1990).

The stock markets can also act as a barometer (gauge the performance of all sectors) of the economy. At stock exchanges, share prices can rise and fall depending largely on the market information and reaction of investors to news and to the general behaviour of market participants. Share prices tend to rise or remain stable when companies or the economy in general show signs of stability. Therefore, the movement of share prices can be an indicator of general trend in the economic activities.

2.2 Stock markets versus bank-based finance: theory and empirics

There are four theories recognized in literature about the financial aspect of economic development. First is that financial structure is an indeterminant feature of economic development (Luintel et al, 2008). The second theory states that either bank-based finance matter for economic development or market-based finance is superior in promoting economic development. Thirdly, provision of quality and quantity financial services matters for economic development (financial services view). This theory suggests that the structural distinction between bank-based or market-based finance is immaterial; rather what matters is the effectiveness of financial services themselves not the form of their delivery. Lastly, La Porta et al. (1997, 1998) and Levine, (1999) added the law and finance view to the literature of the financial aspect of economic development. They argue that the role of the legal system in creating growth-promoting financial sector, with legal rights and good enforcement standards, facilitate the role of both equity and debt markets.

Allen (1993) provides a synthesis of different roles that stock markets and banks play for the investing public. The banks act as delegated monitors of firms, which is in contrast with the market-based finance that allows for long-term relationship with and commitments from the investing public. Diamond (1984) supports the view that management of firms should be closely monitored for the interests of the shareholders.

Banks have an advantage in monitoring investors because one party with the requisite expertise can do the job of monitoring the use of borrowed funds by firms and other economic agents. Stock markets, however, provide finance that result in diverse ownership of resources that means security-holders may waste resources by costly repetition of monitoring. The other desirable characteristic of a bank loan is that it is usually issued on an individual basis and it can be renegotiated more easily than securities sold in stock markets to dispersed atomistic owners.

Diamond (1984) provides support for market-based finance that allows investors to share risk. In most cases if the listed firms cover all key sectors in the economy, the stock market can be a vehicle for risk sharing if the investors hold a diversified portfolio of stocks from firms belonging to different sectors. Jefferies (1995) highlights that Botswana Share Market has limited representatives of the manufacturing sector firms. He argues that the absence of agricultural firms and other primary sector firms inhibits the ability of that stock market to spread risk. Market-based finance also provides incentives to gather information about traded firms, which is then normally reflected in stock prices. This information in stock prices spurs effective managerial schemes within firms.

The work by Mayer and Vives (1992) suggests that in industries where management decisions are widely agreed, the role of bank-based finance is profound. On the other hand, in industries where there is disagreement on management optimal policies, stock markets have been found to be important. The financial function view suggests that both banks and stock markets provide complemen-

tary services that can propel economic growth. It is the overall level and quality of financial services that are provided to the economy that influences productive resource allocation and economic growth.

2.3 Theoretical framework for financial development factors and economic development

A framework relation between financial market deepening and economic development was formulated by Pagano (1993) from the endogenous growth literature. The fundamental underpinnings of the model lie in a "two factor" production, comprising capital and technology. The model can be extended by incorporating labour with an assumption that population growth is constant.

Pagano's (1993) model reveals that financial development can affect growth, as it can raise the proportion of savings channelled to investments as well as allocate more of capital to projects of higher level marginal product. The presence of financial intermediaries is, therefore, important in financing the industrial need to procure more capital and invest in more advanced technology type products that, in turn, foster higher growth outcomes. In order to capture the potential effects of financial development on economic growth, Pagano (1993) deployed the simplest endogenous growth model, where output is a linear function of aggregate capital stock. This production function can be viewed as a reduced form resulting from a competitive economy framework. Production in this case is an increasing function of aggregate capital stock with constant returns to scale technology. To derive the model, Pagano assume that population is stationary in an economy which produces a single goods. The goods can be either consumed or invested and if invested it will depreciate at the rate of δ per period.

In theory, stock markets spur economic growth by increasing the level and productivity of investment. They increase the savings rate and enhance the efficient allocation of savings. As a result, more savings go to the corporate sector, accelerating economic growth. The preponderance of available evidence favours a positive relationship between stock market development and economic growth. A key focus of this study is to explore the channel that links stock market development and economic growth, recognizing the role of institutions, macroeconomic policies and financial market structure. Therefore, our extension to Pagano's (1993) model incorporates results of the empirical literature, and from endogenous growth models. Endogenous growth models have shown that there can be self-sustaining growth without exogenous technological progress (e.g. Greenwood and Jovanovic, 1990; Bencivenga and Smith, 1991; Saint-Paul, 1992 and Pagano, 1993).

The extensive empirical literature on the linkages between stock market and economic development (McKinnon 1973; Shaw 1973; Goldsmith 1969; Levine and Zervos 1996; and Rajan and Zingales 1998 and others), suggest that a well functioning stock market with good institutions can augment technological innovation and capital accumulation. Wurgler (2000) provides further evidence that even if in some cases financial development does not lead to higher investments,

it helps in managing existing investments better and therefore, improves economic development. To explore mechanisms through which financial structure can affect economic development for emerging and frontier markets, a major thrust of this paper, evolved testable model that takes the form of:

$G_{it} = f(SD, C)$,where: G = GDP per capita growth (proxy change in economic development), SD = Financial structure which represents financial development, C = control variable, representing other factors that determine economic growth, such as: government spending, human capital development (education), inflation, private investment and savings.

3 Econometric specification and data

In terms of econometric modelling, since we have a T > N data set, the empirical strategy is based on panel time-series analysis. Specifically, we use the Pooled OLS and Fixed Effects methods. For the full empirical specification we incorporate lagged GDP per capita growth as an explanatory variable to control for potential endogeneity. We also recognize the importance of human capital as was done by Levine (2002).

