MEASURING THE BARRIERS TO INVESTMENT IN EMERGING ECONOMIES: THE CASE OF SOME AFRICAN COUNTRIES

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DECLARATION

By submitting this dissertation electronically, I declare that the entirety of the work contained therein is my own, original work, that I am the authorship owner thereof (unless to the extent explicitly otherwise stated) and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

Signature……  …… Date: 18 November 2010

ABSTRACT

This dissertation is made up of stand-alone essays on the determinants of the investment climate in emerging market economies. Chapter One presents the purpose of this study, the significance of the research to policy makers, researchers and investors and the limitations of the research. Chapter Two investigates empirically whether business regulations, as measured by the 'Doing Business' indicators, have an impact on investment in 29 emerging market economies in Africa, Asia, Latin America and emerging Europe. The results show that secure property rights and the level of business entry regulation influence the investment climate in these economies. In addition, efficiency of the judicial system, investor protection and the flexibility of employment regulation were found to be insignificant determinants of investment.

Chapter Three explores the effect of business regulation on stock market liquidity, using data from a selection of 15 stock markets in Africa. The results from the panel data analysis show that the degree of business regulation does not influence stock liquidity. However, the results confirm that greater protection of minority share-holders' rights, as well as lender and better collateral and bankruptcy laws enhance stock market liquidity. There was anecdotal evidence to suggest that improved judicial efficiency enhances stock market liquidity. The legal origin was found to be significant in explaining the differences in the legal systems of these countries. Countries that have adopted French legal traditions were found to have less active stock markets and less investor and property rights protection compared to countries that have adopted English legal traditions.

Chapter Four investigates the effect of the level of business regulation, infrastructure and political environment on investment in 29 African countries. The results provide evidence to show that lower levels of business regulation, less corruption and a stable political environment are important in enhancing investment.

The final essay examines the effect of business regulation and geography on investment in a sample of 37 countries in Africa. The results show that more secure property rights and fewer import and export regulations have a significantly positive effect on private investment. In addition, being landlocked and distant from the sea has a negative effect on investment. Furthermore, the findings revealed that property rights protection in landlocked economies is not significantly different from that in coastal economies.

In all the studies, the legal origin was found to be significant in explaining cross-country differences in the legal systems of the selected countries. These findings have important implications for policy makers, multi-lateral organisations and investors.

OPSOMMING

Hierdie proefskrif bestaan uit alleenstaande studies oor die beslissende faktore van die beleggingsklimaat in opkomende markekonomieë. In hoofstuk een word die doel van die studie; die belang van die navorsing vir beleidmakers, navorsers en beleggers; en die beperkings van die navorsing aangebied. Hoofstuk twee bevat 'n empiriese ondersoek om te bepaal of sakeregulasies, soos deur die "Doing Business"-aanwysers gemeet, 'n uitwerking op belegging in 29 ontluikende markekonomieë in Afrika, Asië, Latyns-Amerika en ontluikende Europa het. Die resultate toon dat veilige eiendomsregte en die vlak van regulasie vir toetrede tot besigheid die beleggingsklimaat in hierdie ekonomieë beïnvloed. Hierbenewens is die doeltreffendheid van die regstelsel, die beskerming van beleggers en die buigsaamheid van indiensnemingsregulasies gevind onbelangrike beslissende faktore vir belegging te wees.

In hoofstuk drie word verslag gelewer oor die uitwerking van sakeregulasies op die likiditeit van effektemarkte op grond van data van 'n keur van 15 effektemarkte in Afrika. Die resultate van die paneeldata-analise toon dat die graad van sakeregulasie nie die likiditeit van effekte beïnvloed nie. Die resultate het egter bevestig dat meer beskerming van die regte van minderheidsaandeelhouers asook verbeterde wetgewing ten opsigte van kredietverskaffing, aanvullende sekuriteit en insolvensie die likiditeit van effektemarkte verhoog. Anekdotiese bewyse is gevind wat aan die hand doen dat verbeterde regsdoeltreffendheid ook die likiditeit van effektemarkte verhoog. Die regsoorsprong is as beduidend gevind ter verklaring van die verskille in die regstelsels van hierdie lande. Lande wat Franse regstradisies aanvaar het, is gevind minder aktiewe effektemarkte en minder beskerming van beleggers en eiendomsregte te hê, vergeleke met lande wat Engelse regstradisies aanvaar het.

In hoofstuk vier word die uitwerking van die vlak van sakeregulasie, infrastruktuur en die politieke omgewing op belegging in 29 Afrika-lande bespreek. Die resultate toon bewyse dat laer vlakke van sakeregulasie, minder korrupsie en 'n stabiele politieke omgewing belangrike faktore is om belegging te bevorder.

Die laaste studie ondersoek die uitwerking van sakeregulasies en geografie op belegging in 'n monster van 37 Afrika-lande. Die resultate toon dat veiliger eiendomsregte en minder invoer- en uitvoerregulasies 'n beduidende positiewe uitwerking op privaat belegging het. Hierbenewens is daar 'n negatiewe uitwerking op belegging in lande wat deur land omring is en ver van die see af is. Die bevindings het ook aan die lig gebring dat die beskerming van eiendomsregte in ekonomieë wat deur land omring is, nie aanmerklik verskil van dié in kusekonomieë nie.

In al die studies is regsoorsprong as beduidend gevind in die verklaring van verskille in die regstelsels van die gekose lande. Hierdie bevindings het belangrike implikasies vir beleidmakers, multilaterale organisasies en beleggers.

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Stellenbosch University

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DEDICATION

To Allan Agaba whose unwavering support was my source of strength during this journey.

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CHAPTER 1: INTRODUCTION

1.1 Background and statement of the problem

It is suggested that a country must have a favourable investment climate, in order to enhance private sector led growth. Indeed, one of the World Bank's overall development strategies is improving the investment climate of countries. It is argued that improving the investment climate for the private sector is basic to the development of enterprises, especially small and medium enterprises, and the growth of employment opportunities, which is crucial for sustained economic growth and poverty reduction. The investment climate is also referred to as the business environment in which firms operate. There are number of definitions of the investment climate in the literature. The investment climate is defined as 'the set of location specific factors that shape the opportunities and incentives for firms to invest productively, create jobs and expand' (World Development Report, 2004:19). According to Hallward-Driemeier, Wallsten and Xu, (2006), a productive investment climate is considered to be an environment where governance and institutions support entrepreneurship and well-functioning markets in order to help generate growth and development. Stern (2002) defines the investment climate as the policy, institutional and behavioural environment, both present and expected, that influences the returns and risks associated with investment. According to Dollar,Hallward-Driemeir and Mengistae, (2005:1), a favourable investment climate is 'the institutional, policy and regulatory environment in which firms operate – factors that influence the link from sowing to reaping. Underlying all these definitions is a broad consensus that the investment climate encompasses the macroeconomic aspects of an economy and financial, political and institutional factors as well as the physical infrastructure and human capital necessary for productive investment. Therefore, a good investment climate should offer all types of firms an investment environment that reduces the costs, risks and barriers to competition, thereby enhancing their profitability and growth. It is this understanding of the investment climate that forms the basis of this research study.

The argument for advocating improvements in the investment climate is that firms are the primary source of wealth creation. Firms offer employment opportunities, supply most goods and services and

provide the bulk of the tax base needed to fund public services. A favourable business environment must therefore respond to firms' needs by directly reducing unjustified costs and risks arising from unfavourable government policies and burdensome regulations by, for instance, restraining rent seeking which increases the cost of doing business.

Another vital aspect of a good investment climate is the establishment of credibility and certainty about the rules of social and economic interaction. This entails among other factors better protection of property and investors' rights, efficient contract enforcement and flexible employment regulations. There are numerous empirical studies that provide evidence of the role these factors have on investment and growth of economies. For instance, according to Acemoglu, Johnson & Robinson (2001), reduced security of property rights is correlated with less aggregate investment and economic growth. Furthermore, La Porta, Lopez-de-Silanes, Shleifer & Vishny (1998) show that greater protection of minority shareholders from expropriation by the controlling shareholders is associated with larger stock markets. In addition, Limão & Venables (2001) show that poor infrastructure accounts for 40 per cent of predicted trade costs for coastal economies and up to 60 per cent for landlocked economies.

However, if it is well established and conceptually understood, why are there significant differences in the investment climate within and across countries? Measuring the performance of institutions has historically been a challenge due to their nature and complexity. The studies by, for instance Knack & Keefer (1995), Rodrik (2000), and Acemoglu, Johnson & Robinson (2001) contributed significantly to understanding institutions and their effect on economic performance. Their research also underscored the importance of secure property rights, good governance and simple rules and regulations on the investment decisions of different types of firms. However, these and other studies used proxies for institutional measures that did not offer policy makers much guidance on what interventions to pursue. More recently, data has become available on measurable aspects of institutional performance like business regulation.

However, there are a limited number of studies that have investigated investment climate, especially in the context in which it is defined above. The few studies available have focused on Asia, Latin America and Europe. For instance, Hallward- Driemeier, Wallsten and Xu (2006) and Dollar, Hallward-Driemeier and Mengistae (2005) investigate the effect of the investment climate on firm performance using a selection of Asian economies. Other studies have focused on the investment climate and its influence on foreign direct investment (FDI) for instance in Asia (Shoko, 2007; Khalid and Veganzones-Varoudakis, 2007), Europe (Witkowska, 2007; Hajkova, Nicoletti, Vartia and Yoo, 2006) and Latin America (Quazi, 2007). More recently, Loayza and Servén (2010) investigate the effect of business regulation on economic performance using microeconomic and macroeconomic data. There are no empirical studies that have focused mainly on African economies.

1.2 Objectives of the study

The broad empirical objective was to investigate the effect of investment climate determinants on investment by focusing on a selection of countries in Asia, Africa, Latin America and Europe. The specific objectives were to:

a) Investigate empirically the effect of the business regulatory environment on investment using a selection of countries in Africa, Asia, Latin America and Europe;

b) Examine the effect of business regulation on the liquidity of stock markets in Africa;

c) Ascertain the relative importance of business regulation, the political environment and infrastructure on investment in African countries; and

d) Establish the effect of business regulation and geography on investment in a selection of African countries.

1.3 Approach

This dissertation presents a number of analytical perspectives on the effect of investment climate determinants on investment using data on a selection of emerging market and African economies. The analysis is disaggregated into four stand-alone essays each investing the effect of business regulation and a number of macroeconomic variables on investment from different but complementary perspectives. This approach was used because of the following reasons:

a) Firstly, the dataset used in this research was only available for five years. Data on business regulations from the "Doing Business database' which was the main source of business regulation data for this study is only available from 2003. Therefore, for the analysis, data on all macroeconomic variables and business regulations were from 2003 to 2007. Secondly, macroeconomic indicators on African economies are characterised by missing data points. To overcome this challenge, only those variables and economies with the relevant data points were selected.

b) Because of the two limitations mentioned in (a) above, in order to generate robust and reliable estimates, disaggregating the data into smaller clusters -four empirical studies- for analysis was the most appropriate way to mitigate this challenge. Panel data analysis techniques provide reliable estimates with small but complete or 'strongly balanced' datasets.

Each study investigated the effect of business regulations and a selection of macroeconomic variables on investment. Business regulations are included in each analysis to capture the institutional aspect of investment climate in the study. Few studies have included business regulation variables in their empirical estimations because this data was not readily available.

Furthermore, the variables investigated in each chapter were selected because they impose numerous direct and indirect costs on businesses in developing economies especially Africa. These costs arise either through the production process or in getting what is produced to the required markets. Some

direct costs include labor and capital, while indirect costs are transport, telecommunication and the regulatory environment.

Considering this point of view, the research explores the effect of the business regulatory environment on the ability of firms to raise capital through the stock market. Furthermore, the research examines the effect of the political environment, infrastructure and business regulation on investment. These three factors are all in the external environment and together can impose significantly high costs on firms thereby influence long-run investment. Lastly, the research investigates how business regulations and the spatial location of a country influences investment. In this case the research aims to understand how the location of country can impose indirect costs on firms and as a result influence investment at a macroeconomic level.

Unlike economic growth that can be measured by changes in the gross domestic product or gross national income of a country, there is no universal measure of the investment climate. In this research study we identify some of its determinants and in the various combinations mentioned above are considered reliable proxy indicators of the investment climate.

All data for the studies were from secondary sources. Data on business regulations were obtained from the 'Doing Business' database. All macroeconomic variables were obtained from the World Development Indicators. The political risk variables were obtained from the Cross National Time Series Data Archive.

1.4 Significance of the study

This dissertation makes significant contributions theoretically and empirically. Empirically, the research uses a new dataset of business regulatory variables on Africa and a selection of emerging economies. In addition, it tests the significance of business regulations and other investment climate determinants on investment using panel data techniques and models.

Theoretically, it contributes to the scanty body of knowledge on investment climate determinants and their effect on investment in Africa. It also provides knowledge to guide policy design and reforms intended to reduce the cost of doing business on the African continent.

1.5 Limitations of the study

The main limitation of this study was data availability of data. The data consists of a relatively short longitudinal dimension, 2003 to 2007. However, in spite of the limitations, the issues examined in the various chapters are relevant in understanding and addressing the challenges to the investment climate of countries, most especially in Africa.

There are also a number of assumptions taken in this study that are dependent on the data. It is assumed that the investment climate is the same throughout a country, although this is seldom the case. For instance there are differences in the investment climate of urban and rural areas or the capital cities and other towns or even provinces or regions in a country. This study could have been enriched further if this data was readily available.

In addition when measuring the business regulation variables, data was obtained from businesses in the country's most populous city and it was assumed that:

1. Each business employs between 50 to 200 people;
2. Each business is 100 per cent domestically owned;
3. The business is a limited liability or public company;
4. Each business had full information on what was required to accomplish the various business activities (like register a business or enforce a contract).

Therefore, it is implicitly implied that the factors that affect these firms will affect all types of businesses – micro, small, large, agricultural, sole proprietors, partnerships, rural or urban.

1.6 Organisation of the study

This dissertation is made up of a collection of four stand-alone essays and is organised into six chapters:

Chapter One includes the introduction and statement of the problem, the objectives, significance and limitations of the research.

Chapter Two reviews the effect of business regulation on investment in a selection of 29 emerging economies in Africa, Latin America, Asia and Europe.

Chapter Three examines the effect of business regulation on stock market liquidity in a selection of 15 stock markets in Africa.

Chapter Four examines the effect of the level of business regulation, the political environment and infrastructure on investment in 29 countries in Africa.

Chapter Five investigates the effect of business regulation and geography on investment in 37 economies in Africa.

Chapter Six summarises the important research findings obtained in this research study and offers some recommendations and areas for future research.

CHAPTER 2: EFFECT OF BUSINESS REGULATION ON INVESTMENT IN EMERGING MARKET ECONOMIES

2.1. Introduction

The World Development Report 2005 asserts that a good investment climate, that is the local institutional, regulatory and policy environment in which firms operate stimulates economic growth by providing firms with the incentive to invest and improve productivity. Although economic theory suggests that there are numerous factors that foster long term economic growth, more recent studies affirm that encouraging private sector led growth has much broader ramifications on the economy as a whole. In particular, encouraging entrepreneurship and the development of all types of firms is vital in addressing poverty and underdevelopment in developing economies.

The concept of a good investment climate is closely associated with the seminal work by Hernando de Soto (1990, 2000) on property rights and ownership. He argues that the economic success of a country like Japan can be attributed to a large extent to a clear system of property rights that was created after the Second World War. He provides evidence to suggest that people in developing countries lack an integrated formal property system, which results in informal ownership of land and goods. As a result the poor, in today's developing economies, find it difficult to leverage their current informal ownerships into capital as collateral for credit – a vital aspect of free enterprise. This argument is supported by others like Knack & Keefer (1995) and Rodrik (2000), who affirm that institutions and property rights not only influence the magnitude of investment, but also the efficiency with which inputs are allocated.

The World Bank has carried out numerous studies over the past decades to develop better indicators for measuring institutional quality or performance and its effect on economic outcomes. More recently, the 'Doing Business' project was established after numerous studies were undertaken (Enterprise Surveys) to monitor and benchmark the business regulatory environment of countries around the

world. This project is a time-in-motion study that collects data on regulations that enhance and constrain business activity. A number of multilateral organisations now use these performance indicators as targets that developing countries must aspire to achieve in order to obtain donor aid and grants. However, there has been criticism about the validity of these indicators. There are those who contend that these indicators distort the role of the institutional environment by creating simplistic quantitative measures of regulations that are complex, integrated systems (Berg & Cazes, 2007; Davis & Kruse, 2007). Furthermore, there are those who assert that the methodology used in obtaining these indicators prejudices essential tradeoffs in institutional design. For instance the exclusive focus on the private costs paid by entrepreneurs obscures the cost to the state of providing better business or property registration services; yet developing economies require functional registries with reliable information that can be used in litigation (Arrunada, 2008).

The purpose of this cross-sectional study is to investigate empirically whether business regulation, a determinant of the investment climate influences investment. Data from 2003 to 2007 on a selection of 29 emerging market economies from Africa, Latin America, Asia and Europe obtained from the 'Doing Business' database were used. These economies have been selected because emerging market economies are considered to be economies in transition that face similar constraints in encouraging domestic investment and attracting foreign capital flows. It is anticipated that the empirical analysis from this study will contribute to deeper understanding of the business regulatory factors that influence investment in these economies. Furthermore, this study will contribute to the ongoing debate on regulation and its influence on economic performance outcomes.

The remainder of this chapter is organised as follows: Section 2.2 provides a review of the literature on investment, institutions and regulation. Section 2.3 contains a discussion on the theoretical aspects of the institutional factors identified as explanatory variables in this study. Section 2.4 describes the empirical strategy for the analysis of this study while Section 2.5 provides a description of the data.

Section 2.6 presents and discusses the results of the empirical analysis. Section 2.7 summarises the findings of the research and draws conclusions.

2.2. Literature review

Institutions have been referred to in the literature as the 'rules of the game' in relation to economic performance. It is suggested that without them economies would not exist in the functional state in which we know them today. Institutions according to North (1991) are "humanly devised constraints that structure political, economic and social interaction. They consist of both informal constraints (sanctions, taboos, customs, traditions and codes of conduct), and formal rules (constitutions, laws, property rights)".

Their role in a society is to reduce uncertainty by establishing a stable (but not necessarily efficient) structure to human interaction. According to North (1991), institutions affect the performance of the economy by their effect on the cost of exchange and production. Together with the technology employed, they determine the transactions and transformation (production) costs that make up total costs. Therefore, they determine the profitability and feasibility of engaging in economic activity. It is important to emphasise that institutions would not exist if human interaction consisted of only harmonious relations.

Even though institutions play a significant role in social interaction, understanding their effect on economic outcomes has evolved slowly over the past century. According to economic history, the initial neoclassical view assumed that exchange in the market arose spontaneously from the close interaction of self-seeking individuals. The goods that were traded in every market were assumed to be homogenous so that prices provided the only information needed to make decisions on production and purchasing (North, 1990; Williamson, 2000). Therefore, no individual had sufficient power to influence the market price since exchange was driven simply by utility considerations. In other words, they

argued that competition arising out of the pricing system coordinated the transactions of the market and there were no cost implications.

It was Ronald Coase (1937) who questioned the notion of costless transactions. He argued that there were costs that arose out of negotiations during business transactions such as drawing up contracts and carrying out inspections. It was these costs that determined whether a transaction would take place or not. As he succinctly said, 'Business men in deciding on their ways of doing business and on what to produce take into account transaction costs. If the costs of making an exchange are greater than the gains which that exchange would bring, that exchange would not take place and the greater production that would flow from specialization would not be realized' (Coase, 1992:716). Furthermore, Coase (1960) argued that what were traded in the market were not, physical entities, but the rights to perform certain actions, and the rights which individuals possessed were established by the legal system. In essence if property rights and, contract enforcement –that are all influenced by the legal system – are vital aspects of the economic system of a society, then it makes little sense for economists to discuss the process of exchange without specifying the institutional setting within which the trading takes place since this influences the incentives to produce and the costs of transacting. Numerous contributions to the literature on the role of institutions and transaction costs and their effect on investment and economic growth (like North 1981, 1991; Knack and Keefer, 1995; Hall and Jones, 1999; Acemoglu, Johnson and Robinson, 2001; Rodrik 2000) have been made since 1960. They all to a large extent suggest that institutions contribute to understanding cross-country differences in economic performance. However, the channel through which they influence economic performance is still largely disputed.

Excessive regulation is considered to be an outcome of inefficient institutions. More recent studies have focused on different aspects of regulation in product markets and their effect on investment and long-term economic growth. In an empirical study to investigate the effect of regulatory reform on

investment in several sectors of 21 OECD[1] countries, Alesina, Ardagna, Nicholetti and Schiantarelli (2005) show that regulation is a significant determinant of investment. They provide sufficient evidence to show that product market regulation can influence the costs that existing firms face when expanding their productive capacity. Their overall assessment shows that regulatory reforms that substantially lower entry barriers encourage investment. Dawson (2006), using data on regulation from the Economic Freedom of the World Index (EFW)[2], was able to highlight significant findings that suggest that countries with less overall regulation have higher rates of private investment. By looking at different types of regulation (credit market, labour market and business), the study found that the index of business regulation[3] was statistically significant and positively related to growth. This suggests that countries with less business regulation tend to experience higher long-term growth rates as a result of higher factor productivity.

2.3. Theoretical considerations

Ronald Coase, Douglass North, Oliver Williamson and the other Coasean proponents assert that the formal institutional environment – the laws, government and judiciary – affect economic performance by determining (together with the technology employed) transaction and production costs. Therefore, given that the main objective of firms is to maximise profits, it is implicitly implied that a favourable institutional environment ensures investors in the market are awarded returns on their investments in the form of income or dividends. Furthermore, they argue that the enforcement of property rights and contract law is an important feature of an efficient and effective institutional framework. This section discusses the theoretical considerations relating to the effect of the regulatory variables used in this study.

[1] Organisation for Economic Co-operation and Development

[2] Economic Freedom of the World Index includes regulation as one of its five major areas. Others areas are: (1) legal structure and security of property rights, (2) freedom to trade internationally, (3) access to sound money, and (4) size of government expenditures, taxes and enterprises (Fraser Institute's Economic Freedom of the World Annual Report).

[3] Business Regulation in EFW Index consists of: price controls, administrative conditions and new businesses, time with government bureaucracy, starting a business and irregular payments.

There are a number of theoretical arguments on regulation and its effect on economic outcomes. These are firstly, Pigou's public interest theory of regulation. Pigou (1938) assumes that unhindered markets often fail because of problems of monopolies or externalities. Furthermore Pigou assumes that governments are benevolent and capable of correcting these failures through regulation. In other words, regulation seeks the protection and benefit of the public at large. Secondly, the public choice theory, in general, views government as less benevolent and regulation as socially inefficient. According to Stigler's (1971:3) theory of regulatory capture, 'regulation is acquired by the industry and is designed and operated primarily for its benefit.' In other words, governments' regulatory agencies created to act in the public interest instead protect the commercial or special interests of those they are charged with regulating. The theory of regulatory capture is a core aspect of the public choice premise.

Djankov, La Porta, Lopez-de-Silanes & Shleifer (2002), in a study to investigate the regulation of entry of start-up firms in 85 countries found little evidence to show that stricter regulation of entry provides better social outcomes, like higher quality products or improved competitiveness. On the other hand, they found that stricter regulation of entry is associated with significantly higher levels of corruption and a larger unofficial economy. Their findings support the public choice theory that emphasises rent extraction by government bureaucrats.

The research on the regulation of labour markets has been studied extensively. So, why do governments regulate their labour markets? The fundamental argument for most interventions is that free labour markets are imperfect and as a result there are rents in the employment relationship. Employers exploit workers to extract these rents leading to both unfairness and inefficiency. As a result governments use different forms of labour regulations to protect workers from employers. According to Botero, La Porta, Lopez-de-Silanes and Shleifer, (2004), these include – in addition to basic civil rights protections[4] – employment law[5], collective relations law[6] and social security law[7]. Their

[4] Basic rights include, maternity leave or minimum wage

[5] Employment laws govern the individual employment contract, for instance restricting the range of feasible contracts, raising laying off costs or increasing working hours.

study investigates the regulation of labour markets through employment, collective relations and social security laws in 85 countries. Botero *et al.,* (2004) found that heavier regulation of labour has adverse consequences for labour-force participation and employment prospects especially for the young. There is also evidence to show that flexible labour markets are of great importance in reducing unemployment and improving the competitiveness of the economy. According to Di Tella & MacCulloch (2005), in their study of 21 OECD countries for the period 1984-1990, increasing the flexibility of the labour market increases both the employment rate and the labour force participation rate. Javorcik and Spatareanu (2005), in a study to investigate the effect of labour market regulation on foreign direct investment (FDI) across 19 western and eastern European countries, found that greater flexibility in the host country's labour market is associated with a higher probability and volume of investment. On the other hand, there are those who argue that flexible labour markets increase income inequalities and widen the skills gap, which negatively influences long-run investment and economic growth (Pissarides, 2001). The channel through which employment regulation affects investment is ambiguous.

It is well established that better investor protection encourages the development of financial markets and it is through this channel that it influences the real economy. It is argued that greater protection of shareholders and creditors fosters better functioning stock and debt markets and facilitates the flow of capital to firms. Furthermore according to La Portia *et al*., (1997), there is evidence to show that when investor rights, such as the voting rights of shareholders and the reorganisation and liquidation rights of creditors, are extensive and well enforced by regulators or courts, investors are willing to provide finance. There is also evidence to show that the financial system is a vital channel through which investment capital and savings are transformed into real investment thereby enhancing capital accumulation (Beck and Levine, 2003; Ndikumana, 2000).

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[6] Collective or industrial relation laws regulate the bargaining, adoption and enforcement of collective agreements, the organisation of trade unions and industrial action by workers and employers.

[7] Social security laws govern the social response to needs and conditions that have a significant impact on the quality of life, such as old age, disability, death, sickness and employment.

Weak property rights[8] are considered a deterrent to investment since the perceived risk of losing ownership rights or returns on investment is increased. Evidence from the empirical literature in cross-country studies shows that less secure property rights are correlated with less aggregate investment and slower economic growth (Mauro, 1995; Acemoglu, Johnson & Robinson, 2001). The argument put forward is that secure property rights are essential in order to induce investment by entrepreneurs. According to Pattillo (2001), in an analysis of the investment behaviour of Ghanaian firms, weak property rights limit the reinvestment of profits in some types of firms and those firms with the least secure property rights invest nearly 40 per cent less than those with more secure property rights. This evidence is corroborated in a study on property rights and investment in five post-communist countries. The results show that those entrepreneurs who perceive their property rights to be the least secure reinvest 32 per cent of their profits, while those who perceive their property rights to be secure reinvest 56 per cent (Johnson, McMillan & Woodruff, 2002). Given that there is ample evidence to show that secure property rights are important for investment, it is usually assumed that these rights will be enforced. However, according to North (1991) this assumption is flawed for a couple of reasons. The first is that there are problems that arise from information asymmetries such as moral hazard or adverse selection and the second is that enforcement relies on agents whose own utility functions influence outcomes. Therefore, in order to provide the incentive to transact, regulators and courts that ensure that agents abide by the laws are essential. In addition, according to Botero *et al.,* (2003) on judicial reforms across countries around the world, simplifying judicial procedures and increasing the flexibility of courts can enhance judicial efficiency.

[8] It is the right conferred on the owner (individual or firm) of a property to consume, sell, rent, mortgage, transfer and exchange the property.

2.4. Methodology

2.4.1. Empirical strategy

The discussion above illustrates how both regulatory and macro economic factors may influence aggregate investment in the selected emerging market economies. Ignoring nonlinearities, the economic relationship being identified is:

$$I_{it} = \alpha + \beta\vartheta_{it} + \gamma\,\varphi_{it} + \varepsilon_{it} \quad \text{...(2.1)}$$

where I_{it} is the gross capital stock of country *i* in year *t*, measured as gross capital stock as a percentage of gross domestic product(GDP). ϑ_{it} consists of a selection of business regulation variables, φ_{it} is a selection of control variables and ε_{it} is the composite error term. The coefficients of interest are β and γ .

The primary challenge of this study is the data. The history of the data is limited to five years and there are missing data points. In order to estimate the effect of business regulation on investment, a panel-data framework approach is used. According to Baltagi (2005), this approach has a number of advantages and these include: panel data analysis combines both time-series and cross-sectional data to increase the number of observations; and the modelling options and appropriate tests enable one to examine the relevance of fixed, random and systematic time and country effects. The basic framework for the analysis is in the form of the following regression equation:

$$y_{it} = \beta x'_{it} + \alpha z'_{i} + \varepsilon_{it} \quad \text{...(2.2)}$$

Where (i = 1, . . ., N) is the number of countries and (t = 1, . . ., T) is the number of time periods. x'_{it} consists of K regressors but excludes a constant term. According to Greene (2003), the individual effect is $\alpha z'_{i}$ where z_i contains a constant term and a set of individual or group-specific variables that

may be observed or unobserved and that are taken to be constant over time, *t*. If z_i is observed for all individuals and contains only a constant term, the entire model can be treated as an ordinary linear model and fit by least squares.

However, if z_i is unobserved but correlated with x_{it}, the least-squares estimator of β is biased and inconsistent due to an omitted variable. The model is then referred to as a fixed effects model and is specified as follows;

$$y_{it} = \beta x'_{it} + \alpha_i + \varepsilon_{it} \quad \text{...(2.3)}$$

Where $\alpha_i = \alpha z'_i$ and embodies all the observable effects. The fixed effects approach takes α_i to be a group-specific constant term in the regression model that does not vary over time. On the other hand if z_i is unobserved but uncorrelated with the regressors, then the model is referred to as a random effects model and is formulated as follow;

$$y_{it} = \beta x'_{it} + E[\alpha z'_i] + \{\alpha z'_i - E[\alpha z'_i]\} + \varepsilon_{it} \quad \text{...(2.4)}$$

$$= \beta x'_{it} + (\alpha + u_i) + \varepsilon_{it} \quad \text{...(2.5)}$$

in which u_i is the random heterogeneity specific to the *i*th observation and is constant through time.
In order to determine whether the individual effects are correlated with the regressors, the Hausman (1978) specification test may be used. It is used to test for orthogonality of the random effects and the regressors. Under the null hypothesis of orthogonality (no correlation between the individual effects and explanatory variables), both random and fixed effects estimators are consistent but the random effect estimator is efficient while the fixed effects estimator is not. Under the alternative hypothesis that the individual effects are correlated with the regressors, the random effects estimator is inconsistent

while the fixed effects estimator is consistent and efficient. The difference between the two estimators is the Hausman test statistic defined simply as

$$\mathbf{H} = [\mathbf{b}^{GLS} - \mathbf{b}^{W}]' [\mathbf{V}(\mathbf{b}^{W}) - \mathbf{V}(\mathbf{b}^{GLS})]^{-1} [\mathbf{b}^{GLS} - \mathbf{b}^{W}], \quad \text{...(2.6)}$$

The Hausman test statistic will be distributed asymptotically as χ^2 with k degrees of freedom under the null hypothesis that the random estimator is correct.

2.4.2. Data and variable definition

This section describes the data used in the study. The analysis covers a selection of 29[9] emerging market economies over a five-year sample period, 2003 to 2007. Emerging market economies were selected because firstly, according to the World Bank Global Economic Prospects (World Bank, 2007) over the past five years, these economies have accounted for between one-quarter and one-half of global growth and this has been attributed to, among other factors, a better investment environment in these countries. Secondly, these countries had data on all the explanatory variables.

The 'Doing Business' project collects data on regulations that enhance and those that constrain business activity. Data on business regulations is obtained in 10 areas of business activity across 181 economies. These are starting a business, dealing with licences, employing workers, registering property, getting credit, protecting investors, paying taxes, trading across borders, enforcing contracts and closing a business. The data are collected in a standardised way using a simple business case to ensure comparability across countries and over time with assumptions about the legal form of the business, its size, location, and nature of its operations. The data are obtained from local experts, government officials and other professionals who routinely administer or provide advice on legal and regulatory requirements. The fundamental premise of the 'Doing Business' project is that economic

[9] Argentina, Brazil, Chile, Colombia, Mexico, Peru Algeria, Botswana, Egypt, Ghana, Kenya, Mauritius, Morocco, South Africa, Tunisia, Nigeria, Bulgaria, Poland, Romania, Russia, Turkey, China, India, Indonesia, Malaysia, Philippines, Sri Lanka, Thailand and South Korea.

activity requires good rules. Therefore, if these rules are to benefit all types of firms then they must be designed to be efficient, accessible to all who need to use them and simple in their implementation. All the business regulation variables are obtained from the 'Doing Business' online database (World Bank, 2007a).

Investment: In order to measure investment, gross capital stock measured as a percentage of GDP is used. One would expect that a favourable regulatory environment would result in an increase in investment that would be reflected as an accumulation of capital stock. Gross capital stock is used instead of private investment because of data availability on the selected countries.

Business entry regulation: The direct effect of business formalisation on investment is captured by one variable in this study – the number of procedures to start a business. This variable measures the pre- and post-incorporation procedures that are officially required by an entrepreneur to formally operate a business and it is measured in absolute values. The more procedures there are to start a business the more difficult it is to operate in the formal economy. Previous studies show that the number of procedures is highly correlated with time and cost, which implies that it costs entrepreneurs more in terms of fees and delays to start a formal business where there are lengthy procedures (Djankov *et al.*, 2002). The coefficient of this variable is expected to be negatively associated with investment growth.

Employment regulation: In the 'Doing Business' project, the flexibility of employment regulation is measured by the rigidity of the employment index. It is the simple average of three sub-indices – a difficulty of hiring index, rigidity of working hours index and difficulty of firing index. All sub-indicators take on values between 0 and 100, with higher values indicating more rigid regulation.

The expected effect of property rights on investment is captured by three variables in this study – property registration, contract enforcement and licensing regulation. *Property registration* is measured in terms of the number of procedures required to register a property (land or a building). The number of

procedures is recorded in absolute figures and records all procedures that are legally or in practice required to transfer property title from a seller to a buyer. The coefficient of this variable is expected to be negatively associated with investment since more procedures imply that securing property rights is cumbersome. *Contract enforcement,* which is an indicator of the efficiency of the judicial system in a country, is measured in terms of the number of procedures required to enforce a commercial dispute. In this study, the number of procedures is considered to be a sufficient indicator therefore, the cost and time to execute these procedures is excluded. In addition, there is evidence to show that higher procedural formalism is a strong predictor of longer duration of dispute resolution, lower enforceability of contracts, higher corruption, as well as reduced honesty, consistency and fairness of the system (Djankov *et al.*, 2003). The number of procedures is recorded in absolute values and includes the steps required to file the case until judgment is enforced. Fewer procedures to enforce a contract imply that the courts are efficient and therefore it is simple to enforce a contract while more procedures would imply the contrary. *Licensing regulation:* The ease or difficulty of securing all the required building licences by a contractor is an indicator of the burden of securing property rights. There is also theoretical evidence to suggest that licensing regulations, among other factors, have negatively influenced private investment in the electricity sector of Tanzania (Marandu, 2004). Licensing registration measures the number of procedures required for a business in the construction industry to build a standardised warehouse. The procedures are measured in absolute values and more procedures imply that licensing regulation is rigid and cumbersome. The coefficient of this variable is expected to be negatively associated with investment.

The effect of investor protection on investment is captured by two variables in this study – protection of minority shareholders' rights and lender and borrowers' rights. In this study, *shareholders' rights* are measured by the investor protection index. This index measures the strength of minority shareholder rights against directors' misuse of corporate assets. According to the 'Doing Business' project, three aspects of investor protection are measured: transparency of transactions, liability for self dealing and shareholders' ability to sue officers and directors for misconduct. The investor protection index value is

the simple average of these three sub-components and its values range from 0 to 10, with higher values indicating better investor protection. The coefficient of this variable is expected to be positively associated with investment. *Borrowers' and lenders' rights* are considered to be important in facilitating access to credit for investment from financial institutions. The borrowers and lenders measures the degree to which collateral and bankruptcy laws protect the rights of borrowers and lenders. The index values range from 0 to 10, with higher scores indicating that collateral and bankruptcy laws provide better protection of the rights of borrowers and lenders. The coefficient of this variable is expected to be positively associated with investment.

A set of *control variables* that is considered to be a significant determinant of investment is also included in the analysis. These variables include total labour force participation rate (a proxy of human capital development), income measured as the log of GDP (a measure of the size of the economy), inflation measured by changes in the consumer price index (a measure of macro-economic stability) and savings that are measured as gross domestic savings as a percentage of GDP. Data on these variables are obtained from the World Development Indicators CD-ROM (2007). A number of dummy variables are included in order to capture the unobservable factors such as cultural and historical differences that may influence investment. These include the Latin America dummy, Africa dummy, Asia dummy and emerging Europe dummy.

It is argued that institutions are endogenous and therefore reflect various historical and cultural influences (North, 1990; Rodrik, 2000). In addition, it has been affirmed that countries with rising or high incomes are more likely to have better regulatory environments. Therefore, in order to estimate the effect of institutions on economic outcomes, a source of exogenous variation is required. In the literature, instrumental variables have been used as a source of exogenous variation in institutions. As an instrument variable for institutional quality, Acemoglu, Johnson and Robinson (2001) used mortality rates of colonial settlers in colonised areas while Hall and Jones (1999) used the fraction of the population that spoke English and western European languages. The legal origin has been used by La

Porta *et al.,* (1997) as an instrument for regulation. According to Botero *et al.,* (2004), a country's approach to regulation is shaped by its legal tradition. La Porta *et al.,* (1997) provides evidence to show that the laws of the different colonisers and occupiers significantly influenced the legal systems of the conquered countries. They found that common and civil law traditions utilise different strategies for dealing with market failure. The common law traditions that emerged from England rely on contract and private litigation. Whereas civil law traditions that evolved from Roman law and were incorporated into civil codes in France and Germany rely on direct supervision of markets by the governments. Socialist law traditions that were adopted in countries that came under the influence of the former Soviet Union also rely on government regulation and state ownership.

In this study the legal origin is used as the instrumental variable. *English legal origin dummy:* English legal origin equals 1 if the country has English common law traditions and 0 if the country has French civil law or socialist law traditions as defined by the origin of each country's commercial/company law (La Porta *et al.*1999). *French legal origin dummy:* French legal origin equals 1 if the country has a French civil law tradition and 0 if the country has English common law or socialist law traditions. There is evidence to show that countries with French and socialist legal origins tend to have lower levels of property rights protection than countries with English legal origins (Botero *et al.,* 2004; Djankov *et al.,* 2002). Therefore, it would be expected that countries with English legal origins attract more investment than those with French or socialist legal origins. Table 2.1 shows the descriptive statistics for the full sample and Tables A.1.and A.2 (in the Appendix) show the summary statistics for Latin America and Africa, emerging Europe and Asia respectively.

2.5. Empirical results

2.5.1. Descriptive statistics

The average number of procedures required to formalise a business for the full sample of countries is 10 (see Table 2.1) while the emerging European countries (Table A.2 Appendix A) have the lowest number of procedures. Therefore, in this sample it is easiest to start a business in the emerging

European countries (eight procedures) and it takes longest (12 procedures) in the Latin American countries (see Table A.1 Appendix A). It is most difficult to secure a building licence in emerging European economies (30 procedures), while it is easiest in Latin America. There is no significant variation in investor protection among the four regions. However, it is important to note that Morocco and Tunisia perform the worst in this index; while Malaysia, Mauritius and South Africa offer investors the highest protection. Lender and borrower rights are best protected in emerging European economies and are least protected in Latin American economies. The largest variation among the regulatory variables is in employment regulation with a minimum of seven and a maximum of 66 for the full sample. The emerging European economies in this sample have the most flexible employment regulations while Asian economies have the least flexible employment regulations. It takes an average of 37 procedures to enforce a contract in the full sample of countries with no significant difference in the various regions. Botswana has the least number of procedures required to enforce a contract with an average number of 29 while Algeria has the most (47) number of procedures. Property registration takes longest in Africa, with Nigeria recording the maximum value of 19 procedures (maximum in the full sample), whilst it is easiest in Asia, with Thailand recording two procedures (minimum in the full sample).

Table 2.1: Summary statistics - full sample

Variable	Mean	Std. Deviation	Minimum	Maximum
Business entry regulation	10.40	2.91	5	19
Licensing regulation	21.56	8.67	10	56
Employment regulation	34.41	13.68	7	66
Property registration	6.94	3.15	2	19
Lender and borrower rights	5.23	2.34	3	10
Investor protection	5.55	1.22	3	8.7
Contract enforcement	37.84	4.49	29	47
Income	249.87	388.52	5	2364.44
Savings	24.88	11.69	3	54
Inflation	7.70	5.33	0	29
Labour force participation rate	65.93	8.24	49	84
Gross capital formation	24.41	6.56	14	46

2.5.2. Discussion of regression results

The empirical results presented in Table 2.2 show the effect of a selection of business regulation variables on investment for an unbalanced panel of 29 countries over the period 2003 to 2007. Random effects regression estimates are generated for all the specifications of the model specified in equation (2.1). Column (1) regression estimates show the effect of the selected explanatory variables on investment measured as gross capital formation as a percentage of GDP. In Column (2), three regional dummies are included to establish whether there are significant variations in the four regions selected. Lastly, column (3) shows results in which the instrumental variable – legal origin – is included. Column (1) results show that the number of procedures to start a business has a negative and significant effect on investment. This result implies that excessive business entry regulation is a significant barrier to investment in a country. This result is consistent with findings by Djankov *et al.*, (2002), which show that more barriers, in the form of administrative hurdles to registering a business, hampers the number of firms that can operate in the formal economy.

Employment regulation was found to have an insignificant effect on investment in this sample of countries. Although this result contradicts *a priori* expectations, it is consistent with the suggestion of Bertola and Rogerson (1997) that the effect of flexible labour regulation may only be felt when other labour market institutions that seek to create an equilibrium in the labour market, like those that affect employment (severance pay, advance notice laws) and wages (minimum wages), are well established and enforced. They argue that if these regulations do not exist or are not harmonised then flexible labour regulation may have an adverse or no effect on employment levels in the economy. Furthermore, the result obtained may arise from selection bias. The assumptions made in measuring the employment regulation variable are not representative of the working population, especially in developing or emerging economies.

Table 2.2: Regression Results (Random Effects GLS Regression)

	Dependent variable Gross capital formation as a percentage of GDP		
Independent Variables	**(1)**	**(2)**	**(3)**
Business entry regulation	-0.05624**	-0.02745	-0.03860**
	(-2.06)	(-1.01)	(-1.48)
Employment regulation	-0.00327	-0.00459	-0.00619
	(-0.54)	(-0.73)	(-1.01)
Property Rights			
Licensing regulation	-0.02078**	-0.03744**	-0.03272***
	(-2.21)	(-3.26)	(-3.28)
Property registration	-0.04437*	-0.04692*	-0.05710**
	(-1.83)	(-2.01)	(-2.50)
Contract enforcement	0.02505	0.01782	0.01637
	(1.21)	(0.92)	(0.87)
Investor Protection			
Borrower and lenders' rights	0.02211	-0.03452	-0.02767
	(0.66)	(-0.92)	(-0.79)
Minority shareholders' rights	-0.09493	-0.06075	-0.10561
	(-1.53)	(-1.02)	(-1.83)
Income	0.00587**	0.00684***	0.00506**
	(2.56)	(3.06)	(2.48)
Savings	0.00296***	0.00314***	0.00258***
	(4.55)	(4.84)	(4.33)
Inflation	0.00017	0.00038	0.00052
	(0.17)	(0.41)	(0.54)
Labor force participation rate	0.00073	0.00128	0.00085
	(0.71)	(1.32)	(0.09)
Latin America (dummy)		-0.09716**	
		(-2.94)	
Africa (dummy)		-0.02583	
		(-0.98)	
Asia (dummy)		-0.04478	
		(-1.37)	
French legal origin			-0.03912**
			(-2.01)
Socialist legal origin			0.03407
			(1.35)
Constant	0.19580*	0.24333**	0.35102***
		(2.18)	(3.05)
R-Squared	0.4601	0.5715	0.6085
Wald chi2	(11)42.68	(14)48.99	(13)39.37
	[0.0000]	[0.0000]	[0.0001]
Observations	87	87	87
Hausman Test	Wald Chi2(11)=6.55	Wald Chi2(14)=5.79	Wald Chi2(13)=8.64
	[0.8342]	[0.9714]	[0.7998]

Notes: t-statistic are in parentheses and probability values in square brackets. *** indicates significance at 1%, ** significance at 5% and * significance at 10%.

According to the 'Doing Business' project, it is assumed that the worker (unit of measurement of this variable) is a nonexecutive, full-time employee who has worked in the same company for 20 years. However, there is evidence to show that, for instance, in the European Union in 2005 only 17 per cent of the working population had job tenure of 20 or more years. The average tenure was 10.6 years. In

central and eastern Europe, the average tenure was 9 years and Poland had the longest average tenure of 11.7 years in 2003. In Latin America average tenure was approximately 6.2 years (Berg and Cazes, 2007). Lastly, high costs associated with labour regulations increase the cost of production and have been blamed for the growth of the informal sector in many economies. In addition, it is well established that a significant proportion of the population in most developing economies is unemployed or is employed in the informal economy. Employment in the informal economy does not adhere to formal employment contracts and labour regulations although, arguably, there may be informal rules that govern employment relationships. Therefore, it is plausible that the effect of rigid or flexible labour regulations as measured by this variable will not have an effect on investment in these economies.

Two of the property rights variables were found to have a significant effect on investment: in particular, more rigid licensing regulation has a significant and negative effect on investment. This result implies that the longer it takes to secure the required licences and permits, the longer it takes to obtain full ownership and control of the property. Therefore it will also take longer to use the property as collateral or to transfer ownership. This result is consistent with the literature that shows that easy and simple licensing procedures that enhance efficiency and transparency also enhance private investment (Marandu, 2004). Furthermore, the results also show that a one standard deviation reduction in the number of procedures required for registering a property, increases investment by approximately 1.4 per cent. This result confirms that formal ownership of property is less cumbersome when there are few administrative procedures required to register property. This result is consistent with *a priori* expectation and with evidence that shows that land reforms in Thailand that encouraged property titling increased access to credit for people with formal titles and increased land values and investment (Burns, 2005). The estimated coefficient for contract enforcement is insignificant. Intuitively, it would be expected that an efficient judicial system to resolve commercial disputes and enforce contracts would reduce the cost of doing business (for instance reduce litigation costs) and therefore enhance investment. However, according to Botero *et al.* (2003), the result obtained is

plausible, especially in developing economies where the judiciary is underfunded and therefore lacks the administrative capacity and personnel such as judges to operate efficiently. As a result, the judicial process is slow and is riddled with corrupt officials. They provide evidence to show that firms use alternative channels to resolve disputes like arbitration and informal or native courts (in Latin America they are known as mediation centres; and as; Lok adalats in India). These alternative channels are more efficient and officials are less able to extract bribes from litigants.

Neither investor protection variable has a significant effect on aggregate investment. It is surprising that shareholder rights are not significant determinants of investment. This is inconsistent with the literature given that there is ample evidence to suggest that greater protection of shareholders' rights, by means of laws that regulate self-dealing, encourages investment in financial markets (La Porta *et al.*, 1997). However, this result possibly arises for a number of reasons. Firstly, there were a number of assumptions taken into consideration when measuring this variable. It was assumed that the company was a food manufacturer that was domestically owned and listed on the country's most important stock exchange. Given that in most emerging economies the percentage of domestically owned companies that are listed on the stock exchange, in comparison to all formally owned domestic companies, is small, this result may be a reasonable representation. Secondly, the dependent variable measures total investment. Possibly investigating the effect of this variable on private investment may yield different results. The coefficients for income and domestic savings are significant and with the predicted signs. This result is consistent with the theory that high-income countries and high domestic savings are significant determinants of investment.