More specifically, we essentially state the econometric specification that is estimated. In this paper, we consider cross-country growth specifications in order to investigate the competing views about financial structure. The main discussions from previous sections yield the following empirical model:

$$G = a'X + bS + \varepsilon \tag{1}$$

$$G = c'X + dF + \varepsilon \tag{2}$$

$$G = e'X + fS + hF + \varepsilon \tag{3}$$

The variable G is real GDP per capita growth; X is a set of standard growth determinants[1] such as economic openness, FDI, human capital, private investment, savings and inflation, government spending share of GDP. S measures financial structure. Larger values of S signify a more market-based system, while smaller values signify more bank-based system. F measures overall financial development (i.e., the combined level of development of banks and stock markets). Larger values of F signify a greater level of financial services in the economy. ε is the error term in the equation ι =1, 2 and 3 respectively, and the small capital letters a,b,c,d,e and f are coefficients.

This econometric specifications in equation (1)-(3) entails the following regarding the theories of growth-finance nexus explored in here.

Bank-based view: Bank-based systems are good for economic development and banks contribute to overall financial development. Thus, the bank-based

[1] Some referred by Bitterncourt 2011, Romer, Mankiw and Weil (1992)

view predicts that $b < 0$, $d < 0$,$f \quad < 0$ and $h \quad < 0$. This is the definition of bank-based view used in this study.

Market-based view: Market-based systems are particularly good for economic development and stock markets contribute to overall financial development. Thus, the market-based view predicts that $b > 0$, $d > 0$,$f \quad > 0$ and $h \quad > 0$.

Financial service view: Financial services (whether provided by banks or markets) positively influence economic development. Thus, the financial services view predicts that $d > 0$ and $h \quad > 0$.

Hybrid views: there are views that bank-based and market-based financial systems are important for economic development and overall financial development under certain conditions. These views argue that the bank-based system is good under certain conditions whilst the market-based system is good under alternative conditions.

Boyd and Smith (1998) suggest that banks are particularly important at low levels of economic development. As income rises, however, countries will benefit from becoming more market-based. This view suggests that the regression should be specified as reported/shown in equation (4): where Y is real GDP per capita, while other variables remain as defined in equation 3.

$$G = a'X + bS + kS * Y + \varepsilon \tag{4}$$

This hybrid view predicts that $b < 0$ and $k \quad > 0$.

Further, according to Rajan and Zingales (1998) bank-based systems have a comparative advantage in economies with weak institutions. They suggest that a well functioning stock market with good institutions can augment technological innovation and capital accumulation. According to this view, economies will benefit from being more market-based only when their legal systems strengthen. Levine (2002) tested this view and suggested the model below in equation (5) with the additional variable L representing an index of legal system development:

$$G = a'X + bS + kS * L + \varepsilon \tag{5}$$

This view predicts that $b < 0$ and $k \quad > 0$.

The model considered in this paper is the following:

$$G_{it} = \alpha_0 + \alpha_1 G_{it-1} + \alpha_2 S_{it} + \alpha_3 F_{it} + \alpha 4 X_{it} + \varepsilon_{it} \quad , \tag{6}$$

where G_{it} is real GDP per capita, G_{it-1} = lagged real GDP per capita, S_{it} measures financial structure, F_{it} measures overall financial development, (i.e., the level of development of banks and stock markets), X_{it} is the set of standard growth determinants such as economic openness, FDI, private investment and savings, inflation and government spending.

This paper tests the above specification in order to answer the question of whether financial structure matters for economic development for our sample of

African countries. The next section discusses the data and construction of the financial structure variables, an important innovation which we adopted from Levine (2002).

3.1 Data

To examine the relationship between financial development and economic development, we use an array of measures of relative size of banks and stock markets and those that capture effects of financial activities. The other major aspect of interest of this paper is the relationship between financial structure and economic development, and to test this we use the measures of financial structure-activity and financial structure-size which we also constructed following the approach by Levine (2002).

Financial structure-activity is a measure of activities of stock markets relative to the activities of the banking sector. To measure the stock market activities this paper uses the ratio of total value traded to GDP. This measure is frequently used to gauge the market's liquidity because it measures market trading relative to economic activity. To measure the activity of the banks, this study uses ratio of credit provided to private sector by deposit money banks to GDP. Furthermore, domestic credit provided by the banking sector includes all credit to various sectors on a gross basis, with the exception of credit to the central government. Thus, the measure of financial structure-activity equals the total value stock traded divided by domestic bank credit. The other measure of relative activity of stock markets to banks used in this study is the turnover ratio divided by bank credit ratio. Turnover ratio is defined as the total value of shares traded divided by the average market capitalization. Larger values of financial structure-activity imply a more market-based financial system. Recall that the average values of structure-activity are ranked and listed in Table 1.

Financial structure-size is a measure of the size of the stock market relative to that of the banking industry. To measure the size of domestic stock markets, this study uses market capitalization ratio, which is computed as the value of domestic equities listed on domestic equity exchanges divided by GDP. To measure size of banks, we use bank credit ratio. Thus, financial structure-size equals the market capitalization ratio divided by bank credit ratio. The other measure of stock market size we use in the study is the number of listed companies on the stock exchange. That is, we computed another measure as the ratio of listed companies to number of banks. Larger values of financial structure-size imply a more market-based financial system. The average values of structure-size are ranked and also listed in Table 1.

Financial structure-aggregate is a conglomerate measure of financial structure based on financial structure-activity and structure-size described above. Specifically, structure-aggregate is the first principal component of financial structure-activity and financial structure-size. Thus this variable can best explain the two financial structure indicators. We measure overall financial development with the view that quality and quantity of financial services is particularly important for enhancing growth and neither bank-based nor market-based

categorizations are particularly important in identifying financial aspects of economic development.

4 Empirical results on nexus of Financial Structure, Financial Development and Economic Development

We present a correlation table of all variables used in the tests before discussing the estimated regression models. The correlation analysis flags variables that may cause multicollinearity problem. Second, it shows the extent to which constructed measures of financial structure, financial development and financial services indexes are different and thus capture appropriately these relatively disparate factors. The correlation results are presented in Table 2 and 3. All correlated variables are significant at 10% or less.

4.1 Correlations of test variables

As Table 2 shows, all measures of financial structure are highly correlated with each other. The level of association between test variables ranges from 13% to as high as 97%. Measures of financial structure and level of financial development are positively correlated. The results show that the structure of financial system proxied by size of stock market relative to size of banking industry has a positive influence on the structure of financial system which is measured by liquidity of stock markets relative to liquidity of banks. In short, the size of banking industry and stock markets is positively associated with their liquidity.

The correlation of economic development and measures of economic environment (or growth determinants) is relatively high, as reported in Table 3. The measures of economic environment have positive association with growth in economic development with the exception of inflation that has a negative sign. This result means that higher initial human capital, initial income per capita, sizeable domestic savings and investments and good institutional quality encourage growth in income per capita. The level of association between economic development, government spending, human capital and institutional quality is relatively higher than other measures. The institutional quality measures are highly correlated, which means good regulations and low perception of corruption is highly associated with effective running of day-to-day government operations. The correlation between measures of institutional quality is very high and therefore, in our main regressions analysis we include these variables in separate models. The correlation between institutional quality and government spending is positive and high.

4.2 Results of Econometrics Analysis

This section presents results from Pooled OLS and Fixed effects regressions. Recall that our dependent variable is economic development growth (growth in GDP per capita) and our key variable of interest are financial structure measures and financial activities measures that proxy overall financial development. Control variables include measures of economic environment measures and institutional quality variables.

The results from OLS regressions, shown in Table 4, support the importance of economic openness, human capital, low corruption level, human capital development, domestic investment, regulatory quality, and quality of government operations, on economic development.

However, one of our key target variable, financial structure does not significantly impact economic development for our sample of countries. This means bank-based or market based financial system have a neutral effect on economic development. In the Appendix, Table 6 A5.1 shows a significant and positive role of financial services on economic development. The results show that overall financial development is robustly linked to positive economic development and there is no support for bank-based or market-based financial system. In fact, both financial structure for size (depth) dimension and liquidity (activities) do not matter for economic development in our sample of African countries. This result is in agreement with Levine's (2002) main results that neither bank-based nor market based view matter for economic development.

Even the aggregate measure of financial structure does not enter statistically significantly in the economic development models for our sample countries. Our measures of institutional environment have all positive and significant effect on economic development. This means that better control of corruption, good regulatory quality, and effective and efficient government operations impact positively on economic development (proxied by institutions).

More specifically, the result in Table 4 shows that a unit change in economic openness will result in economic development increasing by at least 1.46 units. Further, a one unit increase in school enrollment rate (human capital development) will result in at least one unit increase in economic development. A unit increase in physical capital accumulation (domestic investment) will result in at least 0.3 units increase in economic development for our sample of African countries. Therefore, in the presence of irrelevant financial system structure, sources of economic development in our sample of countries are accumulation of physical capital, savings, economic openness, and quality of institutions.

Using a different econometric technique, Fixed Effects regression, to estimate our empirical model, Table 5, once more indicate that financial structure is not significantly related to economic development. None of our financial structure indicators enters any economic development regressions significantly at the 10% level. Unlike the Pooled OLS results, fewer variables are significant determinants of economic development. Economic openness, domestic saving, FDI, human capital, regulatory quality and government effectiveness (proxied by institutions) are shown to influence economic development for our sample of

countries. Our control variable lagged GDP per capital has one-to-one relationship with GDP per capita.

Regarding our target variable of interest, it is shown that financial services as proxied by financial activity are positive and significant determinant of economic development. The result that shows importance of financial services for economic development is shown by Table 8 and Table 9. The impact of financial services on economic development for our sample of countries is still minimal (about 0.001 to 0.05 increase in economic development per a unit increase in financial services/size).

4.3 Robustness Checks

This section presents the analysis of independent relationship between financial structure and growth in economic development, conditional on level of income and institutional variables with inclusion of lagged GDP per capita. This part looks at the impact of initial conditions on growth in economic development after controlling for all other factors. Similar to the result from our main regression, the sources of economic development are human capital development, economic openness, FDI flows, low corruption, quality regulation and efficient government operations (proxied by institutions). Inflation as expected has a negative impact on economic development.

The measures of structure of the financial system conditional on the level of income in our sample of countries, does not have any significant impact on the processes of economic development as shown in both Table 6 and 7. In Table 6 the results show that economic openness and human capital development have a positive impact on economic development. The institutional quality measures of corruption perception, regulatory quality and level of government effectiveness (proxied by institutions) have positive and significant impact on economic development. Our control variable lagged GDP per capita has almost one-to-one relationship with GDP.

The result for this section yields the same conclusion: that the structure of financial system does not have any significant impact on economic development for the sample of African countries.

We also included government spending as a determinant of economic development in our modelling. The effect of government spending of GDP per capita growth was found in some cases to be negative though positive in some but largely its insignificant determinant of economic development.

5 Policy Implications and Conclusion

This aspect of the study explores the relationship between economic development and financial structure; that is, whether the degree to which the financial system structure (bank-based or market based finance) matters for economic development for our sample of African countries. None of the financial structure indicators enters any of the economic development regressions significantly

at 10% level. The result is inconsistent with bank-based and market-based system view of financial system. Financial structure does not matter for economic development in selected African countries. The policy implication that emerges from this result is that authorities should focus on advancing both market-based and bank-based financial system to improve their economic development.