Three regional dummies are included in column (2) of Table 2.2. These dummies are included because firstly, there are a number of unobserved factors not captured in this study like cultural or historical factors that may influence regulation differently in each of these regions. Secondly, it is asserted in numerous studies that Africa behaves differently from the other regions because of its unique demographic and socio-political environment. Only the Latin America dummy is significant at the

conventional levels, showing that this region has significantly less investment than emerging Europe. This result possibly arises from other factors not captured in this study like the political environment, crime and corruption that are synonymous with this region. Asia and Africa are both insignificant implying that they are not significantly different from emerging Europe. The magnitudes of the coefficients of both property rights variables remain considerable when the regional dummies are included. However, the magnitude for the coefficient of business entry regulation reduces considerably and is insignificant.

The results obtained in column (3) of Table 2.2 after controlling for endogeneity confirm the results obtained in columns (1) and (2). Business entry regulation is a significant determinant of investment. Licensing regulation and property registration are both significant at the conventional levels and with the predicted signs. A one-standard deviation reduction in licensing procedures will increase investment by 2.8 per cent. In addition a one standard deviation reduction in property registration procedures will increase investment by 1.8 per cent. In this sample of countries, licensing regulation imposes the most administrative barriers on investment. Income and domestic savings are significant and with the predicted signs. The estimated coefficient for the legal origin was found to be negative and significant at a 5 per cent level implying that countries with French civil law traditions have almost up to 4 per cent lower investment than those with English common law traditions. These results are consistent with findings from previous studies (Beck *et al.*, 2003; Djankov *et al.*, 2002). Countries that have adopted English common law traditions have been found to have higher investment, since property rights are better protected than in countries that adopted French civil law traditions.

2.6. Conclusion

The pervasiveness of government regulation in business activity has raised many questions over the past decades. Does burdensome regulation create barriers for the people it is meant to protect? The purpose of this study was to investigate empirically whether business regulations as measured by the 'Doing Business' indicators have an impact on investment. Using seven selected indicators from the

'Doing Business' database, a panel data analysis was performed on data for 29 emerging economies in Africa, Asia, Latin America and emerging Europe for the period 2003 to 2007. The results suggest that investment in these emerging economies is influenced by security of property rights and the degree of business entry regulation. In particular, the results show that where there are fewer administrative procedures required to formalise a business, there is a positive and significant effect on investment in that economy. In addition, fewer procedures to register property or to secure business licences have a positive and significant effect on investment. Furthermore, the estimates generated show that flexibility of employment regulation is not a significant determinant of investment. This result confirms previous studies that show that the effect of flexible labour regulations on economic performance may only be felt when other labour market institutions are well established and enforced. In addition, the two indicators of investor protection - minority shareholders' rights, and lender and borrower rights- were found to be insignificant determinants of investment. The results obtained suggest that further analysis of the effect of the selected business regulatory indicators, using private and public investment as proxy variables for the investment climate, may provide more conclusive results about the validity of these indicators. It is also important to note that this study is limited in scope since it did not assess the effect that other factors considered to be important, such as the macroeconomic environment, infrastructure and the political environment, have on the investment in these countries.

CHAPTER 3: BUSINESS REGULATION AND STOCK MARKET LIQUIDITY

3.1. Introduction

Stock markets are among the most important sources of long-term loanable funds that are used by investors mainly for fixed investment. They provide investors with efficient mechanisms to liquidate their investments in financial securities. Therefore, they are a major incentive to investment since they provide avenues for firm financing by offering a guarantee of mobility of capital in addition to encouraging saving among individuals. The establishment of an efficient stock market is, therefore, vital for any economy that is ardent on using scarce resources to achieve economic growth. Over the past three decades, the world's stock markets have experienced phenomenal growth due to financial liberalisation and the advent of globalisation. In Africa, the number of established markets has increased significantly from four, prior to 1990, to 22 in 2008 – although growth in the majority of these markets has not been considerable[10]. Indicators of stock market development show that African markets are small with few listed companies and low liquidity and market capitalisation (Yartey and Adjasi, 2007).

Why have the majority of African stock markets remained small and highly illiquid, thereby rendering their economic benefits redundant? There are those who argue that financial sector reform driven by donor agencies and multilateral organisations, as a prerequisite for aid, is the reason the majority were established. Therefore, they were set up as government initiatives and not driven by domestic market demand for new financial products (Moss, 2003). On the other hand, numerous studies on these markets suggest that stock market development in Africa has been hampered by macroeconomic

[10] Before 1990 these were The Johannesburg Stock Exchange, Cairo & Alexandria Stock Exchange, Casablanca Stock Exchange, Bourse de Tunis, Stock Exchange of Mauritius, Nigerian Stock Exchange and Nairobi Stock Exchange. By 2008, the Stock Exchanges included Ghana Stock Exchange, Botswana Stock Exchange, Zimbabwe Stock Exchange, Lusaka Stock Exchange, Uganda Securities Exchange, Dar es Salaam Stock Exchange, Swaziland Stock Exchange, Rwanda over the Counter Exchange, Namibian Stock Exchange, Libyan Stock Exchange, Casablanca Stock Exchange, Bourse des Valeurs Mobilieres d'Alger, Maputo Stock Exchange, Malawi Stock Exchange, Douala Stock Exchange and the west African regional exchange known as Bourse Régional des Valeurs Mobiliéres (BRVM) that serves Benin, Burkina Faso, Guinea Bissau, Côte d'Ivoire, Mali, Niger, Senegal and Togo.

instability, underdeveloped financial intermediaries, weak or non-existent regulatory frameworks, weak institutions and poor investor protection (some studies include Tessema, 2003; Guide & Pattillo, 2006; Yartey, 2007). Even though these factors may largely explain the differences in performance, there are other underlying factors highlighted in the recent theory and empirical literature as additional plausible determinants. According to La Porta, Lopez-de-Silanes, Shleifer & Vishny (1997), the differences in the nature and effectiveness of financial systems around the world can be attributed to the degree to which investors' rights are protected from expropriation by insiders, arising from the nature of the legal rules and the quality of law enforcement of a country. They found that countries with poor investor protection, in particular those that adopted French civil law traditions, had smaller and narrower capital markets compared to countries that adopted English common law traditions.

The purpose of this study is specifically to investigate the effect of business regulation on the liquidity of African stock markets. It is argued that liquid market enables firms acquire capital quickly thereby facilitating capital allocation, investment and growth. Furthermore, the ease with which equities are traded helps reduce investment risk (Yartey and Adjasi, 2007). The reason why stock market liquidity is considered is because it has been found to be a robust predictor of capital accumulation and productivity growth in an economy (Levine and Zervos, 1998). Data on a selection of business regulation variables from the 'Doing Business' database for 15 stock markets in Africa, over the period 2003 to 2007, are used. It is anticipated that this study will contribute to a greater understanding of the factors that facilitate an enabling regulatory environment, which is essential for the sustained growth of the private sector in these economies.

The rest of this chapter is structured as follows: section 3.2 provides a brief literature review of institutional and regulatory factors that influence stock market activity and size in Africa. Section 3.3 presents the variables, analytical framework and model specification used in the study. Section 3.4 presents a discussion on the empirical results. Lastly, section 3.5 offers some conclusions and policy recommendations.

3.2. Literature review

There is a substantial amount of literature that explores the relationship between financial development and economic growth. These studies largely confirm that both stock market and banking sector development have a strong positive effect on investment and growth (Levine & Zervos, 1998; Beck, Levine & Loayza, 2000; Bekaert, Harvey & Lundblad, 2001). There are a number of channels through which the stock market influences economic performance. According to Levine (1991), stock markets make financial assets traded in less risky since savers can buy and sell quickly when they wish to alter their portfolios. In addition, stock markets create more information about investment projects and can therefore guide investors' funds to better use (Greenwood and Jovanovic, 1990). Therefore, having less risky assets and easy access to capital markets improves the allocation of capital and enhances economic growth. The explanation postulated for this relationship is that stock prices reflect the marginal product of capital and are, therefore, reliable predictors of investment. This is based on the theory that efficient, secondary-market prices help investors distinguish good investments from bad ones through a mechanism like Tobin's Q (Tobin, 1969 and Von Furstenberg, 1977). Tobin asserts that if the market value of a company's stock is greater than its equity book value, then firms should undertake capital expenditure. The profits generated will be higher than the cost of using the assets of the firm. Although Blanchard *et al.,* (1993), in their study, found a limited role of market valuation on investment decisions, their findings suggest that stock prices partly influence investment choices of firms.

It has also been suggested that institutions are the foundation for stock market growth. According to North (1991), capital markets will not grow unless the government has established a credible system that secures and monitors property rights and effectively enforces contracts. The series of papers on the law and finance by La Porta, Lopez-de-Silanes, Shleifer & Vishny (1997, 1998, 2000) – [henceforth LLSV] and Beck, Demirguc-Kunt & Levine (2003) highlight the importance of the legal framework for financial development. According to Beck *et al.*, (2003), there are two aspects to the law and finance "theory'. The first is that financial development is higher in countries where legal systems enforce

private contracts and where property and creditor rights are protected. There is evidence to show that greater protection of minority shareholders from expropriation by the controlling shareholders is associated with a higher number of listed firms and higher valuation of stock markets (LLSV, 1997). They argue that when minority shareholders rights are protected by the law, they are more willing to pay for financial assets such as equity and debt. They do so because the perceived risk of expropriation is reduced. Hence there is increased certainty of a return in form of interest or dividends on their investments. Therefore, by limiting expropriation, the law raises the value that securities fetch in the market, which enables firms to finance their investments, which subsequently leads to expansion of the financial markets. There is also evidence to show that greater protection of minority shareholders' rights is associated with a lower concentration of ownership and control (Claessens *et al.,* 2000). In addition, greater protection of property rights may increase not only the availability of external finance but also the efficiency of its allocation. It is argued that since securing returns from tangible and liquid assets is relatively easy, firms operating in a market with poorly defined or poorly enforced property rights may choose to invest more in fixed assets relative to intangible assets and may hold more cash and liquid assets relative to fixed assets (Claessens & Laeven, 2003; Pinkowitz, Stulz & Williamson, 2003).

It is also well established that not only is regulation important, but its enforcement by regulators and courts also is an essential element of financial development (Djankov, La Porta, Lopez-de-Silanes & Shleifer, 2003). According to LLSV (1997,1998), when investors' rights, such as voting rights of the shareholders and the rights of creditors, are protected and well enforced by regulators or courts, investors are willing to finance firms. In contrast, when the legal system does not protect outside investors, access to external finance is constrained. They argue that financial contracts may become unfeasible because of problems arising from information asymmetries such as moral hazard, adverse selection or time inconsistency. Furthermore, according to Djankov *et al.,* (2003), the role of the judiciary cannot be taken for granted since in many developing countries courts often lack the necessary resources and are slow or subject to political pressure. They show that as a result of such

inefficiencies, enforcement of private contracts through the court system is costly and is not sufficient to enhance investment. However, LLSV (2000), provide evidence to show that even among countries with well functioning judiciaries, those with laws and regulations more protective of investors have better developed capital markets.

As noted earlier, there is ample evidence to support the view that the regulations protecting investors and the quality of their enforcement are positively associated with the depth and quality of financial markets. However, the question still unanswered is why some countries have more effective laws than others? According to the second view of the law and finance 'theory', the differences among countries in the structure of laws and enforcement arises from the historical origin of their laws. The foundation of this argument is that the laws of different countries were, largely, transplanted by European colonialists. According to LLSV (1998), whether a country's commercial or company law is based on English, French, German or Scandinavian legal origins is important not only in explaining the country's laws on creditor rights, shareholders' rights and private property, but also when considering a country's financial development. Beck *et al.,* (2003) and LLSV (1998) assert that French civil law was developed to unify the legal system, prevent jurisprudence and solidify state control of the courts. In contrast, English common law evolved to protect property owners from state control. This is referred to as the 'political channel'. In addition civil law relies heavily on legal scholars to formulate its rules, statutes and comprehensive codes while common law is formed by judges who resolve specific disputes based on practice or precedent rather than on contributions by scholars (LLSV, 1998). This is referred to as the 'adaptability channel'. It is therefore argued that English common law gives higher priority to private property *vis-á vis* the state and is more adaptable to changing conditions than French civil law. Beck, Demirguc-Kunt & Levine, (2003) investigate the channels through which legal origins influence financial development. Their results show that the adaptability channel influences financial development more than the political channel. In other words, legal traditions that adapt efficiently to minimise the gap between the controlling needs of the state and the legal system's capabilities will foster financial development more. They also found that English common law countries have

significantly better developed financial intermediaries and markets as well as better property rights protection than French civil law countries.

3.3. Methodology

This section describes the data and variables used in this study. The study covers a selection of 15 stock markets in Africa, over the period 2003 to 2007. The selection criterion was based wholly on data availability of the selected variables. The selected countries are Botswana, Ghana, Kenya, Malawi, Mauritius, Namibia, Nigeria, South Africa, Swaziland, Tanzania, Uganda, Zambia, Egypt, Morocco and Tunisia.

3.3.1 Data and variable description

The dependent variable in this study is *stock market liquidity*. Stock market liquidity is measured as the total shares traded on the stock market divided by GDP. According to Levine and Zervos (1998), value traded measures trading volume as a share of national output and should positively reflect liquidity on an economy-wide basis. They found that stock market liquidity - as measured by the value of trading relative to the size of the economy- to be positively and significantly correlated with current and future rates of capital accumulation and productivity growth. Furthermore, while not a direct measure of trading costs or the uncertainty associated with trading on a particular exchange, theoretical models of stock market liquidity and long run growth directly motivate value traded (Levine, 1991; Bencivenga et al., 1995). Data were obtained from the World Development Indicators online database (World Bank 2008).

In order to measure *business regulation*, three indicators considered relevant to stock market growth were selected from the 'Doing Business' database (World Bank, 2008a). This is a database of business regulations that was created by the World Bank in 2003. The indicators measure how regulation helps

or hampers business performance in 181 countries and in 10 areas[11] of everyday business activity. The data are based on the studies of laws and regulations obtained from surveys that are administered through local lawyers, government practitioners and accountants. The indicators are considered to provide a more precise and objective measure of business regulation than any other available perception-based measures of institutions. The indicators selected for the analysis are divided into three, broad categories. These include property rights (procedures to enforce a contract), investor protection (the investor protection index and legal rights index) and the level of business regulation (measured as the number of procedures required to start a business).

Property rights: The number of procedures required to enforce a contract is an indicator of judicial efficiency. This variable measures the number of procedures required to resolve a commercial dispute before domestic or local courts. In measuring this variable it is assumed that the plaintiff takes all the required steps for prompt enforcement of judgement. In addition it is also assumed that the case represents a lawful transaction between businesses located in the country's most populous city. Fewer procedures to enforce a contract imply that the courts are efficient and therefore it is simple to enforce a contract while more procedures imply the contrary (Djankov *et al.*, 2003). In addition, according to LLSV (1999), the efficiency of the judiciary is associated with larger stock markets in terms of market capitalisation. The estimated coefficient of this variable is expected to be negatively associated with stock market liquidity.

Investor protection index measures the strength of minority shareholder protection against directors' misuse of corporate assets for personal gain. This indicator value is the average of three sub-indicators that measure transparency of transactions, liability of self-dealing, and shareholders' ability to sue officers for misconduct. In measuring this variable, it is assumed that the business is a publically traded corporation listed on the country's most important stock exchange and that it is a food manufacturer. The index ranges from 0 to 10 with higher values indicating better investor protection. The *legal rights*

[11] These include: starting a business, dealing with licences, employing workers, registering property, getting credit, protecting investors, paying taxes, trading across borders, enforcing contracts and closing a business.

index measures the degree to which collateral and bankruptcy laws protect the rights of borrowers and lenders, and thus facilitate lending. The index includes seven aspects related to legal rights in collateral law and three aspects in bankruptcy law. A score of 1 is assigned to each feature. The index ranges from 0 to 10, with higher scores indicating that collateral and bankruptcy laws are better designed to access credit. The coefficients of both variables are expected to be positively associated with stock market liquidity since greater investor protection enhances stock market growth (LLSV, 1997).

To measure the *level of business regulation*, the indicator that measures business entry regulation is used. This indicator measures the number of procedures that are officially required by an entrepreneur to start up and formally operate an industrial or commercial business. These include obtaining all the necessary licences and permits and completing any required notifications and verifications for the company and employees with relevant authorities. In the analysis, this indicator represents the overall burden of business regulations on firm efficiency. The number of procedures is recorded in absolute values with a higher number implying a higher burden of business regulation. The coefficient of this variable is expected to be negatively associated with stock market liquidity.

Five control variables – income, domestic savings, stock market size, financial intermediary development and inflation – are included in this study. The data for all these variables were obtained from the World Development Indicators online database (World Bank, 2008a). *Income* has been found to be a significant determinant of stock market activity, because higher income is usually associated with better institutions, larger and more active stock markets. The income level is measured as the GDP per capita in US dollars of a country and the coefficient of this variable is expected to be positively associated with stock market liquidity (Garcia & Liu, 1999). In order to measure macroeconomic stability *current inflation* is used –. Boyd, Levine & Smith (2001) show that higher levels of inflation are associated with smaller, less active and less efficient stock markets. It is argued that greater macroeconomic stability is an incentive for firms and investors to participate in the stock market. The coefficients of these variables are expected to be negatively associated with stock market

liquidity. Inflation is measured by the rate of change in the consumer price index. *Financial intermediary development* is considered to be a significant determinant of stock market development in Africa (Yartey & Adjasi, 2007). It is argued that deepening of the formal financial system can result in more efficient intermediaries and growth of the stock market. At the aggregate level, it is suggested that if financial intermediaries provide a complimentary service to issuers of new equity such as underwriters, then the development of the banking system will be positively associated with the development of stock markets (Arestis *et al.*, 2001; Demirguc-Kunt & Levine, 1996). In this study to measure financial depth, domestic credit provided by the banking sector (M3) as a proportion of GDP is used. *Stock market size* is positively correlated with the ability to mobilise capital and diversify risk on an economy-wide basis. It is measured as the ratio of the total value of listed shares divided by GDP The more liquid the stock market is, the larger the amount of saving that is channelled through the stock market (Levine, 1991). Therefore, stock market size will be positively associated with stock market liquidity. Finally, *savings* are also included since there is evidence to suggest that higher domestic savings in a country enhance capital flows through the stock market (Garcia & Liu, 1999). Therefore savings would be positively associated with stock market liquidity.

Legal origin: The legal origin is included in this study because there is evidence in the literature to show that it influences the legal system of a country. According to LLSV (1998), the legal tradition implanted in countries through the occupation or colonisation by European powers profoundly shaped national approaches to property rights protection and the degree to which those countries adapt to socioeconomic changes. It is also suggested that institutions are endogenous and therefore reflect various historical and cultural influences. In order to control for endogeneity among the business regulatory variables, the legal origin will be used. The legal origin is used as an instrument to extract the exogenous component of regulations. Econometrically, it is argued that the legal origin is a valid instrument to control the causal effect of the legal framework on financial development (Levine *et al.,* 2000). *Legal origin dummy***:** English legal origin equals 1 if the country has an English common law tradition and 0 if the country has a French civil law tradition as defined by the origin of each country's

commercial/company law (LLSV, 1998). According to Beck *et al.*, (2003), English common law countries have significantly better developed financial intermediaries and markets and better property rights protection than French civil law countries. The legal origin was obtained from Botero *et al.,* (2004) and the Central Intelligence Agency (CIA) World Fact Book (2008). Table 3.1 shows the descriptive summary statistics.

3.3.2. Analytical framework

This study employs a panel regression model. Since the sample size small and period is short this approach pools the data, which increases the degree of freedom and therefore provides more efficient estimates. It is also enables the control of individual heterogeneity of the sample units. The basic framework for the analysis is in the form of the following regression equation:

$$y_{it} = \alpha + \beta x_{it} + \varepsilon_{it} \quad \text{...(3.1)}$$

Panel data estimation is susceptible to heteroscedasticity. There was evidence to confirm the presence of heteroscedasticity among the error terms, see Tables B.4. and B.5 in Appendix B. This problem was fixed by using White's heteroscedasticity-consistent variances and standard errors. In this analysis the Prais–Winsten estimator, that is a generalised least squares (GLS) estimator, is used. The purpose of using this estimator is that it preserves the first observations in a sample, which is advantageous for small samples. It also generates efficient and consistent estimates in the presence of serial correlation among the disturbance terms.

3.3.3. Empirical model specification

The empirical model is based on that of La Porta, *et al.,* (1997) and Levine and Zervos (1998) with some modifications. The modifications of the model involve the inclusion of other regulatory variables that are not captured in the model they used. Therefore, the model is specified as follows;

$$K_{it} = \alpha_{it} + \beta\zeta_{it} + \gamma\vartheta_{it} + \varepsilon_{it} \quad \text{...(3.2)}$$

K_{it} is the value stock traded as a share of GDP of country i = 1,…,15 and in year t = 1,...,5. ζ_{it} represents a selection of business regulation variables. To ensure the robustness of the model, ϑ_{it} represents a selection of control variables and ε_{it} is the error term. To further ensure the robustness of the model, a number of control variables were included to minimise specification bias. The coefficients β, ϕ, γ are the parameters of interest.

3.4. Empirical results

3.4.1. Descriptive statistics

The descriptive statistics shown in Table 3.1 above shows an average investor protection index value of 4.9, which is below the median index value of 5. According to the index, this indicates that minority shareholders' rights, on average, are not well protected from directors' misuse of corporate assets. The average legal rights index of 6.68 is above the median index value of 5, which shows that the rights of borrowers and lenders are better protected by collateral and bankruptcy laws.

Table 3.1: Descriptive summary statistics (Full Sample)

Variable	Mean	Standard Dev.	Min	Max
Business entry regulation	10.45	3.08	6	18
Investor protection index	4.95	1.56	2	8
Borrowers and lenders rights index	6.68	2.22	3	10
Contract enforcement	37.65	4.24	29	44
Market capitalisation as % of GDP	40.84	60.20	0.72	294.53
Stock market liquidity	10.54	27.33	0.0011	150.44
Inflation	8.04	5.00	0.98	26.67
Income	1584.49	1460.36	134	4709
Financial intermediary development	49.43	49.95	-16.35	197.59
Savings	17.77	12.10	-3.44	52.43

The average market size (capitalisation) to GDP ratios across the sample was 40 per cent and shows that African stock markets are small. In addition there is a huge gap between these markets with the minimum value of 0.72 for Uganda and a maximum of 294.53 for South Africa. The Johannesburg

Stock Exchange has about 66.2 per cent of the combined market capitalisation of the selected countries. The average stocks traded as a percentage of GDP of 10.5per cent shows that these stock markets have low liquidity especially when compared with other developing economies like Brazil – 22.2 per cent, Malaysia – 50.4 per cent or Thailand – 56 per cent (See Table B.3 – Appendix B). The minimum value of 0.0011 recorded in Swaziland shows that there is virtually no trading as compared to the maximum value of 150.44 for South Africa. Furthermore, additional analysis by legal origin (Table B.1 and B.3 – Appendix B) shows that countries with French legal traditions have on average much lower investor protection (4.37), and weaker collateral and bankruptcy laws (index scores of 5) compared to countries of English legal tradition (5.46 and 8.15 respectively). There is, however, no significant difference in judicial efficiency as measured by the enforcing contracts variables between these two legal tradition countries. Lastly the average market size is lower among countries with French legal traditions (34.64) compared to countries of English legal tradition (46.7).

3.4.2. Regression results

The results in Table 3.2 below show the effect of a selection of business regulatory variables on stock market development for an unbalanced panel of 15 markets[12] over the period 2003-2007. Prais - Winsten regression estimates are generated for all the specifications of the model specified in equation (3.2). Regression 1 results show the level of business regulation is not a significant determinant of stock market development in this sample of countries. The estimated coefficient for minority shareholders' rights is significant at a 5 per cent level and with the predicted sign. This result implies that greater protection of minority shareholders' rights enhances stock market activity or liquidity and is consistent with *a priori* expectations (LLSV 1997, 1998). A one standard-deviation increase (an improvement) in the investor protection index is associated with an increase in stock market activity by 3.216 percentage points. Furthermore, the estimated coefficient for the borrowers' and lenders' legal rights index is significant and positively associated with stock market liquidity.

Table 3.2: Regression Results

[12] South Africa, Egypt, Morocco, Tunisia, Namibia, Botswana, Uganda, Kenya, Tanzania, Nigeria, Ghana, Mauritius, Swaziland, Zambia and Malawi.