Financial services quality is a significant determinant of economic development for our sample of African countries. This means the level of financial development is important for economic development goals than the mode of the financing system. The policy implication that emerges from our study is that relevant authorities should invest in accumulating both quantity and quality financial services in order to impact economic development in Africa.

Further notable sources of economic development in our study are quality institutions such as low corruption in the economy, good regulatory quality and effective government. In order to achieve economic development goals, there should be efforts to reduce corruption and improve the quality of day-to-day government business in our sample of African countries. Furthermore, the accumulation of both physical capital and attraction of FDI flows are important sources of economic development. These results in this paragraph are interesting because good institutional quality is also known to encourage increase capital accumulation and pull FDI flows. Finally, a policy that aims at opening the economy to global markets has the potential to increase economic development for our sample of African countries.

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Table 1: Financial Structure[1] for sample countries in Africa (1995-2011 averages)

Country	Financial Activity1	Rank	Financial Activity2	Rank	Financial Size1	Rank	Financial Size2	Rank
Botswana	0.02	8	0.12	10	1.69	1	1.67	5
Cote d'lvoire	0.02	8	0.11	11	0.83	6	1.70	4
Egypt	0.19	2	0.39	2	0.50	11	7.95	2
Ghana	0.02	8	0.11	11	0.58	9	1.0	8
Kenya	0.05	6	0.16	7	0.62	8	1.31	6
Malawi	0.03	7	0.17	6	0.80	7	0.53	13
Mauritius	0.03	7	0.07	12	0.48	12	0.59	12
Morocco	0.12	5	0.24	3	0.57	10	0.75	9
Namibia	0.01	9	0.07	12	0.19	14	0.23	15
Nigeria	0.13	4	0.71	1	1.10	4	13.23	1
South Africa	0.44	1	0.23	4	1.18	3	3.08	3
Swaziland	0.01	9	0.09	13	0.85	5	0.64	11
Tunisia	0.03	7	0.21	5	0.21	13	0.67	10
Zambia	0.02	8	0.13	8	0.48	12	0.50	14
Zimbabwe	0.15	3	0.21	5	1.34	2	1.24	7

[1] Thus Table group countries by the degree to which countries are market-based or bank-based using Financial Activity1, computed as value traded divided by bank credit, Financial Activity 2 which is the ratio of turnover ratio divided by bank credit. Financial Size1 computed as stock market capitalization divided by bank credit and Financial Size2 computed as the ratio of number of listed companies on the stock exchange divided by bank credit.

Table 2: Correlation of Economic Development and Financial Structure

Variables	GDP per capita	Lagged GDP per capita	Structure-size1	Structure-size2	Structure-activity1	Structure-activity2	Finance-size1	Finance-size2	Finance-activity1	Finance-activity2
GDP per capita	1.00									
Lagged GDP per capita	0.999	1.00								
Structure-size1	-0.23	-0.23	1.00							
Structure-size2	-0.22		0.58	1.00						
Structure-activity1	0.07		0.66	0.67	1.00					
Structure-activity2	-0.13		0.46	0.67	0.84	1.00				
Finance-size1	0.48		0.26	0.25	0.68	0.33	1.00			
Finance-size2	0.49		0.14	0.60	0.74	0.54	0.80	1.00		
Finance-activity1	0.56		0.32	0.35	0.79	0.53	0.93	0.87	1.00	
Finance-activity2	0.38		0.25	0.33	0.75	0.59	0.85	0.87	0.96	1.00

Table 3: Economic Development and Economic Environment

Variables	GDP per capita	Lagged GDP per capita	Human Capital	Savings	Investment	Inflation	Economic openness	FDI	Institutions	Government spending
GDP per capita	1.00									
Lagged GDP per capita	0.9987	1.00								
Human Capital	0.78		1.00							
Savings	0.53		0.26	1.00						
Investment	0.39		0.14	0.59	1.00					
Inflation	-0.03		-0.04	-0.30	-0.17	1.00				
Economic openness	0.61		0.24	0.61	0.19	-0.06	1.00			
FDI	0.82		0.61	0.47	0.40	0.48	0.48	1.00		
Institutions	0.76		0.47	0.49	0.43	0.04	0.55		1.00	
Government spending	0.82		0.73	0.50	0.44	0.47	0.47		0.87	1.00

Table 4: OLS Results of Financial Structure and Economic Development

Variables	GDP per capita	GDP per capita	GDP per capita	GDP per capita
Structure size	-0.00	-0.01		
	(0.43)	(1.12)		
Economic openness	1.46	2.31	2.51	2.93
	(3.44)***	(6.23)***	(5.58)***	(9.11)***
Savings	0.01		0.07	
	(2.13)**		(1.51)	
FDI	0.03	0.02	0.01	0.00
	(1.08)	(0.83)	(0.50)	(0.01)
Human capital	1.06	1.17	1.02	1.34
	(9.94)***	(9.22)***	(6.66)***	(13.10)***
Institutions	0.56			
	(7.63)**			
Domestic investment		0.04		0.05
		(2.17)**		(4.20)***
Lagged income	1.01	0.99	0.98	0.98
		(2.78)**		
	(3.06)**		(2.66)**	(2.76)**
Structure activity			0.10	-0.02
			(0.34)	(0.39)
Structure Aggregate			-0.013	
			(0.46)	
Government spending			-0.048	
			(1.20)	
Constant	4.21	3.42	5.38	2.19
	(9.18)***	(5.45)***	(8.11)***	(3.77)***
R^2	0.84	0.79	0.79	0.78
N	115	118	114	115

* $p<0.1$; * *$p<0.05$*** $p<0.01$

Table 5: FE Results Financial Services and Economic Development.