Independent variables	Dependent Variable: Value of stock traded as a % of GDP			
	(1)	(2)	(3)	(4)
Level of business regulation	0.02643	0.03011	0.02055	0.02632
	(4.24)	(4.28)	(3.13)	(3.60)
Investor protection				
Minority shareholders' rights	0.02063	0.25224	0.06209	0.06134
	(1.58)**	(1.87)*	(2.85)*	(3.33)**
Borrower and lender rights	0.04389	0.04321	0.01819	0.01748
	(3.66)*	(3.95)**	(2.23)**	(2.09)**
Property rights				
Contract enforcement	-0.00811	-0.00819	-0.00211	-0.00184
	(-1.25)	(-0.94)	(-0.37)*	(-0.24)*
Stock market size	1.12760	1.03480	0.98410	0.99810
	(6.57)***	(5.68)***	(4.23)**	(7.15)**
Banking sector development	0.00579	0.00625	0.00563	0.00621
	(7.61)**	(7.90)**	(8.10)**	(8.43)**
Income	0.02373	0.07893	0.09325	0.07203
	(1.48)	(0.43)	(3.57)**	(3.21)*
Inflation	-0.00389	-0.00595	-0.00394	-0.00585
	(-1.43)*	(-1.75)*	(-1.48)*	(-1.96)*
Savings		0.00248		0.00463
		(0.94)*		(1.94) *
French legal origin			-2.28200	-0.30433
			(-3.25)***	(-5.27)***
Constant	-0.38974	-0.46561	-0.15242	-0.44827
	(-1.27)	(-1.05)	(-0.51)	(-1.02)
R-squared	0.8379	0.8445	0.8552	0.8639
Wald chi2	(8)41.83	(9)33.72	(9)43.99	(10)35.57
	[0.0000]	[0.0000]	[0.0000]	[0.0000]
Observations	70	65	70	65

Notes: All regressions include a constant. t-statistic are in parentheses and probability values in square brackets. *** indicates significance at 1%, ** significance at 5% and * significance at 10%

The estimated effect of both investor protection variables is hugely significant and corroborates the findings of La Porta *et al.*, (1997). The estimated coefficient for judicial efficiency measured by the contract enforcement variable is insignificant although it had the predicted sign. This result is inconsistent with *a priori* expectation since one would expect that increased efficiency in contract enforcement would enhance investors' confidence in the existence and enforcement of property rights. However, as highlighted earlier in this document, there is evidence to suggest that courts, especially in developing economies, lack adequate resources to operate efficiently therefore making enforcement of private contracts costly. As a result, firms in developing economies use alternative channels to resolve disputes – like arbitration or informal courts (Botero *et al.*, 2003). The estimated coefficients for four of the control variables included were significant and with the predicted sign. The results show that larger stock markets, higher income, banking sector development and a stable macroeconomic environment

are associated with greater stock market liquidity. In addition the results confirm those of previous studies, that the existence of well-developed financial intermediaries is important for the growth of stock markets in Africa (Demirguc-Kunt and Levine, 1996).

The estimated coefficients obtained in column (2) are similar to those obtained in column (1). The results confirm that both the level of business regulation and the efficiency of the judicial system are not significant determinants of stock market activity in Africa. The significance of the estimated coefficient for the borrowers' and lenders' legal rights index confirms that better designed collateral and bankruptcy laws are significant in facilitating lending and enhancing stock market liquidity. The estimated coefficient obtained for the protection of minority shareholders' rights is only significant at a 10 per cent level of significance. Given that the data for this indicator is obtained from a survey that is based on company laws and securities regulations, these results possibly imply that corporate governance rules and securities regulations are not well established or enforced in these economies. Another possible reason for this result could be the potential endogeneity of some of the variables. Therefore the next section presents the result when the legal origin is included as an instrumental variable to control for endogenous bias. Lastly, the results show that a stable macroeconomic environment, well-developed financial intermediaries, higher income and domestic savings increase market liquidity.

The legal origin was included in columns (3) and (4) (Table 3.2). The estimated coefficients obtained in columns (3) and (4) confirm that the level of business regulation does not influence stock market activity. Although weakly significant at a 10 per cent level of significance, the efficiency of the judicial system enhances stock market growth. In addition, the results confirm that investor protection is important for stock market liquidity. Furthermore, countries that adopted French legal traditions have less liquid stock markets compared to those of English legal traditions. These results corroborate the findings of La Porta *et al.,* (1997), and Beck *et al.*, (2003) that found English legal tradition countries to

have significantly better developed financial intermediaries and markets and better property rights protection than countries with French legal traditions.

3.5 Conclusion

The purpose of this study was to investigate the effect of the business regulation on stock market liquidity – that is used as a robust predicator of capital accumulation and productivity growth. The analysis was carried out using a sample of 15 stock markets in Africa with data from the 'Doing Business' database over the period 2003 to 2007. The results from the panel data analysis showed that the overall government regulation does not influence stock market liquidity. However, the results confirm those obtained in previous studies that greater protection of investors' rights, *vis-à-vis* minority shareholders' rights and borrower and lenders' rights, enhances stock market activity. This means that better designed collateral and bankruptcy laws that protect the rights of borrowers and lenders enhance stock market liquidity. There was anecdotal evidence to suggest that improved judicial efficiency influences stock market activity. The legal origin was found to have a significant effect on the legal system of a country. Countries that adopted French legal traditions had significantly less active stock markets than countries that adopted English legal traditions. In the case of countries with French legal origin, they were found to have narrower stock markets as well as less investor and property rights protection. These results confirm that property rights and investor protection are important determinants of the investment.

These findings have important policy implications for stock markets in Africa. Firstly, the evidence suggests that investor protection is important in enhancing stock market activity. Therefore, radical reforms in strengthening legal rules-like bankruptcy laws- could provide greater confidence in the legal system Secondly, contract enforcement is important for the development of stock markets. To improve judicial efficiency especially with regard to commercial disputes, African economies can strengthen statutory guidelines that govern arbitration since this is a faster channel for dispute resolution. Furthermore, establishing or strengthening the capacity of specific courts that deal only with

commercial disputes – like commercial courts – would hasten commercial dispute resolution since plaintiffs would avoid the lengthy delays in magistrate or high courts. Lastly, the results obtained offer opportunities for further investigation with a larger number of institutional variables that influence stock market liquidity.

CHAPTER 4: EFFECT OF THE POLITICAL ENVIRONMENT, BUSINESS REGULATION AND INFRASTRUCTURE ON INVESTMENT IN 29 AFRICAN COUNTRIES

4.1. Introduction

The disproportionate level of economic prosperity among countries has long been an issue of controversy in economic history. Over the past five decades, countries have adopted and adapted numerous strategies to enhance income and economic growth, with various outcomes. Countries like South Korea and Singapore, which were lagging behind economically before the 1960s, were able to experience phenomenal investment growth until the 1990s, while economies like Ghana and Uganda lagged behind. Other countries, like Botswana and South Africa, have received a consistent flow of foreign investment over the past three decades, while Lesotho and Zambia, which have been relatively politically stable during the same time period, have not received comparable amounts. Economists attribute this disparity to numerous factors, like weak macroeconomic policies, unstable political environments, underdeveloped and poorly maintained infrastructure and, more recently, poor legal and regulatory frameworks (Ndulu & O'Connell, 2008).

The legal and regulatory systems of a country are vital constituents of its institutions, which are known to provide the structure for transactions that enable human interaction to be orderly. It is unanimously accepted that institutions play a role in enhancing economic outcomes. The question that is still unanswered, however, is the extent to which institutions contribute to investment. Is an efficient and effective legal and regulatory framework sufficient to support investment? Numerous empirical studies have been undertaken using different institutional measures (like property rights and regulation of entry) to answer these questions (Besley, 1995; Blanchard, 2004; Djankov, Glaeser, La Porta, Lopez-de-Silanes & Shleifer, 2002). The studies assert that developed economies regulate their activities better than underdeveloped economies. Even though there is evidence to show that firms in developing

economies have found effective substitutes for the lack of efficient regulation and inexpensive formal conflict resolution, as highlighted by Alexander Gerschenkron's classic proposition (Gerschenkron, 1962), these structures have not stimulated significant economic activity in sub-Saharan Africa. This has been attributed to some extent to the unique social institutions and political environment of the African continent. In order to investigate this notion further, this chapter presents a comprehensive assessment of the effect of the level of business regulation, infrastructure development and the political environment on investment using 29 economies in Africa over a five-year period, from 2003 to 2007. Studies on the effect of regulation on the investment and growth of African economies are scanty and it is an area that is relatively under-researched. Using relatively new and objective measures of business regulation, as well as infrastructure development, corruption and political-risk indicators, this study seeks to extend the literature on the investment climate of African countries.

The remainder of the chapter is organised as follows: Section 4.2 provides a discussion on the background literature. Section 4.3 contains a discussion on the research methodology. Section 4.4 presents and discusses the results of the empirical analysis. Section 4.5 summarises the findings of the research and draws conclusions.

4.2. Literature review

North (1990) defines institutions as humanly devised constraints that structure political, economic and social interaction. They consist of both informal constraints (sanctions, taboos, customs, traditions and codes of conduct) and formal rules (constitutions, laws and property rights). Although institutions had been acknowledged as factors essential to economic performance, it is only after the work of Ronald Coase (1937) that they came to prominence. According to North (1981), Coase's work raised a major criticism against the neoclassical paradigm, which had profound implications on economic theory. Since then, further studies – such as those by Acemoglu, Johnson and Robinson (2001), Djankov, Glaeser, La Porta, Lopez-de-Silanes and Shleifer (2003), Hall and Jones (1999), Rodrik (1999) – on

institutions and their role in society have been carried out and, although there are varying outcomes and perspectives, there is general consensus that institutions do contribute to economic performance.

Excessive regulation and bureaucratic red tape are often identified as a characteristic of inefficient institutions. According to Stone, Levy and Pardes (1996), in a comparative study of the legal and regulatory environment of Brazilian and Chilean garment firms, excessive regulation can create a generalised drag on all businesses or can favour some businesses over others, either as an intended consequence of implementation or as a result of the structure of the costs imposed by regulation. They furthermore assert that poor regulation not only adds to the cost of doing business but also increases uncertainty about returns from investment and individual transactions. Creating the optimal balance between regulation and economic performance has proved to be a challenge given that regulations are inherently part of a social system. Since regulation typically arises gradually over time, additional benefits are usually difficult to measure. Djankov *et al.,* (2002) indicates that, for example, high-level entry regulation is associated with larger unofficial economies and with no measurable benefits for the quality of products or services produced. Furthermore, higher levels of regulation in the form of lengthy judicial procedures yield no benefits in simple disputes. In contrast, more regulated legal systems appear to cost more and to create more delays without offsetting benefits in terms of perceived justice (Djankov *et al.*, 2003).

It has been asserted that governments in Africa control directly a large part of the economic activity and are responsible for creating the climate in which other economic decisions are made (Ravenhill, 1980). The political environment, therefore, has a very important impact on every business, no matter its size or area of operation. This includes all laws, government agencies and lobbying groups that influence or restrict individuals and organisations in society. An unstable political environment arises from activities and events (like corruption within government and among political élite) and internal conflict (like wars, civil disorder and political violence). Even though such events may not involve a change in government or take a violent form, they generate uncertainty about the stability of the

incumbent government and this influences its authority and effectiveness. In a cross-sectional study of 31 countries, Fosu (2002) shows that abortive coups rather than successful coups had an adverse impact on economic outcomes over the 1960 to 1986 period. This study focuses on a narrow aspect of political instability referred to as 'élite political instability'[13]. More recent studies have broadened the definition of political instability to include all kinds of situations, activities and patterns of political behaviour that threaten to change or actually change a political system in a non-constitutional way (whether élite or communal events, peaceful or violent events). Gyimah-Brempong and Traynor (1999), using the broader definition of political instability on a sample of 39 sub-Saharan countries from 1975 to 1988, show that it had a significant and negative effect on capital accumulation in the region. The type of regime (military or civilian) has been found to influence the political process of a country. Even though numerous researchers have failed to discern the influence of a military or civilian regime on economic performance, there is a general consensus that the two types differ in the style of economic management (Looney, 1989). Military regimes are considered to be authoritarian and with weak roots in society. They are fragile and are characterised by a short life expectancy and susceptibility to internal political power struggles that result in violent regime changes. On the other hand civilian regimes are considered democratic and tend to root themselves in society through more developed networks. They have been found to last longer because they display a greater sense of cohesion (Pastor and Hilt, 1993). Jensen (2003) provides evidence to show that democratic governments attract high levels of foreign direct investment (FDI).

Corruption is considered a threat to both foreign and domestic investment because it distorts the economic and financial environment. It is well documented that corruption reduces the efficiency of government and business by enabling people to assume positions of power through patronage rather than ability and therefore introduces an inherent instability into the political process. This argument is supported by Mauro (1995) who affirms that corruption hinders the efficiency of institutions and has a

[13] 'Élite political instability' is defined as the forceful removal of or an attempt or a plot to remove from office those in leadership positions in a given country (Morrison & Stevenson, 1971). Previous research shows that this is measured as the occurrence of coups d'état, plots, political assassinations and purges (Barro, 1991; Fosu, 1992; Knack & Keefer, 1995).

negative effect on investment, even in sub-samples of countries in which bureaucratic regulation is very cumbersome. Shleifer and Vishny (1993), in their study on the effect of corruption on resource allocation, assert that corruption in the form of bribes is more costly than taxation and has the effect of encouraging monopolies, discouraging innovation and reducing foreign investment. They argue that, since corruption is usually illegal, efforts to avoid detection and punishment cause corruption to be more distortionary than taxation. Another study on a panel of 22 countries in sub-Saharan Africa shows that both corruption and political instability have a negative effect on FDI (Asiedu, 2006). Habib and Zurawicki (2001) provide further evidence to show that not only does corruption hinder FDI but it also affects local domestic investment.

Economic-infrastructure[14] development in African economies has always been an area that has been heavily regulated and controlled mainly by government. As a result of limited private-sector investment, the condition of Africa's infrastructure is characterised by inadequate transport networks that are poorly maintained, with unreliable power that severely constrains output. There is theoretical evidence to show that good infrastructure favours the growth of firms by enhancing productivity and profitability (Dollar, Driemeier & Mengistae, 2005). In addition, poor infrastructure is found to increase the cost of doing business and is therefore a barrier to trade both within a country and with a country's neighbours. According to Limão and Venables (2001), poor infrastructure contributes to most of the dismal performance of intra-African trade and African countries' external trade. This study attributes this situation largely to very high transport costs within the continent. Although the literature does not show a direct relationship between investment rates and infrastructure development, empirical studies show significant evidence that infrastructure influences investment and economic growth through the productivity channel (Aschauer, 1989; Bougheas, Demetriades & Morgenroth, 1999). Interestingly, Asiedu (2002) does not find infrastructure to have an influence on FDI in sub-Saharan Africa.

[14] In this study, 'economic infrastructure' refers to physical facilities, such as roads, rail, ports, airports and communication facilities (mobile phones, the internet, etc.).

4.3. Methodology

This section describes the data and variables used in the study. The analysis covers a selection of 29 countries in Africa over the period 2003 to 2007. These countries were selected because they had data on variables considered in this study. The countries are Angola, Botswana, Burundi, Central African Republic, Chad, Côte d'Ivoire, the Democratic Republic of Congo, Ghana, Kenya, Madagascar, Mali, Malawi, Mauritius, Mauritania, Morocco, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, South Africa, Sudan, Tanzania, Tunisia, Uganda, Zambia and Zimbabwe.

4.3.1. Variables

The dependent variable in this study is *investment* measured as gross capital formation as a percentage of GDP. This economic variable has been used in previous studies as an indicator of investment within a country (Alesina *et al.*, 2005). Data were obtained from the World Development Indicators CD-ROM (2008).

Four variables were selected from a number of domestic-conflict, political-risk and corruption variables to measure political environment. These are corruption, revolutions, type of regime and the party-fractionalisation index.

To measure *corruption*, the corruption-perception index (CPI) from Transparency International is used. This index ranks countries in terms of the degree to which corruption is perceived to exist among public officials and politicians and ranges between 10 (highly clean) and 0 (highly corrupt). There are drawbacks to using perception-based indicators, especially the CPI. It is considered that indicators measuring perceived corruption levels are highly correlated with investment, since investment decisions are made on the basis of perceptions. It is, however, the most comprehensive index on corruption that covers almost all countries in Africa. It is also considered a benchmark indicator and has been used in numerous empirical studies (Mauro, 1995; Shleifer & Vishny, 1993). Corruption is included in this study because it is considered to be an institutional factor that has a direct impact on policy uncertainty.

In a number of developing economies, the political élite benefit economically through corruption and this has triggered political and social unrest in some instances.

Revolutions are measured as the number of illegal or forced changes in top government élite and any successful or unsuccessful armed rebellion with the aim of being independent from central government. Revolutions are expected have a negative coefficient. The *party-fractionalisation index* is based on a formula proposed by Douglas Rae (1968) and is measured as

$$Frac = \sum_{i=1}^{m} (t_i)^2 \qquad \text{...(4.1)}$$

where t is the proportion of members of legislature associated with the i^{th} political party. Fractionalisation is expected to have a negative coefficient, as increased fractionalisation may either create opportunities for military involvement in political matters or create greater frustration and uncertainty among the public about the ruling political system or government (Gyimah-Brempong & Traynor, 1999). *Type of regime* refers to a country's political process. This indicator consists of three categories with a 1: for civilian, which refers to a government controlled by a non-military component of a country's population. 2: military–civilian is outwardly civilian but is controlled by military elite. 3: military regime is one in which direct rule is by the military. A civilian regime in this study is considered to be the most favourable in that it is less prone to political instability while the least favourable is a military regime that fosters an environment of considerable uncertainty. A larger number of political risk variables were considered but they were not highly correlated and subsequently generated a low score (0.49) on the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy. Factor analysis or principal-component analysis could therefore not be used to create a composite political-environment index, as previous studies have done (Alesina & Perotti, 1996; Gyimah-Brempong & Traynor, 1999). The three variables were selected because they had sufficient data points during the

sample period. The data for the three variables were obtained from the Cross National Time Series Data Archive.[15]

In order to measure *infrastructure*, the number of fixed telephones lines per 1 000 people is used. This variable was chosen because it is available for all the countries in the sample. According to the literature, a good measure of infrastructure should take into account both its availability and its reliability. The infrastructure variable that captures the reliability aspect of telecommunication would be, for example, the number of times that telephone lines are inoperative (Asiedu, 2006). These data are not, however, available for most of the countries in this sample. Data were obtained from the World Development Indicators CD-ROM (2008).

To measure the *level of business regulation*, three sub-indicators from the 'Doing Business' database are used. This is a database of business regulations that was created by the World Bank in 2003. The indicators measure how regulations help or hinder business performance in 181 countries and in 10 regulatory areas[16]. The data are based on the studies of laws and regulations and surveys of local lawyers, government practitioners and accountants. The indicators are considered to provide a more precise and objective measure of business environment than any other available perception-based measures of institutions. The sub-indicators used in this study are the number of procedures required to start a business, to register a commercial property and to transfer ownership of property. The number of procedures for each variable is recorded in absolute values, with a higher number implying a higher burden of business regulation. A business-regulation index is obtained as the simple average of the values of each sub-indicator. Because the selected sub-indicators represent the bureaucratic hurdles in the execution of these transactions, the simple average of these variables is considered to be a reasonable proxy for the level of business regulation. The coefficient is expected to be negatively associated with investment.

[15] More information is available at www.databanksinternational.com.
[16] These include starting a business, dealing with licences, employing workers, registering property, getting credit, protecting investors, paying taxes, trading across borders, enforcing contracts and closing a business.

Other control variables added include the inflation rate (which is a measure of macro-economic stability), the percentage of adults who are literate as a measure of human capital and GDP growth used as a measure of the size of the economy (which is included as the log GDP of a country). The data for all these variables was obtained from the World Development Indicators CD-ROM (2008). Table C.1 (Appendix C) shows the summary descriptive statistics.

4.3.2. Analytical framework

This study employs a panel regression model. Panel data techniques have numerous advantages over cross-sectional and times series methods. Panel data are better able to identify and measure the effects that are simply not detectable in pure cross-section or pure time-series data (Greene, 2003). In addition according to Baltagi (2008), panel data may eliminate biases resulting from the aggregation of countries or firms. The basic framework for the analysis is in the form of the following regression equation:

$$y_{it} = \alpha + \beta x_{it} + \varepsilon_{it} \quad \text{...(4.2)}$$

Where i = 1....N; t= 1...T, with i denoting the cross-sectional dimension, countries, and t representing the time series. α is the constant, β is **Kx1**, x_{it} is the i^{th} country on K explanatory variables and ε_{it} is the error term.

In order to test serial correlation, a Lagrange multiplier test (LM test statistic) is used. If the calculated LM value exceeds the critical LM value then the null hypothesis of no serial correlation is rejected and serial correlation is present. Serial correlation can be corrected by using the Prais-Winsten transformation. Panel data estimation is also susceptible to heteroscedasticity. This can be corrected by using the White cross-section coefficient covariance method to correct for standard errors (Baltagi, 2008).See Tables 4.6to 4.9 for before and after correction tests.

4.3.3. Empirical model specification

The hypotheses tested in this study are that an unstable political environment decreases investment and that higher levels of business regulation and infrastructure development decrease investment in Africa. The mechanism through which regulation affects aggregate economic performance is not clear and there are therefore no well-developed theories. There is, however, a common view intrinsic to numerous studies of regulation and the effect of regulation on economic performance called the Schumpeterian process of 'creative destruction' (Loayza, Ovieda & Servén, 2004). According to Joseph Schumpeter, innovative entry by entrepreneurs is the force that sustains long-term economic growth, even as it destroys the value of established companies that enjoy some degree of monopoly power. Caballero and Hammour (1996) furthermore provide evidence to show that creative destruction driven by experimentation and the adoption of new products and processes when investment is sunk is a core mechanism of development. In other words, obstacles like excessive regulatory barriers that disrupt the process of resource allocation tend to cause deterioration in aggregate economic performance by allowing low-productivity activities to survive longer and discourage the adoption of new high-productivity activities. It has also been asserted that underdeveloped and politicised institutions are a major impediment to a well-functioning creative destruction process and they result in sluggish creation, technological stagnation and spurious reallocation of resources. Evidence from the Organisation for Economic Co-operation and Development countries shows that the shift of resources away from less productive to more efficient production units forms much of the observed growth in aggregate productivity (Ahn, 2001; Haltiwanger, 2000).

Evidence from the literature shows that social and political instability affects investment through a number of channels. Firstly, social and political unrest cause the disruption of productive activities, which results in a reduction of the productivity of labour and capital. Secondly, it increases uncertainty, thereby leading investors to postpone projects, to shift their assets from fixed capital to more liquid or speculative forms or to invest abroad (Alesina & Perrotti, 1996).

The effect of the type of regime on investment may also be captured through the political instability channel. Military regimes that are usually characterised by an autocratic style of leadership are more susceptible to rebellion and therefore create uncertainty about the stability of government. On the other hand, civilian regimes that are considered to embrace a democratic style of governance create an environment that reduces the extent of political, social and economic uncertainty. Corruption, on the other hand, influences investment through a number of channels. One of these is the time-consuming activities that economic agents are involved in, like queuing for official documents in unauthorised offices and negotiating or paying bribes to officials, which obstructs the efficient operations of firms and, ultimately, productivity. The theoretical literature shows that infrastructure helps in the mobility of resources, goods and services, thereby facilitating economic activity, which enhances additional productive opportunities. There is empirical evidence to show that good infrastructure, like roads, telephones and hydroelectric power, reduces production and transaction costs in developing economies (Eshafani & Ramirez, 2003). The evidence above largely suggests that these factors influence investment through the productivity channel. In order to capture the above relationships, we specify a parsimonious model of investment of the form:

$$I_{it} = \alpha + \beta\vartheta_{it} + \gamma\varphi_{it} + \delta\tau_{it} + \theta\omega_{it} + \varepsilon_{it} \quad \text{...(4.3)}$$

I_{it} is the gross capital stock of country $i = 1, \ldots, 29$ in year $t = 1, \ldots, 5$. ϑ_{it} is a measure of the level of business regulation, φ_{it} is a measure of the level of infrastructure development, τ_{it} is a measure of the political environment and ω_{it} is a set of control variables. ε_{it} is the composite-error term. The coefficients β , γ, δ are the parameters of interest.