Variables	GDP per capita	GDP per capita	GDP per capita	GDP per capita
Structure size	0.00	-1.03		
	(0.16)	(0.24)		
Economic openness	0.183	1.09	0.06	0.31
	(1.09)	(0.93)	(0.82)	(1.83)
Savings	0.01	0.01	-1.12	
	(3.38)***	(2.67)**		
FDI	0.02	5.49	1.37	0.02
	(2.95)**	(2.10)* *	(1.93)*	(2.61)**
Human capital	0.76	6.64	4.44	0.77
	(9.27)***	(7.71)***	(7.19)***	(9.29)***
Institutions	0.014	0.08	0.01	
	(2.37)**	(1.91)*	(1.81)*	
Domestic investment		2.60		0.08
		(0.10)		(0.95)
Lagged income	0.99	0.97	0.97	0.96
	(193.01)***	(42.64)***	(46.73)***	(44.21)***
Structure activity			8.86	0.01
			(1.09)	(0.74)
Government spending	-0.001		7.91	
	(1.07)			
			(1.84)*	
Constant	4.45	-7.01	-0.37	4.33
	(12.24)***	(4.43)***	(4.61)***	(10.88)***
R^2	0.59	0.48	0.47	0.59
N	115	118	114	115

* *p*<0.1; * *p*<0.05*** *p*<0.01

Table 6: OLS Results of Financial Structure (conditional on income) and Economic Development

Variable	GDP per capita	GDP per capita	GDP per capita	GDP per capita
Structure size*income	-0.00	-0.00		
	(0.42)	(1.25)		
Economic openness	1.48	1.99	2.60	2.77
	(3.93)**	(5.59)**	(6.19)**	(8.83)**
Savings	-0.08		-0.16	
	(1.56)		(2.33)*	
Inflation	-0.19	-0.17	-0.17	-0.14
	(5.48)**	(4.13)**	(3.94)**	(3.24)**
FDI	0.05	0.05	0.03	0.02
	(2.07)*	(1.97)	(1.11)	(0.81)
Human capital	1.12	1.17	1.10	1.38
	(11.77)**	(9.87)**	(7.60)**	(13.95)**
Institutions	0.58			
	(8.83)**			
Structure activity*income			0.02	-0.00
			(0.67)	(0.40)
Investment		0.21		0.58
		(1.49)		(3.83)**
Structure aggregate*income			-0.002	
			(0.79)	
Lagged income	0.90	0.94	0.99	0.93
	(3.16)**	(3.67)**	(4.19)**	(3.09)**
Constant	4.48	3.79	5.53	2.35
	(10.93)**	(6.39)**	(8.90)**	(4.20)**
R^2	0.87	0.81	0.82	0.80
N	115	118	114	115

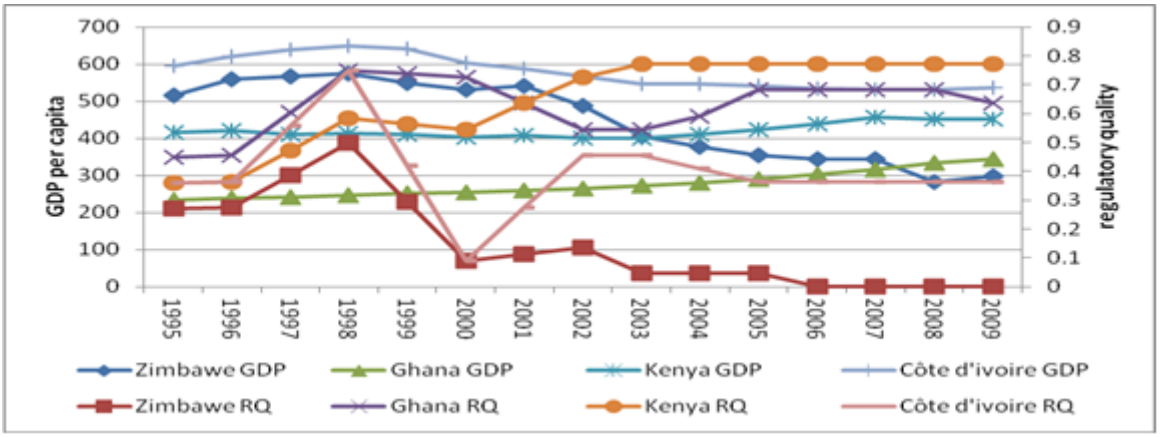
* *p*<0.1; * *p*<0.05*** *p*<0.01

Table 7: FE of Financial Structure (conditional on income) and Economic Development

Variables	GDP per capita	GDP per capita	GDP per capita	GDP per capita
Lagged income	0.96	0.98		
	(3.19)**	(4.29)**		
Economic openness	0.181	0.176	0.313	0.166
	(1.08)	(1.05)	(1.89)	(1.00)
Savings	0.01	0.02		0.02
	(0.58)	(0.68)		(0.92)
Inflation	-0.02	-0.02	-0.02	-0.02
	(1.11)	(1.10)	(1.13)	(1.21)
FDI	0.03	0.03	0.02	0.02
	(3.09)**	(3.14)**	(2.76)**	(3.07)**
Human capital	0.76	0.76	0.77	0.77
	(9.17)**	(9.32)**	(9.54)**	(9.55)**
Institutions	0.014		0.012	
	(2.68)**		(2.61)**	
Government spending		0.01	0.07	
		(1.12)	(0.87)	
Structure size			0.00	0.00
*institutions			(0.19)	(0.22)
Constant	4.51	4.48	4.39	4.40
	(12.27)**	(12.25)**	(10.94)**	(12.28)**
R^2	0.60	0.59	0.59	0.60
N	115	115	116	115