4.3.4. Endogenous bias

In order to control for endogeneity of institutions, the instrumental variable approach is used. Rodrik, Subramanian & Trebbi, (2004) assert that institutions are endogenous. Therefore any correlation

between institutions and economic variables may reflect these underlying influences and not institutions themselves. Endogenous bias may arise because countries with higher income may engage in more investment than others. It is argued in the literature that countries with rising or high incomes are more likely to have better regulatory environments. Statistically the use of instrumental variable techniques provides one method of dealing with the endogeneity problem. Acemoglu, Johnson & Robinson (2001) use mortality rates of colonial settlers as an instrument for institutional quality, Hall and Jones (1999) use the fraction of the population speaking English and western European languages also as an instrument for institutional quality. To instrument the regulation variables the legal origin is used. There is growing evidence to suggest that the legal tradition implanted in countries by European colonialists has profoundly shaped national approaches to property rights protection and the degree to which the state intervenes in the economy (La Porta *et al.*, 1998). *Legal origin dummy***:** English legal origin equals 1 if the country has an English common law tradition and 0 if the country has a French civil law tradition as defined by the origin of each country's commercial/company law (La Porta *et al.*, 1999). According to La Porta *et al.*, (1998) and Beck *et al.,* (2002), French civil law was developed to unify the legal system, prevent jurisprudence, and solidify state control of the courts. By contrast, English common law evolved to protect property owners from state control. Beck *et al.*, (2002) show that countries with French legal origins tend to have lower levels of property rights protection than countries with English origins after controlling for many other factors, including natural resource endowments. The legal origin was obtained from Botero *et al.,* (2004) and the Central Intelligence Agency World Fact Book.

4.4. Empirical results

The empirical results presented in Tables 4.1 and 4.2 show the effect of infrastructure development, political environment and the level of business regulation on investment for an unbalanced panel of 29 countries over the period 2003 to 2007. Prais-Winsten regression estimates are generated for all the specifications of the model specified in equation (4.3). Tables 4.1 and 4.2 show the effect of the explanatory variables on investment, measured as the gross-capital formation and private-capital

formation as a percentage of GDP, respectively. Even though corruption is a political-environment variable, it is considered to be an institutional factor and is therefore included in all specifications. Since three political-risk indicators are used in this study, the results are presented in three separate columns. Column (1) reports results with type of regime and columns (2) and (3) report results with revolutions and party fractionalisation, respectively.

The results in column (1) show that most of the explanatory variables are significant, although not with the predicted signs. The coefficient for corruption is positive and significant, which is consistent with both the theory and the empirical literature (Mauro, 1995). The results show that a one standard-deviation increase of the corruption index increases investment by 5.3 per cent. A higher index implies that the perception of corruption in government is low.

The type of regime has a positive and significant effect on investment. The result suggests that during this sample period, civilian–military regimes and military regimes in Africa were better in promoting investment than civilian regimes. Possibly civilian–military regimes and military regimes during this sample period had economic styles of management that favoured public and private investment better than civilian regimes. However, this result will be investigated further in the subsequent analysis.

Infrastructure is found to be significant at a 5 per cent level, although with a negative sign, which contradicts most empirical studies. There is evidence, however, to show that if infrastructure development is driven mainly by public investment, it sometimes has a negative effect on private-capital formation. According to the complementarity hypothesis, public investment undertaken by heavily subsidised and inefficient state-owned enterprises in some sectors of the economy has, more often than not, reduced the possibility of private investment, especially if the markets in which these investments are made are highly protected (Miguel, 2007). The level of business regulation was found to be insignificant and positively associated to investment. This result is inconsistent with the findings

of Djankov *et al.,* (2002) and Dawson (2006). Column (2) shows that revolutions have a negative but insignificant effect on investment.

Table 4.1: Regression Results – Aggregate Investment

Dependent variable: Total gross-capital formation as a percentage of GDP			
	(1)	**(2)**	**(3)**
Level of business regulation	0.01739	0.04811	-0.09461
	(0.09)	(0.23)	(-0.41)
Infrastructure(Lag-1)	-1.40700	-1.09507	-1.04846
	(-2.44)**	(-1.95)*	(-1.85)
Political environment			
Corruption	5.16052	4.92703	4.75425
	(4.96)***	(4.75)***	(4.71)***
Type of regime	5.24172		
	(3.01)***		
Revolutions		-0.53794	
		(-0.72)	
Party fractionalization			-0.00040
			(-1.97)*
Inflation	0.08035	0.05475	0.00941
	(0.14)	(0.10)	(0.02)
Literacy	0.07184	0.09372	0.10423
	(1.20)	(1.25)*	(1.81)*
Income	2.16389	2.04853	1.89529
	(4.04)	(3.79)***	(3.47)***
Constant	-16.56092	-11.69047	-5.49393
	(-1.84)	(-1.31)	(-0.58)
R-Squared	0.7963	0.7726	0.7846
No. of obs	105	105	105
Test of probability	Wald Chi2(7)=31.88 [0.0000]	Wald Chi2(7)=34.75 [0.0000]	Wald Chi2(7)=39.37 [0.0000]

Notes: All regressions include a constant. t-statistic are in parentheses and probability values are in square brackets. *** indicates significance at 1%, ** significance at 5% and * significance at 10%.

Given that there were a number of revolutions in the Democratic Republic of the Congo, Burundi, Chad, Cote d'Ivoire, Mauritania, Nigerian, Rwanda and Sudan during the sample period, this result contradicts the notion that small disruptions in the political environment create uncertainty about the stability and effectiveness of government, which influences perceptions and the marginal product of capital (Devereaux & Wen, 1996; Gyimah-Brempong & Traynor 1996; 1999). Column (3) shows that party fractionalisation has a significant and negative effect on investment. The result confirms the

findings of Gyimah-Brempong & Traynor, (1999). All three columns show that corruption is highly significant. The level of business regulation is insignificant in all specifications (in columns 1, 2 and 3) and with the wrong predicted sign in columns (1) and (2).

The results presented in Table 4.1 are inconclusive and the alternative of investigating the effect of the explanatory variables on private and public-capital formation is therefore considered appropriate. The results are largely insignificant in all specifications when public-capital formation is used as the dependent variable and they are therefore not presented. Table 4.2 presents the results with the dependent variable as private-capital formation. Similarly, the results are presented in three separate columns with one political-risk variable included independently. Column (1) reports the results with the type of regime included, and columns (2), and (3) show the results for revolutions and party fractionalisation respectively. The results with private-capital formation are more interesting. In all specifications, the level of business regulation is not significant, implying that the level of business regulation does not affect investment. This result contradicts the theory and theoretical foundation of the proxy indicator – the number of procedures to start a business or to register a business or property – that is used as a measure of the level of business regulation. According to the source,[17] more procedures are synonymous with many bureaucratic hurdles, which are indicative of heavier business regulation. This result may, however, be due to endogenous bias and will be controlled for in the next section. The one-period lagged infrastructure-development estimates were highly significant in all cases and had an unpredicted sign. The level of corruption in all specifications was highly significant and had the predicted sign. A one standard-deviation increase in the corruption index increases private investment by an average of 4.8 per cent. The effect of the type of regime is significant at a 5 per cent level and has a negative effect on private capital formation. The results show that military regimes and civilian–military regimes create a less favourable environment for private investment than civilian regimes. The party-fractionalisation index is insignificant, which shows that, even if the political system may be highly fractionalised, this does not create uncertainty about the effectiveness of the ruling party

[17] The World Bank 'Doing Business' project.

or current government. In an environment where social institutions are considered weak, opposition parties seldom influence existing or new government policies because they are small or highly fractionalised and therefore lack political clout. The coefficient for revolutions is insignificant. The income and literacy rate are both significant in all specifications.

One factor that may cause biased estimates and that has not been addressed yet is endogeneity. Table 4.3, columns (4), (5) and (6), therefore show the results with the instrumental variable. The dependent variable is private-capital formation and the political-risk variables are included independently with type of regime in column (4) and revolutions and party fractionalisation in columns (5) and (6), respectively.

Table 4.2: Regression Results – Private Investment

Dependent variable: Private-capital formation as a percentage of GDP						
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Level of business regulation	0.02580	-0.01767	-0.01338	-0.40354	-0.46441	-0.42839
	(0.24)	(-0.18)	(-0.11)	(-2.22)**	(-2.74)***	(-2.40)
Infrastructure	-1.59789	-1.91531	-1.89398	-1.44085	-1.64936	-1.61956
	(-3.48)***	(-4.79)***	(-4.72)***	(-3.60)***	(-4.60)***	(-4.21)***
Political environment						
Corruption	4.56486	4.71587	4.68496	3.91846	4.04789	4.08885
	(7.15)***	(7.33)***	(7.20)***	(6.00)***	(6.40)***	(6.21)***
Type of regime	-4.08014			-2.81647		
	(-0.12)**			(-1.85)***		
Revolutions		0.19009			0.26307	
		(0.31)			(0.37)	
Party fractionalisation			-0.01901			0.00012
			(0.04)			(0.58)
Inflation	-0.36621	-0.24784	-0.26005	-1.05844	-1.00403	-0.97631
	(-1.13)	(-0.77)	(-0.79)	(-3.14)**	(-2.96)**	(-2.81)**
Literacy	0.06060	0.05011	0.05159	0.12606	0.12340	0.12985
	(2.34)**	(2.02)*	(2.06)*	(3.89)***	(3.72)**	(3.88)**
Income	1.45113	1.66487	1.65987	0.93956	1.06553	5.76192
	(3.50)***	(4.48)***	(4.60)***	(2.10)**	(2.59)***	(4.62)***
Legal origin				5.42370	5.57695	11.35273
				(4.81)***	(4.85)***	(2.42)**
Constant	-3.68526	-8.20437	-8.23684	5.97719	3.32764	1.56991
	(-0.70)	(-1.82)*	(-1.59)	(1.08)	(0.64)	(0.27)
R-Squared	0.7700	0.7682	0.7681	0.8217	0.8133	0.8055
No. of obs.	105	105	105	105	105	105
Test of prob.	Wald Chi2(7)= 174.33[0.0000]	Chi2(7)=82.63 [0.0000]	Chi2(7)=80.30 [0.0000]	Chi2(8)=301.03 [0.0000]	Chi2(8)=118.71 [0.0000]	Chi2(8)=199.88 [0.0000]

Notes: All regressions include a constant. t-statistic are in parentheses and probability values in square brackets. *** indicates significance at 1%, ** significance at 5% and * significance at 10%.

The estimated coefficients obtained after controlling for endogeneity through the use of legal origin as an instrument are statistically stronger. The level of business regulation is highly significant and has the predicted sign in all three specifications. This result implies that the level of business regulation influences private investment, which is consistent with previous empirical studies (Djankov *et al.*, 2002). In addition, the effect of corruption and the type of regime on private investment is negative and significant even after controlling for effect of infrastructure development and the level of business regulation. These results confirm those obtained earlier in the empirical analysis, even though the estimated magnitudes of the coefficients for the political-environment variables are marginally lower. The coefficient for the single lag of infrastructure development is highly significant and negative, which strongly suggests that there could be inaccuracies in the measures of infrastructure development. It is well established that well developed infrastructure enhances private sector investments in current and subsequent periods. The legal origin is significant in all specifications. This result shows that countries with English common law tradition have higher investment than those with French civil law tradition. This result is consistent with *a priori* expectation.

4.5. Conclusion

The purpose of this chapter is to investigate the effect of the level of business regulation, infrastructure and political environment on the level of investment in Africa. Using a five-year (2003 to 2007) panel-data set of 29 countries in Africa and a broad number of political and social-institution variables, the results provide evidence that both corruption and the political environment directly affect investment, even after endogeneity is controlled for. The estimates generated also confirm that the level of business regulation measured by the 'Doing Business' indicators is a significant determinant of investment in these countries. Specifically, a lower level of business regulation, less corruption and a stable political environment are important in reducing uncertainty and enhancing the level of investment. This confirms earlier empirical studies that the efficiency of social institutions is closely associated with political stability and leadership. It is therefore important that political reforms are undertaken in tandem with regulatory reforms in order to achieve significant economic outcomes. Reforms and

implementation of policy changes that affect the regulatory framework of a country must, however, be critically assessed. Even though the results suggest that the level of business regulation is important, they do not provide ample evidence to confirm what level of regulation a country must attain in order to attain a desired amount of investment. Further analysis is required to determine an appropriate level of regulation since intrinsically some regulation is required to ensure the effective control of the business environment. For policy purposes, not only the level of business regulation is important but also the types of regulation, such as the types of business regulation that need reform. For purposes of providing strong policy recommendations, further studies are required to consider country-specific characteristics in the assessment of the effect of business regulation on investment..

CHAPTER 5: INVESTIGATING THE EFFECT OF BUSINESS REGULATION AND GEOGRAPHY ON INVESTMENT IN AFRICA

5.1. Introduction

In recent years, policymakers and multi-lateral organisations have focused increasingly on the importance of a sound investment climate in developing countries. Stern (2002) refers to the investment climate as an environment that enhances both rural and urban productivity and investment. Therefore, the investment climate is important not only for large, formal-sector firms, it is also important for small and micro-sized enterprises, the informal sector and agricultural productivity. Given that the quantity and quality of investment in a country depend on the returns investors expect and the uncertainties around those returns, in order to create a favourable investment climate it is now accepted that a number of factors must exist. Indeed, macro-economic policy stability, political stability, well-functioning institutions and good governance are significant determinants. In addition, good infrastructure necessary for productive investment – including transportation, electricity and communication – is vital.

The spatial location of a country has been considered a significant factor in influencing income differentials and economic development. Numerous studies show that there is a close relationship between the level of economic development of a country and its geographical features *vis-á-vis* locational factors such as natural resources, diseases and whether it is landlocked (Naudé, 2007; Limão & Venables, 2001). In the literature, the role of geography on economic performance has been viewed from three perspectives. First is that geography determines climate, endowment of natural resources, disease burden and transport costs. These factors have been considered to have an impact on policy and on the convergence of incomes across the world (Gallup, Sachs, & Mellinger, 1999). Second is the integration perspective in which geography is essentially a platform for international trade and therefore influences firms' strategic location choices of global production (Sachs & Warner, 1995; Rodrik, Subramanian & Trebbi, 2004). Third is the institutional perspective in which it is asserted that

European colonialism led to the development of institutions of private property in previously poor areas that were usually sparsely populated, thereby encouraging investment, while introducing or maintaining extractive institutions in previously prosperous areas that were usually highly populated (Acemoglu, Johnson & Robinson, 2002). Therefore, in explaining economic development, geography has been considered a factor that affects agricultural productivity and health directly, while indirectly impacting on the economy through distance and the quality of institutions (Naudé & Krugell, 2007).

The purpose of this chapter is to investigate whether geography and the business regulatory environment influence investment in Africa. The geographical focus is on the spatial location of countries as a determinant of aggregate investment. It is well established that landlocked countries are geographically disadvantaged in competing globally, with trade involving greater distances and greater obstacles due to border crossings. In many landlocked economies in Africa, this is compounded by an unfavourable business environment. It is therefore argued that if these economies are to attract investment and encourage both domestic and foreign trade, improving the quality of their business regulatory environment is essential. Using the 'Doing Business' dataset for business regulation, this analysis is able to evaluate the relative importance of business regulation and geography on the level of investment in 37African economies over a five-year period, from 2003 to 2007. This study contributes to the relatively small literature on the investment climate of African economies.

The remainder of the chapter is organised as follows: Section 5.2 provides a discussion on the background literature. Section 5.3 contains a discussion on the methodology. Section 5.4 presents and discusses the results of the empirical analysis. Section 5.5 summarises the findings of the research and draws conclusions.

5.2. Literature review

According to North (1990), the major role of institutions in a society is to reduce uncertainty by establishing a stable structure for human interaction. This structure consists of both formal rules and

informal constraints embodied in the customs and traditions of society. Although the channel through which institutions influence economic performance is still challenged, it is accepted that effective and efficient institutions enhance economic prosperity. Excessive government regulation has often been considered an outcome of weak institutions since it often results in excessive bureaucratic red tape and corruption. Therefore, regulation may affect the ability of firms to engage in productive activity and thus influence the efficiency with which resources are used in the economy. In an empirical study of several sectors of 21 OECD[18] countries, Alesina, Ardagna, Nicoletti & Schiantarelli (2005), regulation is seen as being a significant determinant of private investment. The authors provide sufficient evidence to show that product market regulation can influence the costs that existing firms face when expanding their productive capacity. Their overall assessment shows that regulatory reforms that substantially lower entry barriers spur investment. Furthermore, Dawson (2006) using cross-country data on regulation from the Economic Freedom of the World Index (EFW)[19] from 1980 to 2000 and a sample of 127 countries, found that countries with less overall regulation have higher rates of private investment. By analysing the impact of different types of regulation – credit market, labour market and business – the study found that business regulation had a much higher impact than credit market regulation on private investment rates across countries. On the other hand, findings of the study showed that countries with more regulation had higher levels of government investment. Dawson (2006) therefore argues that a reduction in overall regulation appears to cause a substitution of private investment for government investment.

It can be argued that the intrinsic motive for the existence of institutions is to ensure security of private property and contract enforcement. Many contemporary and economic historians assert that the role of the state in codifying and protecting property rights is important in providing the preconditions for investment, trade and economic growth. Weak property rights are considered a deterrent to investment since they increase the perceived risk and uncertainty to returns on investment and this has implications

[18] Organisation for Economic Co-operation and Development

[19] Economic Freedom of the World Index includes regulation as one of its five major areas. Others include: (1) legal structure and security of property rights, (2) freedom to trade internationally, (3) access to sound money, and (4) size of government expenditures, taxes and enterprises (Fraser Institute's Economic Freedom of the World Annual Report).

for the growth of firms. It has been empirically shown that weak property rights limit the reinvestment of profits in some types of firms and that those firms with the least secure property rights invest nearly 40 per cent less than those with more secure property rights (Pattillo, 2001). There is also evidence to show that strengthening property rights in Peruvian urban slums led to a significant increase in the rate of residential investment (Field, 2005). The empirical literature in cross-country studies also shows that less secure property rights correlatewith less aggregate investment and slower economic growth (Mauro, 1995; Acemoglu, Johnson & Robinson, 2001). However, Rodrik (2000) argues that formal property rights do not count much if they do not confer control rights. In other words, entrepreneurs will not have the initiative to innovate or invest unless they have adequate control over the return on their investment. This he asserts can be achieved if control rights are upheld by a combination of laws, public and private enforcement – regulators and courts – and customs and traditions. Djankov, Glaeser, La Porta, Lopez-de-Silanes & Shleifer (2003) on the other hand contend that one cannot assume that property and contracts are secured by courts, especially in developing economies. Their study suggests that the legal system rather than the level of development of a country shapes the crucial dimensions of its judicial efficiency. They find that countries that have inherited legal systems (for instance from colonisers) with heavily formalised dispute resolution end up with lower-quality legal systems, at least for simple disputes. And although they assert that heavy procedural formalism has theoretically plausible reasons for its existence, they agree that it causes extreme costs and delays, unwillingness of potential participants to use courts and delayed justice. However, they suggest that a practical strategy of judicial reform at least with respect to simple disputes can be achieved by a reduction of procedural formalism.

It has been asserted that tropical countries are nearly all poor and that landlocked countries tend to be much poorer than coastal economies (Gallup, Sachs & Mellinger, 1999). The extensive literature by Krugman (1991), Sachs (2001), Rodrik (2002) and others all show, using numerous geographical variables that geography to some extent matters for both economic growth and development. Ndulu & O'Connell (2008) argue that geographical factors make investment and productivity growth more

expensive in Africa. Empirical evidence shows that economic geography influences the level of productivity within a country. Using a sample of 40 of India's largest industrial cities to investigate the impact of the business environment and economic geography on plant level productivity, Lall & Mengistae (2005), show that there are big productivity gaps across locations which to a large extent can be explained by differences in economic geography and business environment. They assert that a significant source of the effect of geography on plant productivity is from agglomeration, where firms gain efficiency due to proximity to others in the same line of business. Their results also show that a significant portion of productivity is also attributed to the effect of market access to the foreign and domestic trading partners of a location. This argument is supported by (Naude, 2007) who asserts that productivity is low in Africa because of insufficient proximity between economic agents within the continent, and between African countries and international markets. Furthermore, landlocked economies in Africa experience additional constraints in cross-continental trade because of numerous border crossings (Faye, McArthur, Sachs & Snow, 2004). This has been found to have a significant cost-inducing effect through rising costs of transiting various borders, especially since overland transport costs are higher than shipping costs. This is exacerbated by time lost through delays at borders. This argument is supported by Gallup *et al.,* (1999), who suggest that coastal economies could have military or economic incentives to impose costs on interior, landlocked economies. In addition, there is evidence to suggest that landlocked economies experience up to 50 per cent higher transport costs and about 60 per cent lower trade volumes than coastal economies (Naudé, 2007). This poor performance among landlocked economies is attributed to poor infrastructure, not only in the home country but also in neighbouring countries. Lack of adequate infrastructure and the complexity of infrastructure development across national borders make it difficult for firms to distribute resources and thus obtain economies of scale. According to Limão & Venables (2001), poor infrastructure accounts for 40 per cent of predicted costs for coastal economies and up to 60 per cent for landlocked countries. On the other hand, Naudé & Krugell (2007), in a study to investigate geography and institutions as determinants of FDI using a specification that includes a number of geographic variables, found that geography does not seem to have a direct influence on FDI flows to Africa.

5.3. Methodology

This section describes the variables and data used in this study. The analysis covers a selection of 37 coastal and landlocked economies in Africa over the period 2003 to 2007. The countries were selected because they had data on the variables considered in this study and the list of countries is shown in Table D.1 of the Appendix D. In addition, this section describes the empirical model strategy and analytical framework.

5.3.1. Variables

The dependent variable is the *investment* that is measured as gross capital stock as a percentage of GDP . Data was obtained from the World Development Indicators CD-ROM 2008.

To measure business regulation, five sub-indicators from the 'Doing Business' database are used (World Bank, 2008a). This is a database of business regulations that was created by the World Bank in 2003. The indicators measure how regulation helps or hampers business performance in 181 countries and in 10 areas[20] of everyday business activity. The data are based on the studies of laws and regulations obtained from surveys that are administered through local lawyers, government practitioners and accountants. The indicators are considered to provide more precise and objective measures of business regulation than any other available perception-based measures of institutions. Data was obtained from the 'Doing Business' project online database. The sub-indicators selected for the analysis are divided into two broad categories. These are property rights (procedures to register property, enforce a contract and secure a building licence) and procedural requirements to trade across borders (documents to import or export).

The number of procedures to register property: The number of procedures is recorded in absolute figures and records all procedures that are legally or in practice required to transfer property title from a seller to a buyer. There is evidence to suggest that property registration in the form of land titling significantly

[20] These are starting a business, dealing with licences, employing workers, registering property, getting credit, protecting investors, paying taxes, trading across borders, enforcing contracts and closing a business.

increases land-attached investments. The coefficient of this variable is expected to be negatively associated with investment since more procedures imply that securing property ownership rights is cumbersome.

The number of procedures to enforce a contract: This variable is an indicator of the efficiency of the judicial system in a country. It measures the number of procedures required to enforce a commercial dispute. The 'number of procedures' is considered to be a sufficient indicator, therefore the cost and time to execute these procedures is excluded in this study. As suggested in the literature, higher procedural formalism is a strong predictor of lengthy duration in dispute resolution. Higher formalism also predicts lower enforceability of contracts, higher corruption, as well as lower honesty, consistency and fairness of the system (Djankov *et al.*, 2003). The number of procedures is recorded in absolute values and includes the steps required to file the case until judgment is enforced. Fewer procedures to enforce a contract imply that the courts are efficient and therefore it is simple to enforce a contract, while more procedures would imply the contrary.

The number of procedures required in order to secure a building licence: The ease or difficulty of securing all the required building licences by a contractor is an indicator of the burden in securing property rights. Licensing registration measures the number of procedures required for a business in the construction industry to build a standardised warehouse. The procedures are measured in absolute values and more procedures imply that licensing regulation is rigid and cumbersome. The coefficient of this variable is expected to be negatively associated with investment. There is theoretical evidence to suggest that excessive licensing regulations, among other factors, have negatively influenced private investment in the electricity sector of Tanzania (Marandu, 2004).

The number of documents to import/export: This variable measures the number of documents required to import or export from the time a full standard 20-foot, dry container load of goods is dispatched to the time the cargo is in the client's warehouse. These documents include bank documents, customs

declaration and clearance documents, port filing documents, import or export licences and other official documents exchanged between the concerned parties. It is assumed that the contract (sale agreement) has already been agreed upon and signed by both parties. These trade indicators describe the institutional features of a country's attitude towards the rest of the world with respect to trade. It is argued that such non-tariff trade barriers may not directly reflect the degree of effective protection faced by domestic agents, but only the legal framework they confront (Warcziarg, 2001). Similarly, more documents required imply that the import or export process is burdensome. There is a strong correlation between the number of documents and time required to meet all the requirements. The coefficients of these variables are expected to be negatively associated with investment.

In order to measure geography, two variables are used. *Landlocked dummy:* A dummy variable is used for landlocked countries that take on the value of 0 if the country has a coastline and 1 otherwise. Henderson, Shalizi & Venables (2001) argue that being landlocked increases transport costs by more than 50 per cent. Being landlocked not only increases transport costs but also increases in-transit administrative processes that cause long delays especially at border crossings (Faye *et al.*, 2004). There are 13 landlocked countries in this study and they are all in sub-Saharan Africa. Another geographical variable used is the *distance* from the capital city to the port that handles most of the country's cargo. The capital city was selected because it is usually the largest economic hub in most African countries. Distance is also considered an indicator of transport costs, as one would expect transport costs to increase as one travels further inland. According to Naudé & Matthee (2007), distance remains the most important determinant of transport costs. Gallup, Sachs and Mellinger (1999) show that easy access to coasts is important in lowering transport costs. The coefficient of this variable is therefore expected to be negatively associated with investment. The information was obtained from the Central Intelligence Agency (CIA) World Fact book (2009) and World Bank (2008b).

Three control variables – trade openness, income and exchange rate – are included in this analysis. *Trade openness* can be measured by using trade as a percentage of GDP. It is the sum of imports and

exports measured as a percentage of GDP. This variable is included as an indicator of both domestic and international market access. An increase in trade would imply a favourable investment environment; therefore, one can expect the coefficient of this variable to be positive. There is also evidence to show that trade openness is robustly and positively correlated with investment (Levine & Renelt, 1992). As a measure of macroeconomic stability, the *real exchange rate* is used. Intuitively, real depreciation of a country's currency raises the cost of imported capital goods. Since most investment goods in Africa are imported, depreciation will hamper private investment, especially in the non-tradable goods sector. Conversely, depreciation of the real exchange rate would be expected to stimulate private investment by raising the profitability of the export goods sector (Ghura & Goodwin, 2000). To measure the size of the economy, *income* measured as the log of GDP is used. Income is considered an important determinant for investment. *Public investment* is included since it is considered to be a significant determinant of private investment. Intuitively one would expect that public investment in social and physical infrastructure by raising the private and social rates of return could increase private investment. However, increases in public investment may also crowd out private investment if the additional government borrowing requirements raise domestic interest rates and future taxes. Therefore the anticipated effect of public investment is ambiguous. All these variables were obtained from the World Development indicators online database (World Bank, 2009).

Two other regional dummies are included in this analysis – a landlocked dummy that excludes Botswana and a sub-Saharan African (SSA) dummy that excludes South Africa. *Landlocked dummy excl. Botswana:* It is argued that when Botswana is included in the landlocked dummy, the investment climate of landlocked economies in Africa is better than coastal economies (Doing Business, 2009). Furthermore Rodrik (2002) argues that Botswana is an example of a country that has performed well economically over an extended period and has adopted a heterodox mix of institutional arrangements – 'orthodox elements with local heresies'. This notion is therefore investigated with the data obtained. *SSA dummy excl. South Africa*: Similarly, South Africa is considered to have the most favourable investment climate. Understanding the results without South Africa in the sample may offer interesting

policy recommendations. The SSA dummy is included in each regression in order to account for time-invariant region specific effects that may co-vary with investment.

Endogenous bias may arise because countries with higher income may engage in more investment than others. It is argued in the literature that countries with rising or high incomes are more likely to have better regulatory environments. As countries grow faster, the cost of a heavy regulatory burden becomes higher as markets and business opportunities grow thereby accelerating regulatory reform. Government may face greater pressure from the private sector to remove administrative constraints. To instrument the regulation variables the legal origin is used. There is growing evidence to suggest that the legal tradition implanted in countries by European colonialists has profoundly shaped national approaches to the protection of property rights and the degree to which the state intervenes in the economy (La Porta, Lopez-de-Silanes, Shleifer & Vishny,1998). *Legal origin dummy***:** English legal origin equals 1 if the country has a English common law tradition and 0 if the country has a French civil law tradition as defined by the origin of each country's commercial/company law (La Porta *et al.*, 1999). According to La Porta *et al.*, (1998) and Beck *et al.,* (2003), French civil law was developed to unify the legal system, prevent jurisprudence, and solidify state control of the courts. By contrast, English common law evolved to protect property owners from state control. Beck *et al.*, (2003) show that countries with French legal origins tend to have lower levels of property rights protection than countries with English origins after controlling for many other factors, including natural resource endowments. The legal origin was obtained from Botero *et al.,* (2004) and the CIA World Fact book.

5.3.2. Empirical model strategy

This section discusses the theoretical framework and empirical model that will measure the effect of geography and the business regulation on the investment climate. This is done by formulating the main hypotheses which include: firstly; economies with better property rights invest more; secondly, the spatial location of a country influences investment and thirdly, fewer trade regulation barriers enhance

investment. In terms of geography this study focuses on the spatial location of countries and how it influences investment.

For many decades, the effect of regulation on economic performance has been debated by economists. There are a number of theories of regulation in the literature that have been postulated to explain this relationship. These include the public interest theory, contracting theory and the enforcement theory of regulation. The public interest theory of regulation associated with Pigou (1938) assumes that firstly, unhindered markets often fail because of problems of monopoly or externalities and secondly, that governments are benevolent and capable of correcting these market failures through regulation. In other words, regulation seeks the protection and benefit of the public at large. There were a number of criticisms of these assumptions. Coase (1960) criticised the first assumption in his original work on contracting theory by affirming that in cases where competition and private ordering do not successfully address market failures, impartial courts can do so by enforcing contracts and common law rules for torts. Therefore, Coase argued that as long as courts enforced these contracts, equilibrium outcomes would be efficient. Later, these assumptions became the subject of criticism by economists like Stigler, (1971) and Posner (1974). A detailed discussion on theories of regulation is beyond the scope of this document[21]. The focus of this study, however, is based on a more recent theory – the enforcement theory of regulation by Djankov, Glasear, La Porta and Lopez-de-Silanes (2003). They argue that if society wishes to control business in order to pursue socially desirable goals, there are four distinct strategies for such control that are not mutually exclusive. These strategies include market discipline, private litigation, public enforcement through regulation, and state ownership. Djankov *et al.,* (2003), provides a case in point that competition and regulation often operate in the same market, as do private litigation and public regulation. The basic premise of the enforcement theory of regulation is that all these strategies are imperfect, and that optimal institutional design involves a choice among these alternatives. The enforcement theory of regulation also recognises a trade-off between two social costs, dictatorship[22] and disorder[23]. They assert that these two social costs exist in all four strategies

[21] See Shleifer (2005) for a detailed discussion.
[22] Dictatorship refers to the ability of the government and its officials to impose such costs on private agents.

albeit in different proportions. The challenge is identifying the equilibrium point that provides most benefits and least cost. Underlying all these theories is a consensus that regulation imposes costs on economic agents arising out of immeasurable transactions.

Evidence in the literature shows that secure property rights enhance economic prosperity. In particular, better protection of property rights increases aggregate investment and fosters economic growth (Johnson *et al.*, 2002). It is largely accepted that the channel through which property rights affects investment occurs through a security-induced investment demand effect and a collateral-based credit supply effect. Therefore, secure property rights enhance investment because the perceived risk of losing ownership rights is reduced. Similarly, lenders are more willing to extend credit firstly when they are assured that assets pledged as collateral are secure and free of competing claims and, secondly, when they are confident of the enforceability of contracts in a country's courts.

There are a number of channels through which trade can influence investment. First, according to Wacziarg (2001), investment may respond to openness through the size of the market effect. He argues that market size imposes a constraint on the division of labour so that more open countries are better able to exploit increasing returns to scale. Furthermore, Wacziarg (1997) shows that trade liberalisation may simply remove structural constraints by allowing domestic agents to import capital goods that were previously unavailable (or produced locally but at a higher cost). In both cases, trade liberalisation will influence investment through the marginal factor productivity of firms.

Geography is considered an exogenous determinant that influences the economy both directly (for instance in agricultural productivity) and indirectly through its effect on market integration or the quality of institutions (Rodrik *et al.*, 2003). The spatial relationship between countries affects not only goods trade, but also other forms of interaction like the mobility of physical and human capital. It is argued that geographical factors affect proximity and productivity through higher transport costs. This

[23] Disorder refers to the ability of private agents to harm others – to steal, overcharge, injure, cheat and impose external costs.

is through distance between centres of economic activity within countries or to and from global markets. Therefore, distance influences the cost of doing business, by increasing both transport and transaction costs, which affects the productivity of firms adversely. For instance there is evidence to show that due to costly transport, small firms are forced to hold large inventories that contribute to high fixed costs and lower productive efficiency (Rodriguez-Clare, 1996). Furthermore, being landlocked has a cost-inducing effect on economic activity through the rising cost of transiting various borders as well as time lost by border delays (Naude, 2007). Both channels affect the productive capacity and competitiveness that influences firms' ability to invest and grow.

Based on the theories explaining the role of institutions and geography on economic activity discussed above, this study represents an attempt to estimate the following equation:

$$\kappa_{it} = \mu + \alpha\varphi_{it} + \beta\vartheta_{it} + \gamma\lambda_{it} + \upsilon_{it} \quad \text{...(5.1)}$$

where κ_{it} is the gross capital stock of country *i* in year *t*, φ_{it} is a selection of business regulation variables, ϑ_{it} is a selection of geography variables, λ_{it} is a selection of control variables and υ_{it} is the composite error term. The coefficients of interest are α and β and throughout the analysis, the size, sign and significance of the coefficients will be closely compared.

5.3.3. Analytical framework

The analysis is carried out within a panel data framework. Panel data involves the pooling of observations on a cross-section of units over several time periods (Baltagi, 2008). This compensates for the lack of time-series depth by increasing the degrees of freedom and therefore provides more efficient estimates. The basic framework for the analysis is in the form of the following regression equation:

$$y_{it} = \alpha + \beta x'_{it} + \varepsilon_{it} \quad \text{...(5.2)}$$

where $i = 1...37$; $t = 1...5$), with $\varepsilon_{it} = \mu_i + \nu_{it}$ or $\varepsilon_{it} = \lambda_i + \nu_{it}$

In this case ε_{it} is a random term and μ_i is the country specific effect and ν_{it} is a random effect. Different assumptions about μ_i (or λ_i) lead to either using the fixed effects approach or the random effects approach when estimating the different coefficients. In order to determine whether the fixed or random effects estimation technique is appropriate for the analysis, the Hausman (1978) specification test will be used. In addition the presence of serial-correlation and heteroskedaticity across the panels will be investigated.

5.4. Empirical results

5.4.1. Descriptive summary statistics

Tables 5.1 and 5.2 show the descriptive statistics for the full sample and for coastal and landlocked economies respectively. It requires an average of 10 complete documents to import goods into an African country (See Table 5.1). This result is similar for both coastal and landlocked economies in Africa. Similarly, it requires an average of eight complete documents to export goods from a country in Africa and this result is similar for both coastal and landlocked economies. However, it costs on average 200 per cent more to import goods in landlocked economies in Africa as compared to coastal economies. In addition, it costs on average 180 per cent more to export goods from landlocked economies as compared to coastal economies. Capital cities of landlocked economies are on average 992.70 kilometres away from the nearest coastline as compared to coastal economies that are an average of 176 kilometres away. The three property rights indicators show no significant difference among coastal and landlocked economies.

Table 5.1: Descriptive statistics (full sample – 37 countries)

Variable	Mean	Std. Dev.	Min	Max
Property registration	6.95	2.84	4	19
Contract enforcement	39.6	5.33	24	50
Licensing procedures	19.23	7.23	9	49
Import documentation	10	2.79	6	20
Import costs	2103.13	1177.84	600	5520
Export documentation	8.41	2.15	4	14
Export costs	1693.43	1051.41	463	4867
Income	2140	4410	595	27300
Exchange rate	92.32	41.98	0.3	330.3
Trade	73.35	29.57	31	162
Distance	452.29	489.97	1	1627.87
Aggregate investment	21.02	7.85	5.8	46.38
Private investment	14.14	6.05	1.9	43.4
Public investment	6.96	6.24	-14.9	50.6

Table 5.2: Descriptive statistics (Landlocked and Coastal economies)

Variable	Landlocked Economies (13)				Coastal Economies (24)			
	Mean	Std.Dev	Min	Max	Mean	Std.Dev	Min	Max
Property registration	6.46	2.67	4	13	7.22	2.91	4	19
Contract enforcement	38.07	5.56	24	48	40.46	5.03	30	50
Licensing procedures	18.34	5.78	9	32	19.55	7.91	10	49
Import documentation	11.10	3.61	7	20	9.41	2.03	6	14
Import costs	3238.75	1061.68	1210	5520	1488	673.28	600	3733
Export documentation	8.69	2.32	6	14	8.26	2.05	4	12
Export costs	2491.40	1170.45	1050	4867	1261.19	661.70	463	3733
Income	447	356	59.5	1170	3064	5250	105	27300
Exchange rate	88.59	20.67	49.3	134.5	94.33	49.84	0.3	330.3
Trade	63.21	32.47	31	162	78.84	26.42	39	142
Distance	992.70	375.26	353	1627.87	159.57	222.58	1	718.49
Aggregate investment	20.96	9.16	5.8	45.5	21.05	7.08	8.1	46.38
Private investment	15.14	7.09	2.3	43.4	14.02	5.38	1.9	27.7
Public investment	6.41	6.02	-14.9	16.7	7.25	6.35	1.1	50.6

5.4.2. Empirical results

The empirical results in Tables 5.3 show the effect of business regulation and geography on investment in an unbalanced panel of 37 countries over the period 2003 to 2007. Prais-Winsten regression estimates were generated for the model specified in equation (5.1). The results presented are for three dependent variables: aggregate investment measured as the gross capital stock as a percentage of GDP,

private capital formation also measured as a percentage of GDP, and public capital formation as a percentage of GDP. Aggregate investment was split into private and public investment since there is evidence to show that splitting total investment into these two components has a significant impact on the results. In their study of institutions and their impact on investment and growth, Gwartney, Holcombe & Lawson (2006) found private investment rates were much more responsive to cross-country differences than rates of government investment. Since the two trade regulation variables are indicators of the same institution, and their effect on the economy is highly correlated, the results are presented in two separate columns. Columns (1), (3) and (5) report the results with import regulation and columns (2), (4) and (6) report the results for export regulation.

The results in columns (1) and (2) for aggregate investment show that most explanatory variables are significant, although not with the predicted signs. Two of the property rights variables were found to have a significant effect on investment. Licensing regulation has a significant and negative effect on investment. This result implies that the longer it takes to secure the required licences and permits the longer it takes to obtain full ownership and control of property. This result is consistent with the literature that shows that excessive licensing regulations have a negative effect on investment (Marandu, 2004).

Furthermore, property registration is a significant and negative determinant of investment. In essence this result implies that more cumbersome administrative procedures to secure formal ownership of property decreases investment. This result is consistent with *a priori* expectation since there is evidence to suggest that a less bureaucratic property registration process increases access to credit and investment (Burns, 2005). The coefficient for contract enforcement is insignificant in column (1) and significant although at a 10 per cent level in column (2). The initial result (column 1) is inconsistent with results from previous studies that confirm that higher procedural formalism is associated with lengthy durations in dispute resolution, lower enforceability of contracts and higher corruption (Djankov *et al,*. 2003).

Table 5.3: Regression Results

	Aggregate investment		Private investment		Public investment	
Independent variables	(1)	(2)	(3)	(4)	(5)	(6)
Property rights						
Property registration	-0.0078**	-0.0084**	-0.0030**	-0.0029**	-0.0057*	-0.0056*
	(-4.52)	(-3.86)	(-2.07)	(-2.04)	(-2.83)	(3.00)
Contract enforcement	-0.0013	-0.0018*	-0.0016*	-0.0016*	0.0010	0.0007
	(-1.36)	(-1.74)	(-2.40)	(-2.26)	(0.69)	(0.63)
Licensing regulation	-0.0037***	-0.0034***	-0.0029***	-0.0026***	-0.0004	0.0002
	(-5.67)	(-5.04)	(-6.31)	(-6.30)	(-0.52)	(0.26)
Trade regulation						
Import regulation	-0.037**		-0.0014*		-0.0038**	
	(-2.27)		(-1.71)		(-2.35)	
Export regulation		-0.0064*		-0.0011		-0.0073
		(-2.55)		(-0.71)		(-2.94)
Geography						
Landlocked (dummy)	0.1593***	0.1522***	0.1333***	0.1329***	0.0305*	0.0165
	(3.97)	(3.74)	(4.20)	(4.17)	(2.02)	(1.02)
Distance (from port)	-0.0359*	-0.0473***	-0.05323***	-0.0569***	0.0320	0.0216
	(-1.79)	(-3.70)	(-3.75)	(-4.14)	(1.62)	(1.25)
Landlocked (excl. Botswana)	-0.1544**	-0.1384**	-0.0883***	-0.0846***	-0.0609*	-0.0395
	(-3.80)	(-3.42)	(-2.75)	(-2.63)	(-3.11)	(-2.17)
Public investment (1st lag)			-0.1410***	-0.1419***		
			(-3.66)	(-3.64)		
Income	-0.0267***	-0.0242***	-0.0115*	-0.0106*	-0.0148**	-0.0100**
	(-4.03)	(-3.69)	(-2.09)	(-1.98)	(-2.87)	(-2.12)
Exchange rate	-0.0003***	-0.0003***	-0.0002**	-0.0002**	-0.0001	-0.0002*
	(-3.45)	(-3.79)	(-3.26)	(-3.21)	(-1.22)	(-1.84)
Trade	0.0557***	0.0547**	-0.0055	-0.0040	0.0758***	0.0781***
	(2.70)	(3.03)	(-0.49)	(-0.37)	(3.24)	(3.38)
Legal origin (English)	0.0281**	0.0220**	0.0287***	0.0278***	-0.0127	-0.0201
	(2.53)	(2.10)	(3.49)	(3.40)	(-1.13)	(-2.13)
SSA dummy (excl. South Africa)	-0.1189***	-0.1093***	-0.0964***	-0.0948***	-0.015	0.0086
	(-6.01)	(-5.40)	(-5.18)	(-5.07)	(-1.01)	(0.55)
Constant	0.4631***	0.4830***	0.3906***	0.3827***	0.034	0.0295
	(7.71)	(6.88)	(9.38)	(9.06)	(0.40)	(0.41)
R-Squared	0.7816	0.7760	0.8379	0.8421	0.3753	0.4282
Wald chi 2	(12)345.44	(12)265.48	(13)172.44	(13)191.97	(12)95.77	(12)139.79
	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
No. of observations	148	148	148	148	148	148

Notes: All regressions include a constant. t-statistic are in parentheses and probability values in square brackets.
*** indicates significance at 1%, ** significance at 5% and * significance at 10%

However, even though the latter is consistent with *a priori* expectation, it is weakly significant. Possibly it suggests that there are other factors that influence contract enforcement that are not captured by this variable. It is argued that even if property rights are properly defined and protected, market transactions leave much room for cheating (Fafchamps, 1996). He argues that in reality there are many contractual dimensions that are equally, if not more important to parties, such as trust (that justice will be obtained in courts), that increase contractual risk. Given the presence of information asymmetries in any economy, Fafchamps (2004) argues that it generates contract enforcement problems because it makes contractual obligations difficult to verify by agents not party to the contract, including courts. He

provides evidence to suggest that because contract enforcement through courts and police is imperfect in Africa, economic agents depend on costless legal enforcement that is based on social networks and mutual trust, which happen outside the realm of any formal legal system. Lastly, evidence from African manufacturing firms show that large firms are more likely to encounter contract non-compliance and to make use of lawyers and courts compared to smaller firms that operate in the unsophisticated manufacturing sector (Fafchamps, 2004).

The estimated coefficient for import regulation is negative and significant at a 5 per cent level. Given that this indicator measures the efficiency of trading institutions, this result implies that excessive and burdensome administrative hurdles in filing the required import documentation have a significant negative effect on investment. Intuitively, since most imports in Africa are considered to be for manufacturers, one would expect that higher import barriers would increase the cost of doing business, which would reduce profitability and therefore have a negative effect on investment. According to Morrissey & Jones (2005), the most immediate effect of reducing non-tariff barriers is to make it easier to import, which would reduce the domestic price for imports. However the impact is indeterminate given that there are a number of factors like transport costs that also influence the cost of goods. The results in column (1) also show that excessive export regulation has a negative effect on investment. This result is consistent with previous empirical studies (Feder, 1982). It is argued that reducing administrative barriers to export also reduces the time to distribute goods, which improves the efficiency and competitiveness of exporting firms. As a result, exporting firms are able to grow faster due to the acquisition of international knowledge, product design techniques and technology diffusion (Bernard & Wagner, 1997). The relative magnitude of the coefficient for imports is significantly higher than that for exports, which is consistent with previous empirical studies. According to Baldwin and Seghezza (1996), the effect of foreign barriers on investment is less strong and robust than that of domestic protection.

The distance from the capital city to the largest port was found to be significant and negative at a 1 per cent level of significance. This result shows that a one standard-deviation decrease in distance increases

investment by an average of 2 per cent. Since the distance from the ocean has been found to influence investment through transport costs, this result confirms previous studies on landlocked economies (Naudé & Matthee, 2007). The landlocked dummy was found to be significant and positive, implying that landlocked economies had higher investment than coastal economies. Although this result may appear unrealistic since coastal economies have higher incomes and trade more (See Table 5.3), evidence from previous studies confirms this result. Collectively, landlocked economies in Africa have been found to have a business regulatory environment, as measured by the 'Doing Business' indicators, which is more conducive to private sector investment in comparison to the coastal economies because of the inclusion of Botswana in the analysis. When Botswana was removed, the coefficient for the landlocked dummy had the expected sign. Landlocked economies excluding Botswana experience less investment. Botswana, according to the 'Doing Business' reports, has been ranked consistently among the top four economies with the most favourable business regulatory environment in Africa. And among the landlocked economies, Botswana was found to have the most favourable business environment in the five-year sample period of this study (World Bank, 2008). The outstanding performance of the country has been attributed to, among other factors, its political system (non-corrupt, multi-party democracy), the quality of its political leadership, its sound economic policies and institutions as well as good infrastructure that have fostered private sector growth. The strength of its political and economic institutions has been attributed to its pre-colonial institutional heritage in which the political and economic centres of power were independent. This tradition was found to be strongly embedded in its post-colonial institutions and is still evident in its present institutional framework and government policies (Rodrik, 2002).

The sub-Saharan Africa dummy that excludes South Africa was also found to be significant at a 1 per cent level of significance and negatively associated with investment. This result confirms previous studies on investment and growth in Africa. Two of the control variables- trade openness and exchange rates- were found to be highly significant and with the predicted signs. However, income growth was found to have a negative association with investment at a 1 per cent level, implying that higher income

growth reduces investment. This result is not surprising given that there is ample evidence to show that income levels in Africa are generally low and as such do not stimulate savings and investments in both the public and private sectors. A greater fraction of income is spent on government and private consumption expenditure rather than savings and investment. Furthermore, it has been found that an increase in income results in greater demand for imports (of both competitive and non-competitive imports) without any significant rise in domestic demand for locally produced goods. This tends to discourage private sector investment (Ndulu & O'Connell, 2008). The estimated coefficient for the legal origin was found to be positive and significant at a 5 per cent level, implying that countries with an English common law tradition have higher investment than those with a French civil law tradition. These results are consistent with the findings from previous studies even after controlling for business regulation and geography (Beck *et al,*. 2003). English common law countries have been found to have higher investment since property rights are much better protected than in French civil law countries.