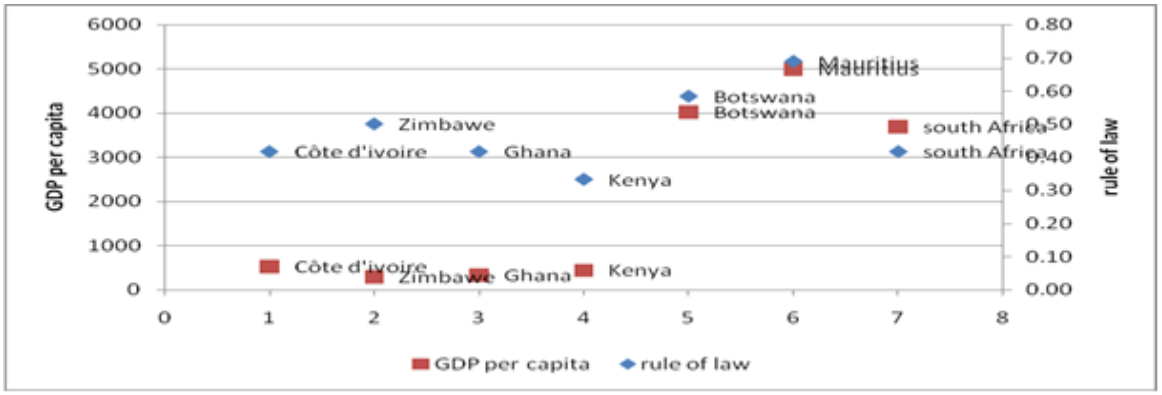
* $p<0.1$; * *$p<0.05$*** $p<0.01$

Figure 1: GDP per capita and regulatory quality



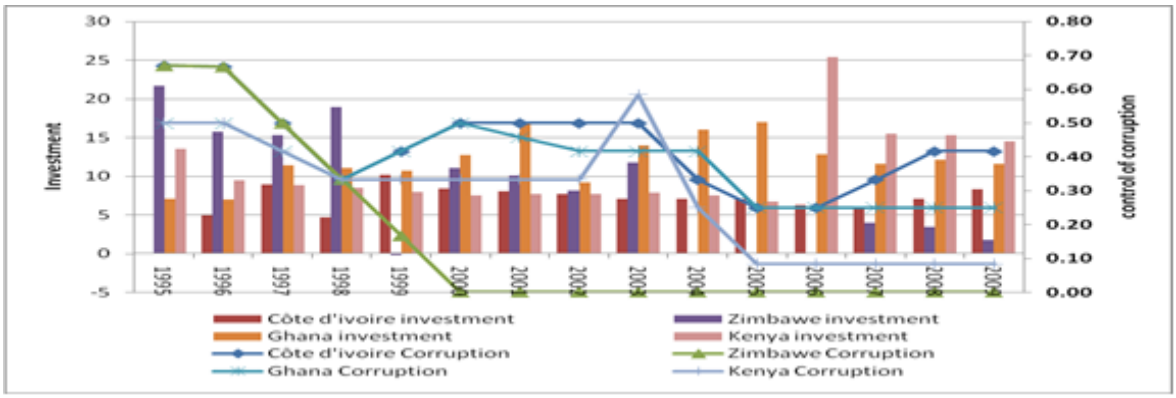
Source: authors' computation

Figure 2: Relationship between GDP per capita and Rule of Law for 2009



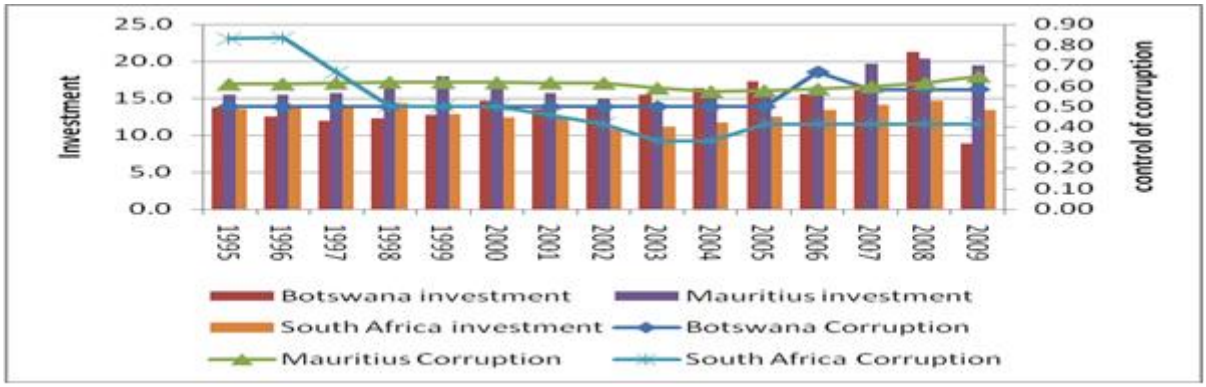
Source: authors' computation

Figure3: Control of corruption and Investment (Gross fixed capital formation-private)



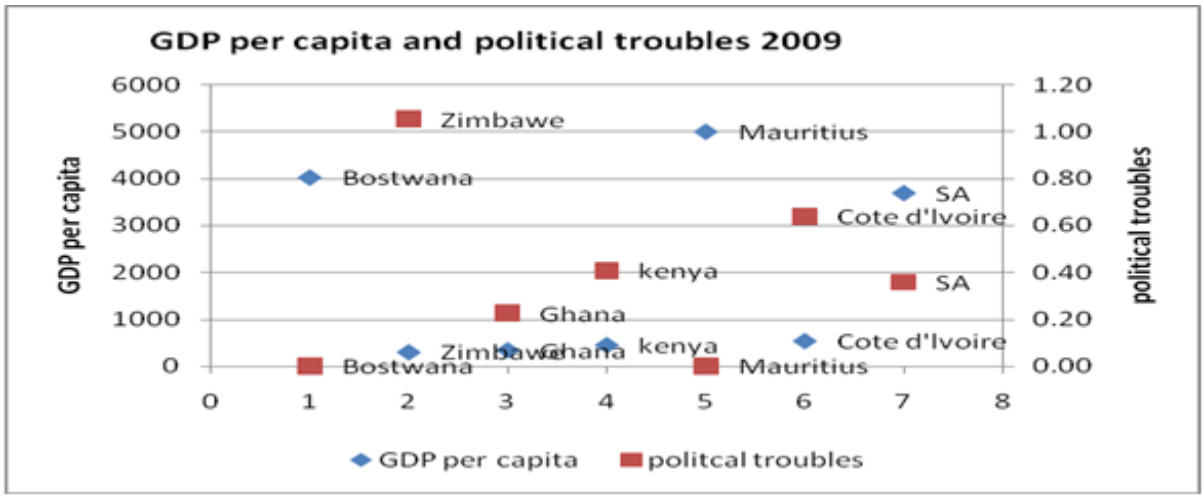
Source: authors' computation

Figure 4: Control of corruption and Investment (Gross fixed capital formation-private)



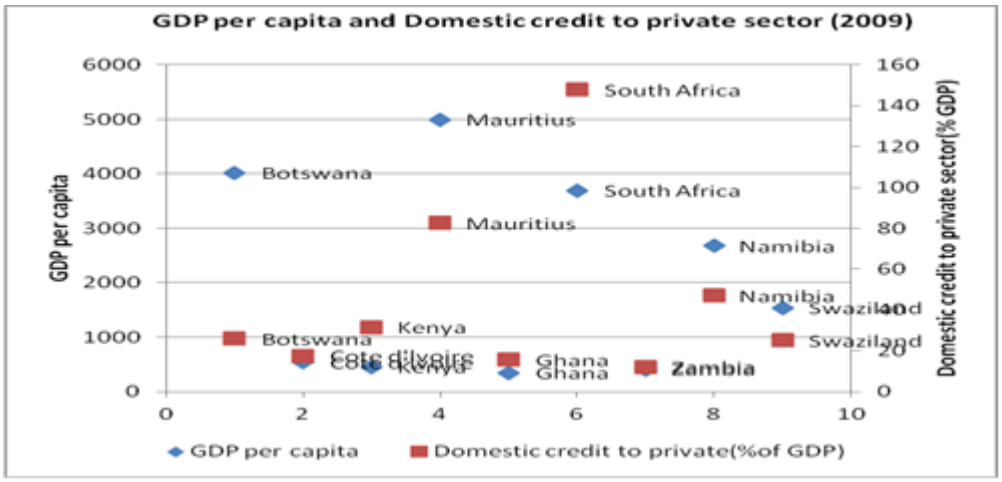
Source: authors' computation

Figure 5: Political troubles and GDP per capita



Source: authors' computation

Figure 6: GDP per capita and domestic credit to private Sector



Source: authors' computation

Appendix

OLS Results for Financial Services and Economic Development

Table A5.1: OLS Results for Financial Services and Economic Development.

Variables	GDP per capita	GDP per capita	GDP per capita	GDP per capita
Finance activity	0.01			
	(2.06)*			
Economic openness	2.220	3.49	3.08	3.01
	(4.45)**	(7.00)**	(6.11)**	(6.34)**
Savings	-0.10	-0.20	-0.14	-0.14
	(1.53)	(2.73)**	(1.90)	(2.06)*
Investment	0.50	0.69	0.65	0.70
	(2.82)**	(3.48)**	(3.55)**	(4.19)**
FDI	0.01	-0.01	-0.01	-0.01
	(0.30)	(0.32)	(0.39)	(0.24)
Human capital	1.04	1.16	1.22	1.17
	(9.68)**	(7.70)**	(8.07)**	(9.37)**
Institutions	0.044			
	(5.19)**			
Lagged income			0.99	0.93
			(3.80)**	(3.12)**
Finance size		0.03	-0.01	
		(1.04)	(0.22)	
				-0.00
				(0.09)
Constant	3.58	3.54	3.23	3.18
	(6.73)**	(4.40)**	(5.19)**	(5.27)**
R^2	0.85	0.81	0.81	0.82
N	114	115	115	114

* $p<0.1$; * *$p<0.05$*** $p<0.01$

FE Results for Financial services and Economic Development

Table A5.2: FE Results for Financial Services and Economic Development.

Variables	GDP per capita	GDP per capita	GDP per capita	GDP per capita
Finance activity	0.00			
	(3.10)**			
Economic openness	0.44	0.21	0.30	0.17
	(2.38)**	(1.26)	(1.85)*	(0.98)
Savings	0.00	0.01		0.02
	(0.18)	(0.54)		(0.84)
FDI	0.02	0.03	0.02	0.03
	(2.62)**	(3.23)***	(2.83)**	(3.05)**
Human capital	0.76	0.66	0.81	0.77
	(9.40)**	(7.43)**	(8.77)**	(9.19)**
Institutions	0.02			
	(2.40)**			
Investment			0.04	
			(0.63)	
Lagged income	0.98	0.97	0.91	0.96
	(4.12)**	(4.51)***	(4.41)***	(3.12)**
Finance size		0.05	-0.02	
		(2.62)**	(0.70)	
Structure Aggregate				0.00
				(0.34)
Constant	4.69	4.62	4.44	4.43
	(12.85)***	(12.94)***	(11.18)***	(12.04)***
R^2	0.63	0.62	0.60	0.60
N	114	115	118	114

* $p<0.1$; * *$p<0.05$*** $p<0.01$

Table A5.3: OLS Results on Financial Structure (conditional on income) and Economic Development.