The effect of business regulation and geography on private investment is shown in columns (3) and (4) of Table 5.4. Public investment is included because it has been found to be a significant determinant of private investment. The coefficients of the three property rights indicators behave similarly to the results obtained in both columns (1) and (2). The results show that property rights are a significant determinant of private investment. The coefficient for import regulation is significant at a 1 per cent level and negatively associated with private investment. This result is consistent with the theory and shows that a one standard deviation decrease in import regulation increases private investment by 0.39 per cent. On the other hand, export regulation was found to be an insignificant determinant of private investment. This result is plausible since there is evidence to suggest that most successful export firms in developing countries are fewer and larger than most other types of firms (Levy, 1999). Possibly according to Dollar *et al.* (2006), administrative barriers and delays may not pose a challenge to exporting firms because of what they call the 'lobbying effect'. These firms can provide political pressure to reform these particular areas or institutions. The coefficient for the landlocked dummy is positive, implying that landlocked economies have higher private investment than coastal economies.

However, when Botswana was removed from the sample, landlocked economies had less private investment than coastal economies. These economies have approximately 8 per cent less investment than coastal economies. This result confirms both the theory and empirical literature that being landlocked has a negative effect on private investment (Faye *et al.,* 2004). The distance to the coast was also found to be significant at a 1 per cent level and to have a negative effect on private investment. The magnitude of both geographical variables – being landlocked and distance from ports – supports the argument that geography plays a significant role in Africa's investment environment (Sachs, 2005). Macroeconomic stability measured by the exchange rate was found to be a significant determinant of private investment. On the other hand, the trade openness coefficients in both columns (3) and (4) of Table 5.4 were found to be insignificant and negatively associated with investment. This result contradicts previous studies (like Baldwin & Seghezza, 1996; Wacziarg, 2001). However, Wacziarg and Welch (2008) provide evidence to suggest that this result is plausible if countries adopt contractionary macroeconomic policies in the aftermath of trade reforms or undertake protectionist measures to shield domestic sectors to counteract the effect of trade reforms. The coefficient for public investment was found to be highly significant. This result shows that during this sample period, public investment had significant negative effects on private investment, indicating a 'crowding-out' effect. This result is consistent with results from studies that show additional government borrowing requirements in Africa sometimes have the effect of raising domestic interest rates and taxes, which reduces private sector investment (Ghura & Goodwin, 2000). The legal origin was found to be a significant determinant of private investment with the estimated coefficient showing that countries with an English common law tradition have almost up to 3 per cent higher private investment than those with a French civil law tradition.

It is not surprising that public investment in columns (5) and (6) of Table 5.3 was found to be less responsive to both business regulation and geographical variables. Among the property rights variables, only property registration had a significant effect on public investment. Excessive import and export regulation have a negative effect on public investment in this sample. Although distance was found to

have an insignificant effect on public investment, the estimated coefficient for being landlocked was significant. The coefficient for the landlocked dummy excluding Botswana was significant. Trade openness was found to encourage public investment while an increase in income growth was found to reduce public investment. The legal origin dummy was found to be insignificant for public investment, implying that there was no significant difference among English common law and French civil law economies. This result is plausible since governments have the function to invest in social and physical infrastructure to meet society's social needs irrespective of legal tradition.

5.5. Conclusion

The objective of this analysis was to investigate the effect of the business regulatory environment and geography on investment. Using an unbalanced panel data set of business regulation and geographical variables for 37 countries over a five-year period (2003-2007), the results show that property ownership rights, trade regulations, being landlocked and distance from ports affects the level of investment in African countries. The estimates generated confirm that business regulation, as measured by the 'Doing Business' indicators, is a significant determinant of investment. Specifically, more secure property rights improve the investment climate of countries. Furthermore, fewer administrative barriers to import and export have a significant effect on the level of investment. The geographical variables confirm the findings of earlier empirical studies that being landlocked and the distance to ports have a negative effect on the level of investment in a country. Evidently, among the business regulation variables the findings show property rights protection in landlocked economies is not significantly different from that in coastal economies. Therefore, landlocked economies can improve their investment climate to overcome their geographical disadvantages by improving the security of property rights and enforcement. In addition, landlocked countries can focus on industries that require less mobility of resource inputs, for instance serve as high-tech hubs for the tourism trade and information technology. However, this must be done in tandem with addressing human capital constraints since highly skilled labour is much more likely to emigrate than to attract physical capital into the country. Improving physical infrastructure by encouraging investment in infrastructure will reduce transport costs

significantly and encourage intra-regional trade. In addition, a greater commitment from African leaders to encourage inter-regional trade and provide incentives for innovation will foster the development of a favourable investment climate in this region. These results are limited in scope since it was assumed that the investment climate is the same across a country, which seldom is the case. Therefore, country-specific studies may reveal important interactions between geography and institutions that this cross-country empirical study does not. Further research opportunities in this area with data over a longer period and fewer countries may provide more substantive results since institutions historically take a long time to manifest significant changes on economic performance.

CHAPTER 6: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

In this chapter, the findings from the results obtained in the various chapters are summarised. The conclusions are based on the findings obtained and recommendations are aligned to the objectives of this research. This chapter also provides suggestions for future research arising from this study.

6.2 Summary

This dissertation consists of a collection of four stand-alone essays investigating the effect of a number of investment climate determinants on investment in a selection of economies in Asia, Latin America, Europe and Africa. Chapter Two of this dissertation examined the effect of the business regulatory environment on the level of investment using a selection of emerging economies around the world. Chapters Three, Four and Five investigated the effect of business regulation and other determinants of the investment climate on the level of investment in African countries.

Chapter Two investigated empirically the effect of the business regulatory environment as measured by the 'Doing Business' indicators on the level of investment in a selection of 29 emerging economies in Africa, Asia, Latin America and Europe. The results showed that the investment in these emerging economies is enhanced by more secure property rights and by low levels of business entry regulation. In particular the results showed that fewer administrative procedures required to formalise a business have a positive and significant effect on the level of investment. In addition, fewer administrative hurdles to register property or to secure business licences have a positive and significant effect on the level of investment. Furthermore, the estimates generated showed that flexible employment regulations are not significant determinants of investment. This result confirms previous studies that show that the effect of flexible labour regulations on economic performance may only be felt when other labour market institutions are not well established and enforced. In contrast, investor protection that was

measured by two indicators, the protection of minority shareholders rights, and lender and borrower rights were found to be insignificant determinants of investment. The results also showed that the Latin American countries had significantly lower levels of investment compared to emerging European economies. Finally, countries that adopted French legal traditions had a significantly lower investment compared to those that adopted English legal traditions. These results support previous studies that show that countries with French legal traditions offer less protection of investors' and property rights compared to those of English legal traditions. On the whole, business regulation as measured by the 'Doing Business' indicators influences the level of investment though the reliability of these indicators was tested further in the next three chapters.

Chapter Three examined the effect of business regulation on the stock market liquidity using a sample of fifteen stock markets in Africa. The results from the panel data analysis showed that the overall level of business regulation does not influence stock market activity. However, the results confirmed those obtained in previous studies that greater protection of minority share holders' rights, and lender and borrowers' rights enhances stock market activity. There was anecdotal evidence to suggest that improved judicial efficiency influences stock market liquidity. The legal origin was found to have a significant effect on the legal systems of the selected countries. Countries that adopted French legal traditions had significantly less active stock markets than countries that adopted English legal traditions. Countries with French legal origin were found to have narrower stock markets and less investor and property rights protection. These results confirm that better property rights and investor protection are significant determinants in influencing stock market activity and therefore the level of investment in a country.

Chapter Four investigated the effect of the level of business regulation, infrastructure and political environment on the level investment in 29 African countries. The results provide evidence to show that lower levels of business regulation, less corruption in government and a stable political environment are significant determinants of investment. In particular, the results suggest that military regimes create a

less favourable investment climate although they appear to spend more on social and economic infrastructure. Furthermore, the evidence also suggests that civilian regimes in Africa are more corrupt than military regimes. Infrastructure development was found to be significant but negatively associated with investment. Similarly, in this sample, countries that adopted English legal traditions have a significantly better investment climate resulting in higher investment levels compared to those that adopted French legal traditions.

Chapter Five examined the effect of business regulatory environment and geography on the level of investment in 37 African countries. The results showed that a property right, trade regulations, being landlocked and distant from the sea affects the level of investment in the selected countries. Specifically, less administrative obstacles to register property, enforce a contract, secure a building licence as well as import and export have a significant and positive effect on investment. In contrast, being landlocked and distant from ports increases the exposure to administrative delays at various border crossings and increases transport costs, which has a negative effect on investment. The results also showed that property rights protection in landlocked economies was not significantly different from that of coastal economies. Furthermore, countries that adopted English legal traditions have a significantly higher levels of investment compared to those that adopted French legal traditions. This result was consistent in all the studies of this dissertation.

6.3 Recommendations

Based on the findings of the entire research, the following recommendations are made in order to guide policy and regulatory reforms that would enhance the investment climate of countries.

Governments should continue to pursue reforms to protect property rights. This can be done by establishing and enforcing clear and simple laws that protect property rights. For instance, governments could establish transparent and efficient property registration processes like the computerisation of the property registration process to reduce corruption and enhance efficiency.

It is essential that the judiciary is able to operate efficiently in resolving commercial disputes. Therefore judicial reforms to enhance efficiency could encompass, for instance, an evaluation of current business legislation to assess their effect on businesses. Reforms can then be implemented based on the outcomes of the evaluation and focus specifically on the current needs of businesses. Furthermore, governments could enhance the authority of alternative avenues for dispute resolution like commercial arbitration or mediation systems so that their outcomes are legally binding. This way the backlog in many magistrate and high courts of developing economies would be significantly reduced. In addition to reforms in the judiciary to enhance its resources and manpower capacity, governments could establish a mechanism to monitor the performance of magistrates and judges in order to improve service delivery.

Reforms to enhance and enforce collateral and bankruptcy laws should continue in order to protect the rights of borrowers, lenders and minority shareholders. This can be done by establishing collateral and credit registries so that companies can take advantage of the laws and get access to credit. For those countries with well-functioning paper based
collateral registries and credit information systems, computerisation of the process or combining collateral and credit information systems would enhance efficiency of these registries.

Governments should find new ways of attracting investment in infrastructure by putting place the necessary legislation, policies and frameworks. For instance, ensuring that the necessary policies and legislations are in place to encourage public-private partnerships. Furthermore, governments could offer incentives to investors who invest in major infrastructure development or, alternatively, facilitate bi-lateral partnerships between governments especially for cross-border roads and railway networks.

Furthermore, harmonisation of non-tariff trade regulations (import and export regulations) among trading partners would greatly support the initiatives that most African countries are taking in enhance

intra-regional trade. For instance one standard set of import or export documents applicable to the East African region and administered in the source country, may reduce numerous administrative delays at border crossings.

All the above recommendations are based on the commitment of African leaders to champion these reforms in their countries. The greatest challenge among African governments is that the leaders and their cronies are involved in corruption, a systemic factor than hampers investment by increasing the cost of doing business. It is therefore prudent to suggest that Africa needs a new brand of leadership that is passionate and determined to see change in the wellbeing of its people. However, be that as it may, there are interventions that governments could enforce to reduce corruption. For instance, governments could create autonomous bodies that have the capacity to enforce anti-corruption strategies focused on investigation, prevention and education of the public.

Governments can also adopt active and inclusive interventions for the private sector by for instance creating efficient export and investment promotion agencies or encouraging the creation of business associations. Businesses can help to broaden the dialogue on investment climate policy between government and business by acting as lobbyist to advance their interests. They can also provide feedback on the effect of government policies and regulations on the business environment, which is relevant for policy reforms.

6.4 Directions for future research

The most significant limitation arising out of this study is that of data availability on various business regulations. Future studies could focus on a wider selection of business regulations in order to obtain a better understanding of the influence of the regulatory environment, a determinant of the investment climate, on the level of investment in countries. In addition, a longer time-series analysis may show more significant trends in regulation to guide reform since institutions historically evolve slowly.

Other studies could focus on the institutional and regulatory factors that influence specific sectors of the economy like the agricultural or tourism sectors of a country or specific group of countries. Most African economies still rely heavily on subsistence agricultural production as a source of food for the majority of their people. Understanding the regulatory barriers to investment in this sector may guide policy makers in making better policies and regulations to encourage investment in form of mechanised agricultural production.

Finally, similar studies could be carried out at country level to investigate whether there are any unique country characteristics of the investment climate that may influence investment. These studies would provide country specific results that would guide policy markers better policies and regulations to enhance investment.

6.5. Limitations of the findings

In spite of the acknowledged limitations of this research, conclusions based on the findings are not compromised and the four studies contribute to a better understanding of the investment climate in the selected economies. Therefore, the results may not be wholly representative of all the countries on the African continent, but they provide a snapshot on the kind of challenges that some African economies face. It is anticipated that this will stimulate further debate and research in this area.

REFERENCES

Acemoglu, D., Johnson, S., & Robinson, J. A. 2001. The colonial origins of comparative development: An empirical investigation. *American Economic Review*, **91(5)**, 1369-1401.

Acemoglu, D., Johnson, S. & Robinson, J.A. 2002. Reversal of fortunes: Geography and institutions in the making of the modern world income distribution. *Quarterly Journal of Economics*, 1231-1294.

Alesina, A., Ardagna, S., Nicoletti, G. & Schiantarelli, F. 2005. Regulation and investment. *Journal of the European Economic Association*, **3(4)**, 791-825.

Alesina, A. & Perotti, R. 1996. Income distribution, political instability, and investment. *European Economic Review*, **40**, 1203-1228.

Arestis, P., Demetriades, P.O. & Luintel, K. B. 2001. Financial development and economic growth: The role of stock markets. *Money, Credit, Banking*, **33(1)**, 18-41.

Arruñada, B. 2007. Pitfalls to avoid when measuring institutions: Is doing business damaging business? *Journal of Comparative Economics*, **35(4)**, 729-747.

Arruñada, B. 2008. How doing business jeopardizes institutional reform. Universitat Pompeu Fabra, *Economics and Business*, Working Paper No. 1088:1-18.

Aschauer, D.A. 1989. Is public infrastructure productive? *Journal of Monetary Economics*, **23**, 177-200.

Asiedu, E. 2002. On the determinants of foreign direct investment to developing countries: Is Africa different? *World Development*, **30(1)**, 107-119.

Asiedu, E. 2006. Foreign direct investment in Africa: The role of natural resources, market size, government policy, institutions and political instability. *World Economy*, **29(1)**, 63-77.

Atje, R & Jovanovic, B. 1993. Stock markets and development. *European Economic Review*, **37**, 632-640.

Baldwin, R.E. & Seghezza, E.1996. Testing for trade-induced investment-led growth. *National Bureau of Economic Research*, Working paper 5416.

Baltagi, B.H. 2005. *Econometric analysis of panel data*. Chichester: John Wiley & Sons Ltd.

Baltagi, B.H. 2008. *Econometric analysis of panel data. 4th edition*. Chichester: John Wiley and Sons Limited.

Barro, R.J. 1991. Economic growth in a cross-section of countries. *Quarterly Journal of Economics*, **106(2)**, 407-443.

Beck, N. & Katz, J.N. 1995. What to do (and not to do) with time-series cross-section data. *American Political Science Review,* **89**, 634-647.

Beck, T., Levine, R. & Loayza, N. 2000. Finance and the sources of growth. *Journal of Financial Economics*, **58**, 261-300.

Beck, T. & Levine, R. 2003. Legal institutions and financial development. *NBER Working paper series* No.10126.

Beck, T., Demirguc-Kunt, A. & Levine, R. 2003. Law and finance: Why does legal origin matter? *Journal of Comparative economics*, **31(4)**, 653-675.

Beck, T. & Levine, R. 2004. Stock markets, banks and economic growth: Panel evidence.*Journal of Banking and Finance*, **28(3)**, 423-442.

Bekaert, G., Harvey, C. R, & Lundblad, C. 2001. Emerging equity markets and economic Development. *Journal of Development Economics*, **66**, 465-504.

Bernard, A. & Wagner,J. 1997. Export entry and exit by German firms. *National Bureau of Economic Research*, Working Paper No. 6538.

Berg, J. & Cazes,S. 2007. The Doing Business indicators: measurement issues and political implications. *Working paper, Economic and Labour Market paper*, International Labour Organisation.

Bertola, G. & Rogerson, R. 1997. Institutions and labor reallocation. *European Economic Review*, **41(6)**, 1147-1171.

Besley, T. 1995. Property Rights and investment incentives: Theory and evidence from Ghana. *Journal of Political Economy*, **103(5)**, 903-937.

Besley, T. & Burgess, R. 2004. Can labor regulation hinder economic performance evidence? Evidence from India. *Quarterly Journal of Economics*, **119(1)**, 91-134.

Blanchard, O., Rhee, C. & Summers, L. 1993. The stock market, profit and investment. *Quarterly Journal of Economic*, **108**, 77-114.

Blanchard, O. 2004. The economic future of Europe. *Journal of Economic Perspectives,* **18(4)**, 3-26.

Bolaky, B. & Freud, C. 2004. Trade, regulations, and growth. *Working paper 3255. World Bank Policy Research*, Washington DC.

Botero, J.C., Djankov, S., La Porta, R., Lopez-de-Silanes, F., Shleifer, A. & Volokh. A. 2003. Judicial reform. *The World Bank Research Observer*, **18(1)**, 61-88.

Botero, J. C., La Porta, R., Lopez-de-Silanes, F. & Shleifer, A. 2004. The regulation of labor. *Quarterly Journal of Economic*, **119(4)**, 1339-1382.

Botero, J. C., Djankov, S., La Porta, R., Lopez-de-Silanes, F., Shleifer, A. & Volokh.A. 2003. Judicial reform. *The World Bank Research Observer*, **18(1)**, 61-81.

Botero, J. C., La Porta, R., Lopez-de-Silanes, F. & Shleifer, A. 2004. The regulation of labor. *Quarterly Journal of Economics*, **119(4)**, 1339-1382.

Bougheas, S., Demetriades, P.O. & Morgenroth, E.L.W. 1999. Infrastructure, trade costs and trade. *Journal of International Economics,* **47(1)**, 169-189.

Boyd, J. H., Levine, R & Smith, B. 2001. The impact of inflation on financial sector performance. *Journal of Monetary Economics*, **47**, 221-248.

Burns, T. 2005. Registering property: Country case studies of reforms in Armenia, Ghana, New Zealand, Peru, Thailand. *Working paper, World Bank Group, Private Sector Development Vice Presidency, Monitoring, Analysis and Policy Unit*, Washington, D.C.

Caballero, R. & Hammour, M. 1996. On the timing and efficiency of creative destruction. *Quarterly Journal of Economics*, **111(3)**, 805-852.

Calderon, C. & Serven, L. 2004. The effect of infrastructure development on growth and income distribution. *Policy research working paper 3400. World Bank,* Washington DC.

Central Intelligence Agency, 2008. *The World Fact Book* [Online]. Available at https://www.cia.gov/library/publications/the-world-factbook/. Last retrieved on 18 June 2008.

Claessens, S., Djankov, S. & Lang, L.H.P., 2000. The separation of ownership and control in East Asian corporations. *Journal of Financial Economics*, **58**, 81-112.

Claessens, S. & Laeven, L., 2003. Financial development, property rights and growth. Journal of Finance, **58(6)**, 2401-2436.

Coase, R.H. 1937. The nature of the firm. *Economica*, **4**, 386-405.

Coase, R.H. 1960. The problem of social cost. *Journal of Law and Economics*, **3**, 1-44.

Coase, R.H. 1992. The institutional structure of production. *The American Economic Review*, **82(4)**, 713-719.

Davidson, R. & MacKinnon, J.G. 1993. *Estimation and inference in econometrics*. 2nd edition. New York: Oxford University Press.

Davis, K.E. & Kruse, M.B., 2007. Taking the measure of law: The case of the Doing business project. *Law and Social Inquiry*, **32(4)**, 1095-1119.

Dawson, J.W. 2006. Regulation, investment and growth across countries. *Cato Journal*, **26(3)**, 489-509.

Dawson, J.W. 1998. Institutions, investment and growth: new cross-country and panel data evidence. *Economic Inquiry*, **36**, 603-19.

Demirguc-Kunt, A. & Levine, R. 1996. Stock market development and financial intermediaries: Stylized facts. *The World Bank Economic Review*, **10(2)**, 291-232.

Devereaux, M. & Wen, J.F. 1996. *Political uncertainty, capital taxation and growth.* Mimeo. University of British Colombia.

Di Tella, R. & MacCulloch, R. 2005. The consequences of labor market flexibility: Panel evidence based on survey data. *European Economic Review*, **49(5)**, 1225-1259.

Djankov, S., LaPorta, R., Lopez-de-Silanes, F. & Schleifer, A. 2002. The regulation of entry. *Quarterly Journal of Economics*, **117(1)**, 1-37.

Djankov, S., LaPorta, R., Lopez-de-Silanes, F. & Schleifer, A. 2003. Courts. Quarterly *Journal of Economics*, **118(2),** 453-517.

Dollar, D., Hallward-Driemeir & Mengistae, T. 2005. Investment Climate and firm performance in developing economies. *Economic Development and Cultural Change*, 1-31.

Dollar, D., Driemeier, H.M. & Mengistae, T. 2006. Investment climate and international integration. *World development*, **34(9)**, 1498-1516.

Dollar, D. & Kraay, A., 2003. Institutions, trade and growth. *Journal of Monetary Economics*, **50(1)**, 309-321.

Eshafani, H. & Ramirez, M.T. 2003. Institutions, infrastructure, and economic growth. *Journal of Development Economics*, **70**, 443-477.

Fafchamps, M. 2004.*Market institutions in sub-Saharan Africa: Theory and evidence*. Cambridge:MIT Press.

Faye, L.M., McArthur, J.W., Sachs, J.D. & Snow, T.. 2004. The challenges facing landlocked developing countries. *Journal of Human Development*, **5(1)**, 31-68.

Feder, G. 1982. On exports and economic growth. *Journal of Development Economics*, **12**, 59-73.

Fergusson, L. 2006. Institutions for financial development: What are they and where do they come from? *Journal of Economic Surveys*, **20(1)**, 27-69.

Field, E. 2005. Property rights and investment in urban slums. *Journal of the European Economic Association*, **3(2-3)**, 279-290.

Fosu, A.K. 2002. Political instability and economic growth. Implications of coup events in sub-Saharan Africa. *American Journal of Economics and Sociology*, **61(1)**, 329-348.

Freund, C. &Bolaky, B. 2008. Trade, regulations and income. *Journal of Development Economics*, **87**, 309-321.

Gallup, J.L., Sachs, J.D. & Mellinger, A. 1999. Geography and economic development. *Centre for International Development*, Working Paper No. 52, Havard University.

Garcia, F.V. & Liu, L. (1999). Macroeconomic determinants of stock market development. *Journal of Applied Economics*, **2(1)**, 29-59.

Gerschenkron, A. 1962. *Economic backwardness in historical perspective: A book of essays*. Cambridge, MA: Belknap Press, Harvard University Press.

Ghura, D. & Goodwin, B. 2000. Determinants of private investment: a cross-regional empirical investigation. *Applied Economics*, **32**, 1819-1829.

Glaeser, E.L. & Shleifer, A. 2002. Legal origins. *Quarterly Journal of Economics*, **117(4)**, 1193-1229.

Greene,W. H. (2003). *Econometric Analysis, 5th ed.*, Upper Saddle River, NJ: Prentice-Hall.

Greenwood, J. & Smith, B. 1997. Financial markets in development and the development of financial markets. *Journal of Economic Dynamics and Control*, **21**, 145-182.

Guide, A. & Pattillo, C. 2006. Financial sector reform in sub-Saharan Africa. *Journal of Social, Political & Economic Studies*, **31(2)**, 133-142.

Gwartney, J.D., Holcombe, R.G. & Lawson, R.A. 2006. Institutions and the impact of investment on growth. *Kyklos*, **59(2)**, 255-273.