Variables	GDP per capita	GDP per capita	GDP per capita	GDP per capita	GDP per capita
Structure size*government	-0.00	0.00			
	(0.49)	(0.14)			
Economic openness	1.48	1.98	2.68	2.04	2.33
	(3.93)***	(5.53)***	(6.49)***	(5.85)***	(5.54)***
Savings	-0.08		-0.16		-0.10
	(1.54)		(2.40)*		(1.63)
Inflation	-0.19	-0.17	-0.16	-0.16	-0.20
	(5.49)***	(4.04)***	(3.89)***	(4.00)* *	(4.82)***
FDI	0.05	0.05	0.03	0.04	0.04
	(2.07)*	(1.99)*	(0.97)	(1.76)	(1.45)
Human capital	1.12	1.14	1.15	1.11	1.20
	(11.78)***	(9.74)* *	(8.10)***	(9.68)***	(9.96)***
Corruption	0.58				
	(8.84)**				
Investment		0.23		0.37	
		(1.63)		(2.51)*	
Regulation		0.38		0.41	0.48
		(3.63)***		(4.04)***	(4.87)***
Structure size*regulation			-0.00		
			(0.10)		
Government effectiveness			0.42		
			(4.14)***		
Structure size *corruption				-0.00	0.00
				(0.33)	(0.16)
Constant	4.47	3.82	5.45	3.58	4.85
	(10.93)***	(6.39)***	(8.89)***	(6.10)***	(9.39)***
R^2	0.87	0.81	0.81	0.83	0.82
N	115	118	115	116	115

* p<0.1; * *p<0.05*** p<0.01

Table A5.4: FE Financial Structure (conditional on income) and Economic Development.

Variables	GDP per capita	GDP per capita	GDP per capita	GDP per capita
Structure size*income	0.00			
	(0.14)			
Economic openness	0.182	460.4	410.5	0.30
	(1.08)	(0.89)	(0.75)	(1.78)
Savings	0.01		-18.44	
	(0.58)		(0.24)	
Inflation	-0.02	-64.26	-49.68	-0.02
	(1.12)	(1.26)	(0.95)	(1.16)
FDI	0.03	60.70	59.16	0.02
	(3.09)**	(2.28)**	(2.25)**	(2.78)**
Human capital	0.75	1,932.80	1,932.54	0.76
	(9.17)***	(7.61)***	(7.29)***	(9.16)***
Corruption	-0.02			
	(0.38)			
Structure activity*income		-0.15		0.00
		(0.29)		(0.73)
Investment		17.54		0.08
		(0.08)		(0.94)
Regulation		461.03		
		(2.64)**		
Structure size*regulation			1.78	
			(0.36)	
Government effectiveness			409.68	
			(1.72)	
Constant	4.52	-5,383.95	-5,352.76	4.40
	(12.28)***	(4.24)***	(4.52)***	(10.95)***
R^2	0.60	0.49	0.47	0.59
N	115	118	115	115

* p<0.1; * *p<0.05*** p<0.01

Definition of explanatory variables

To assess the independent relationship between economic development, and financial structure and financial development, we control for other potential economic development determinants. We use logarithm of initial real per capita GDP, which for the present study is the value in 1995, and the logarithm of the number of years of schooling in the working age population. Initial income captures the convergence effect predicted by many growth models and schooling is included to capture the potential role of human capital in growth processes. A higher literacy rate improves the efficiency of an economy by providing a more productive labour force.

The augmented Pagano model comprises of four key determinants of economic development; human capital development, inflation, private domestic savings and investments. These variables and key determinants of financial structure referred in Chapter 2 are discussed below.

(i) Inflation

A stable macroeconomic environment characterized by low and predictable inflation encourages private sector activities and has higher potential to impact growth positively. Higher and volatile inflationary environments discourage productive activities of the private sector and hence hurt economic development. We expect a negative relationship between inflation and growth in economic development.

(ii) Domestic savings

Savings is calculated as a ratio of gross saving to GDP. We expect it to have a positive effect on economic development. The mobilized resources will help to finance the private sector's productive projects and hence propel economic development.

(iii) Domestic investment and FDI

Foreign Direct Investment (FDI) can play an important role in developing countries. FDI helps by bringing new capital for investment, contributing to the balance of payment by raising potential exports and integrating an economy into global economic networks. Capital formation has a potential to influence positively the growth processes. Investment rate is considered as an important determinant of economic development. We use the ratio of gross fixed capital formation to GDP as a measure of investment.

(iv) Economic openness

There is a strong and positive link between openness and economic development. Economic openness enables the exploitation of comparative advantage, technology transfer and diffusion of knowledge, increasing scale economies and exposure to competition.

(v) Government spending

General government final consumption expenditure (formerly general government consumption) includes all government current expenditures for purchases of goods and services (including compensation of employees). It also includes most expenditures on national defence and security, but excludes government military expenditures that are part of government capital formation.

(vi) Institutional factors

The role of institutions in growth process has been a source of considerable research. La Porta et al (1997, 1998) and Levine (1999) maintain that the role of legal system in creating growth-promoting financial sector, with legal rights and good enforcement standards facilitate the role of both equity markets and banks. Better maintenance of rule of law, higher quality of government business and low perception of corruption encourage economic development by stimulating investment. In this research, we incorporate corruption perception, regulatory quality and government effectiveness to proxy for quality of legal system and governance. We expect a positive relationship between institutional quality measures and economic development.