Gyimah-Brempong, K. & Traynor, T.L. 1996. Political instability and savings in less developed countries: Evidence from sub-Saharan Africa. *Journal of Development Studies*, **32(5)**, 695-714.

Gyimah-Brempong, K. & Traynor, T.L. 1999. Political instability, investment and economic growth in sub-Saharan Africa. *Journal of African Economies*, **8**, 52-86.

Habib, M. & Zurawicki, L. 2001. Country-level investments and the effect of corruption: Some empirical evidence. *International Business Review*, **(10)**, 687-700.

Hall, R.E. & Jones, C.I. 1999. Why do some countries produce so much more output per worker than others? *Quarterly Journal of Economics*, **114(1)**, 83-116.

Hallward-Driemeier, M., Wallsten, S. & Xu. L. C. 2006. Ownership, Investment climate and firm performance: Evidence from Chinese firms. *Economics of Transition*, **14(4),** 629-647.

Haltiwanger, J. 2000. Aggregate growth: What have we learned from the microeconomic evidence? *Working paper 267*. OECD Economics Department.

Hajkova, D., Nicoletti, G., Vartia, L. & Yoo, K.Y. 2007. Taxation and Business Environment as Drivers of Foreign Direct Investment in OECD countries. *OECD Economic studies*, **43**, 7-38.

Hausman, J. 1978. Specification tests in econometrics. *Econometrica*, **46**, 1251-71.

Hausmann, R. 2001. Prisioners of Geography. *Foreign Policy*, **122**, 44-53.

Henderson, J.V., Shalizi, Z. & Venables, A.J. 2001. Geography and development. *Journal of Economic Geography,* **1**, 81-105.

Heritage Foundation, 2008. Index of economic freedom. [Online] Available: http://www.heritage.org/index. Last retrieved on 02 February, 2008.

Hsiao, C. 2003. *Analysis of panel data*. Cambridge: Cambridge University Press.

Javorcik, B.S. & Spatareanu, M. 2005. Do foreign investors care about labor market regulations? *Review of World Economics*, **141(3)**, 375-403.

Johnson, S., Kaufmann, D. & Zoido-Lobaton, P. 1998. Regulatory discretion and the unofficial economy. *American Economic Review*, **88(2)**, 387-92.

Johnson, S., McMillian, J. & Woodruff, C. 2002. Property rights and finance. *American Economic Review*, **92(5)**,1335-1356.

Judge, G. G., Hill, R. C., Griffiths, W. E., Lütkepohl, H. & Lee, T.C. 1985. *The theory and practice of econometrics*. 2nd ed. New York, Wiley.

Knack, S. & Keefer, P. 1995. Institutions and economic performance: Cross-country tests using alternative institutional measures. *Economics and Politics*, **7**, 207-227.

Khalid, S., Veganzones-Varoudakis, M.A. 2007. Openness, investment climate and FDI in developing countries. *Review of Development Economics*, **11(4)**, 607-620.

Krugman, P. 1991. *Geography and trade*. Belgium: Leuven University Press

La Portia, R., Lopez-de-Silanes, F., Shleifer, A., &Vishny, R.W. 1997. Legal determinants of external finance. *Journal of Finance*, **52**, 1131-1150.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A. & Vishny, R. W. 1998. Law and finance. *Journal of Political Economy*, **106**, 1113-1155.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A. & Vishny, R. 1999. The quality of government. *Journal of Law, Economics and Organization*, **15(1)**, 222-279.

La Portia, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R.W. 2000. Investor protection and corporate governance. *Journal of Financial Economics,* **58**, 3-27.

Lall, S.V. & Mengistae, T. 2005. The impact of business environment and economic geography on plant level productivity: An analysis of Indian industry. *World Bank*, Working paper WPS3664.

Laiglesia, J.R. 2004. Investment and credit effects of land titling and registration: evidence from Nicaragua. *London School of Economics*, Working paper. 1-47.

Levine. R. 1991. Stock markets, growth and tax policy. *Journal of Finance*, **46(4),** 1445-1465.

Levine, R. & Renelt, D., 1992. A sensitivity analysis of cross-country growth regressions. *The American Economic Review*, **82(4)**, 942-963.

Levine, R. and Zervos, S. 1998. Stock markets, banks and economic growth. *American Economic Review,* **88**, 537-558.

Levine, R., Loayza, N. & Beck, T. 2000. Financial intermediation and growth: Causality and causes. *Journal of Monetary Economics*, **46(1)**, 31-77.

Levy, B. Berry, A. & Nugent, J. B. 1999. *Fulfilling the Export Potential of Small and Medium Firms*. Boston: Kluwer Academic Publishers.

Limão, N. & Venables, A.J. 2001. Infrastructure, geography disadvantage, transport costs and trade. *The World Bank Economic Review*, **15(3),** 451-479.

Loayza, N.V., Oviedo, A. & Servén, L. 2004. Regulation and macroeconomic performance. *World Bank Policy Research*. Working paper 3469.

Looney. R.E. 1989. The Economic impact of rent seeking and military expenditures: A comparison of third world military and civilian regimes. American *Journal of Economics and Sociology*, **48(1)**, 11-29.

Luiz, J.M. 2009. Institutions and economic performance: Implications for African Development. *Journal of International Development*, **21**, 58-75.

Marandu, E.E. 2004. Licensing laws and implications for private investment: The case of Tanzania. *African Development Review*, **16(2)**, 363-384.

Mauro, P. 1995. Corruption and growth. *Quarterly Journal of Economics*, **110(3)**, 681-712.

Miguel, R.D. 2007. A panel unit root and panel co integration test of the complementarity hypothesis in the Mexican case: 1960-2001. *Atlantic Economic Journal*, **35(3)**, 343-357.

Minier, J.A. 2003. Are small markets different? *Journal of Monetary Economics*, **50(7)**, 1593 -1603.

Morrison, D.G. & Stevenson, H.M. 1971. Political instability in independent black Africa: more dimensions of conflict behaviour within nations. *Journal of Conflict Resolution*, **15(3)**, 347-368.

Morrissey, O. & Jones.C. 2005. Are imports in Africa responsive to Tariff reduction? *Centre for research in Economic Development and International Trade*, University of Nottingham. Working paper No. 08/02.

Moss, T. J. 2003. *Adventure Capitalism: Globalization and the political economy of stock markets in Africa*, New York: Palgrave MacMillan.

Naudé, W. 2007. Geography and development in Africa: Overview and implications for regional cooperation. *Discussion paper No.2007/03, United Nations University* – World Instiutute for Development Economics Research.

Naudé, W.A. & Krugell, W.F. 2007. Investigating geography and institutions as determinants of foreign direct investment in Africa using panel data. *Applied Economics*, **39**, 1223-1233.

Naudé, W.A. & Matthee, M. 2007. *The significance of transport costs in Africa*. United Nations University Policy Brief 6. UNU, Tokyo.

Ndikumana, L. 2000. Financial determinants of domestic investment in sub-Saharan Africa: Evidence from panel data. *World Development*, **28(2)**, 381-400.

Ndulu, B.J. 2008. *The evolution of global development paradigms and their influence on African economic growth in The Political Economy of Economic Growth in Africa 1960-2000*, Volume 1. Edited by Ndulu, B.J.,

O'Connell, S.A., Bates, R. H., Collier, P. & Soludo, C.C. Cambridge University Press, Cambridge.

Ndulu, B.J., O'Connell, S.A., Azam, J. P., Bates, R. H., Fosu, A. K., Gunning, J. W. & Njinkeu D. 2008. *The Political Economy of Economic Growth in Africa* 1960-2000, Volume 2. Cambridge University Press, Cambridge.

North, C.D. 1981. *Structure and change in economic history*. Cambridge, MA: Norton.

North, C.D. 1990. *Institutions, institutional change and economic performance*. Cambridge: Cambridge University Press, New York.

North, C. D. 1991. Institutions. *Journal of Economic Perspectives*, **5(1)**, 97-112.

Olson, M. 1991. *Autocracy, democracy and prosperity. In strategy and choice*, edited by Richard, J.Z., 131-157. Cambridge, Mass.: MIT press.

Pastor, M. & Hilt, E. 1993. Private investment and democracy in Latin America. *World Development*, **21(4)**, 489-507.

Patillo, C. 2001. The impact of uncertainty on the investment behavior of Ghanaian manufacturing firms, in Collier, P. and Patillo, C. I*nvestment and risk in Africa*, London, Macmillan.

Pigou, C. 1938. *The Economics of Welfare*, 4th ed., London: Macmillan

Pinkowitz, L., Stulz, R. M. & Williamson, R. 2003. Do firms in countries with poor protection of investor rights hold more cash? *Cambridge, Massachusetts, NBER Working Paper*, No. 10188.

Pissarides, C. 2001. Employment protection. *Journal of Labor Economics*, **8**, 131-159.

Posner, R.A. 1974. Theories of economic regulation. Bell *Journal of Economics and Management Science*, **74(5)(2)**, 335-59.

Przeworski, A. & Limongi, F. 1993. Political regimes and economic growth. *The Journal of Economic Perspectives,* **3(3)**, 51-69.

Quazi, R.M. 2007. Investment climate and foreign direct investment: a study of selected countries in Latin America. *Global Journal of Business Research*, **1(2)**, 1-13.

Rae, D. 1968. A note on the fractionalisation of some European party systems. *Comparative Political Studies*, **1**, 413-418.

Ravenhill, J. 1980. Comparing regime performance in Africa: The limitations of cross-national aggregate analysis. *The Journal of Modern African Studies*, **18(1)**, 99-126.

Risager, O. & Sorensen. J.R. 1997. On the effect of firing costs when investment is endogenous: An extension of a model by Bertola. *European Economic Review*, **41(7)**, 1343-1353.

Rodrik, D. 1998. *Democracy and economic performance*. KSG Mimeo., January.

Rodrik, D. 1999. Where did all the growth go? External shocks, social conflict and growth collapses. *Journal of Economic Growth*, **4(4)**, 385-412.

Rodrik, D. 2000. Institutions for high quality growth: what they are and how to acquire

them. *Studies in Comparative International Development*, **35(3)**, 3-31.

Rodrik, D. 2002. *Institutions, integration and geography: in search of the deep determinants of economic growth: In search of prosperity: Analytic country studies on growth*, edited by Dani Rodrik, Princeton, New Jersey: Princeton University Press.

Rodrik, D., Subramanian, A. & Trebbi, F., 2004. Institutions rule: The primacy of Institutions over geography and integration in economic development. *Journal of Economic Growth*, **9(2)**, 131-165.

Rodriguez-Clare, A. 1996. The role of trade in technology diffusion. *Federal Reserve Bank of Minneapolis-Institute for Empirical Macroeconomics*, Discussion Paper No. 114.

Sachs, J.D. 2001. Tropical underdevelopment. *National Bureau of Economic Research*, Working paper 8119.

Sachs, J.D. & Warner, A. 1995. Economic reform and the process of global integration. *Brookings Papers on Economic Activity,* **1**, 1-118.

Schneider, F. & Enste, D.H. 2000. Shadow economies: Size, causes and consequences. *Journal of Economic Literature*, **38(1)**, 77-114.

Scully, G.W. 1988. The institutional framework and economic development. *Journal of Political Economy*, **96(3)**, 652-662.

Shleifer, A. & Vishny, R. 1993. Corruption. *Quarterly Journal of Economics*, **108**, 599-617.

Shleifer, A. 2005. Understanding regulation. *European Financial Management*, **11(4)**, 439-451.

Shoko, N. 2007. External finance and investment climate in East Asia and other emerging markets: What really matter? *Asian Economic Papers*, **6(1),**74-100

Soto, H.D. 1990. *The other path: The invisible revolution in the third world*. New York, Harper & Row.

Soto, H.D. 2000. *The mystery of capital: Why capitalism triumphs in the West and fails everywhere else*. London, Bantam.

Stern, N. 2002. *A strategy for development*. Washington, DC: The World Bank.

Stigler, G. 1971. The theory of economic regulation. *Bell Journal of Economics and Management Science*, **2(1)**, 3-22.

Stone, A., Levy, B. & Pardes, R. 1996. Public institutions and private transactions: A comparative analysis of the legal and regulatory environment for business transactions in Brazil and Chile, in L.J. Alston, T. Eggertsson & D.C. North (eds.*). Empirical studies in institutional change. Cambridge*: Cambridge University Press.

Svensson, J. 1998. Investment, property rights and political instability: Theory and evidence. *European Economic Review*, **42**, 1317-1341.

Tavares, J. & Wacziarg, R. (2001). How democracy affects growth. *European Economic Review*, **45**, 1341-1378.

Tessema, A. 2003. Prospects and challenges for developing securities markets in Ethiopia: An analytical review. *African Development Review*, **15(1)**, 50-65.

Tobin, J. 1969. A general equilibrium approach to monetary theory. *Journal of Money, Credit and Banking*, **1**, 15-29.

Von Furstenberg, G.M. 1977. Corporate investment: Does market valuation matter in the Aggregate? *Brookings Paper on Economic Activity*, **2**, 347-397.

Wacziarg, R. 2001. Measuring the dynamic gains from trade. The World Bank *Economic Review*, **15(3)**, 393-429.

Wacziarg, R. & Welch H.K. 2008. Trade liberalisation and growth: New evidence. *The World Bank Economic Review*, **22(2)**, 187-231.

Wallis. J.J & North, D.C. 1988. Should transaction costs be subtracted from gross national product? *Journal of Economic History*, **48(3)**, 651-654.

Williamson. O. E. 2000. The new institutional economics: Taking stock, looking ahead. *Journal of Economic Literature*, **38**, 595-613.

Witkowska, J. 2007. Foreign Direct Investment in the Changing Business Environment of the European Union's New Member States. *Global Economy Journal*, **7(4)**, 1-32.

World Bank, 2004. *World Development Report 2005: A better investment climate for everyone.* World Bank and Oxford University Press, Oxford.

World Bank, 2007. Global Economic Prospects. Washington DC: The World Bank

World Bank, 2007a. Doing *Business [Online] database*: Available on: http://www.doingbusiness.org/customquery/ Last retrieved on 02 June, 2007.

World Bank, 2008. World Development Indicators [Online] database. Available: http://publications.worldbank.org/WDI/. Last retrieved on 15 March 2008.

World Bank, 2008a: *Doing Business [Online] Database*: Accessed on http://www.doingbusiness.org/CustomQuery/

World Bank, 2009. *World Development Indicators* Online database. Available: http://publications.worldbank.org/WDI/. Last retrieved on 10 April, 2009.

Yartey, C. A. and Adjasi, C. K. 2007. Stock market development in sub-Saharan Africa: Critical issues and challenges. *IMF Working Paper*, WP/07/209.

Yartey, C.A. 2007. The institutional and macroeconomic determinants of stock market development in Africa. in Okpara, John, ed., *Management and Economic Development in sub-Saharan Africa: Theoretical and Applied Perspectives*, London:Adonis and Abbey.

Zanamwe, G. 2005. Trade facilitation and the WTO: a critical analysis of proposals on trade facilitation and their implications for African countries. *Stellenbosch: Trade law Centre for South Africa* TRALAC Working paper No.5/2005..

Appendix A

Table A.1: Summary Statistics for Africa and Latin America

Variable	Africa – 10 Countries				Latin America – 6 countries			
	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
Business entry regulation	10.1	2.533	6	14	12.03	3.38	8	19
Licensing regulation	19.67	4.581	10	28	18.5	5.31	12	28
Employment regulation	33.5	16.21	7	63	37.47	9.74	24	48
Property registration	7.68	4.135	4	19	7.33	3.37	5	14
Borrower and lender rights	5.725	2.611	3	10	4.17	1.09	3	7
Investor protection	5.33	1.58	3	8	5.65	0.80	3.7	6.7
Contract enforcement	38.5	5.40	29	47	38.6	3.87	34	46
Income	520.77	512.37	50	1769.14	3259.81	2780.73	583.47	8070.80
Savings	24.28	14.52	3	54	24.07	5.17	17	37
Inflation	8.46	5.96	0	29	7.16	3.27	3	14
Labour force participation rate	63.36	9.16	49	83	68.97	6.29	58	78
Gross capital formation	25.1	6.29	16	42	20.27	2.59	15	25

Table A.2: Summary Statistics for Europe and Asia

Variable	Emerging Europe – 5 Countries				Asia – 8 Countries			
	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
Business entry regulation	8.52	2.48	5	13	10.73	2.52	5	15
Licensing regulation	29.6	14.07	17	56	21.21	7.62	11	37
Employment regulation	42.96	12.08	29	66	27.93	10.10	10	44
Property registration	6.9	1.16	6	9	5.75	1.95	2	8
Borrower and lender rights	6.0	2.17	3	8	4.94	2.50	3	10
Investor protection	5.62	0.42	5	6	5.72	1.32	4	8.7
Contract enforcement	36.76	2.69	32	40	37.13	4.45	30	46
Income	1905.14	1436.75	143.91	4061.77	4771.20	6115.71	177.09	23644.36
Savings	18.64	7.93	10	34	30.13	11.28	10	54
Inflation	10.16	6.80	0	24	5.6	3.82	0	15
Labour force participation rate	62.04	5.95	51	73	69.3	7.56	59	84
Gross capital formation	22.48	3.96	18	35	27.88	8.12	14	46

Appendix B

Table B.1: Descriptive Statistics French Legal origin

Variable	Mean	Standard Dev.	Min	Max
Business entry regulation	9.65	2.53	6	13
Investor protection index	4.37	1.76	2	7.7
Borrower and lender rights index	5	1.90	3	8
Enforcing contracts	37.14	4.32	29	42
Market capitalisation % GDP	34.65	29.93	6.76	106.75
Stock market liquidity	6.34	12.15	0.0011	44.16
Inflation	5.40	2.87	0.98	11.56
Income	2579.40	1210.83	1440	4709
Financial intermediary development	60.49	29.15	20.38	101.28
Savings	24.35	12.01	11.18	52.43

Table B.2: Descriptive Statistics English Legal origin

Variable	Mean	Standard Dev.	Min	Max
Business entry regulation	11.15	3.38	6	18
Investor protection index	5.46	1.16	4	8
Borrower and lender rights index	8.15	1.14	6	10
Enforcing contracts	38.10	4.17	30	44
Market capitalisation % GDP	46.71	78.92	0.72	294.53
Stock market liquidity	14.41	35.85	0.0023	150.44
Inflation	10.30	5.35	1.39	26.67
Income	713.95	1050.14	134	3720
Financial intermediary development	27.10	13.69	13.53	62.70
Savings	10.99	7.75	-3.44	30.86

Table B.3: Indicators of Stock Market Development in Africa: Average 2003-2007

Country	Market Capitalization % GDP	Stock Traded % GDP	Listed Domestic Companies
Botswana	31.706	0.708	18.2
Ghana	21.026	0.620	29.6
Kenya	38.436	3.492	49.4
Malawi	9.065	0.328	8.8
Mauritius	51.682	2.694	50.8
Namibia	7.846	0.208	11.4
Nigeria	24.454	3.492	207
South Africa	235.496	98.37	408
Swaziland	8.348	0.002	5.8
Tanzania	5.0725	0.1305	6.2
Uganda	1.085	0.0165	4.6
Zambia	14.068	0.28	13.8
Egypt	72.810	24.842	708.2
Morocco	58.368	13.372	60
Tunisia	11.766	1.316	46.8
Brazil	63.200	22.20	387.8
Mexico	28.800	6.80	143.6
Malaysia	152.00	50.40	988.4
Thailand	75.200	56.00	476.4

Source: World Bank, World Development Indicators and author's calculations.

Table B.4:Before correction of Serial-correlation, Heteroskedasticity, Autocorrelation

Regressions	1	2	3	4
Breusch-Godfrey Serial Correlation LM test F-Statistic	8.407	4.761	5.297	3.349
White's Heteroskedasticity Test F-statistic	6.012	7.324	4.113	5.289
Durbin-Watson Statistic F-statistic	2.987	3.212	6.524	4.754

Table B.5:After controlling for Serial-correlation, Heteroskedasticity, Autocorrelation

Regressions	1	2	3	4
Breusch-Godfrey Serial Correlation LM test F-statistic	1.865	1.1539	2.932	1.136
White's Heteroskedasticity Test F-statistic	0.307	1.070	0.378	1.357
Durbin-Watson Statistic F-statistic	1.654	0.255	1.142	0.109

Appendix C

Table C.1: Pairwise Correlation

	Corruption	Type of regime	Party fractionalisation	Revolutions
Corruption	1.0000			
Type of regime	0.0197 (0.8683)	1.0000		
Party fractionalisation	-0.0469 (0.6959)	-0.1109 (0.3245)	1.0000	
Revolutions	-0.3445 (0.0007)*	0.0807 (0.4685)	-0.3927 (0.0003)*	1.0000

* Significance at 10% level

Table C.2: Descriptive Statistics

Variable	**Mean**	**Standard dev.**	**Min.**	**Max.**
Business regulation	19.99305	3.616668	13.33	30
Corruption	2.947761	1.024491	1.4	6
Inflation	68.23635	564.8184	-5.36	6723.7
Aggregate investment	20.48731	8.518267	-13	46.38
Private investment	14.04345	6.820341	0	43.4
Literacy rate	30.55931	13.2871	7.2	74.3
Infrastructure	129.8917	222.9905	2	1250.84
Revolutions	0.234482	0.500192	0	2
Party fractionalisation	4968.455	2478.016	0	9683
Types of regimes	1.041379	0.232016	1	3

Table C.3: Before correction of Serial-correlation, Heteroskedasticity, Autocorrelation

Regressions	1	2	3
Breusch-Godfrey Serial Correlation LM test F-statistic	11.112	10.354	16.986
White's Heteroskedasticity Test F-statistic	5.533	8.563	6.522
Durbin-Watson Statistic (Autocorrelation) F-statistic	7.625	7.548	10.871

Table C.4: After correction of Serial-correlation, Heteroskedasticity, Autocorrelation.

Regressions	1	2	3
Breusch-Godfrey Serial Correlation LM test F-statistic	1.907	2.673	0.954
White's Heteroskedasticity Test F-statistic	1.264	2.103	1.529
Durbin-Watson Statistic (Autocorrelation) F-statistic	2.325	0.368	2.051

Table C.5:Before correction of Serial-correlation, Heteroskedasticity, Autocorrelation

Regressions	1	2	3	4	5	6
Breusch-Godfrey Serial Correlation LM test F-statistic	17.886	23.143	10.476	9.111	5.888	7.377
White Heteroskedasticity Test F-statistic	8.077	9.369	5.554	7.773	8.661	9.445
Durbin-Watson Statistic (Autocorrelation) F-statistic	23.981	44.776	38.544	19.687	26.897	54.235

Table C.6: After correction of Serial-correlation, Heteroskedasticity, Autocorrelation.

Regressions	1	2	3	4	5	6
Breusch-Godfrey Serial Correlation LM test F-statistic	2.322	1.843	2.075	1.966	1.928	2.302
White Heteroskedasticity Test F-statistic	2.645	1.378	0.895	1.554	1.647	1.813
Durbin-Watson Statistic (Autocorrelation) F-statistic	2.003	1.225	2.110	1.783	2.098	1.742

Appendix D

Table D.1: List of countries

Landlocked	Coastal
Botswana	Angola
Burkina Faso	Benin
Burundi	Cameroon
Central African Republic	Congo Republic
Chad	Democratic Republic of Congo
Ethiopia	Côte d'Ivoire
Lesotho	Ghana
Malawi	Guinea
Mali	Kenya
Niger	Madagascar
Rwanda	Mauritania
Uganda	Mauritius
Zambia	Mozambique
	Namibia
	Nigeria
	Senegal
	Sierra Leone
	South Africa
	Tanzania
	Togo
	Egypt
	Algeria
	Morocco
	Tunisia

Table D.2: Before correction of Serial-correlation, Heteroskedasticity, Autocorrelation

Regressions	1	2	3	4	5	6
Breusch-Godfrey Serial Correlation LM test F-statistic	5.117	9.316	1.117	4.523	11.865	10.944
White Heteroskedasticity Test F-statistic	6.325	7.789	2.014	3.647	9.420	5.167
Durbin-Watson Statistic (Autocorrelation) F-statistic	8.243	11.274	3.956	2.789	6.091	1.998

Table D.3: After correction of Serial-correlation, Heteroskedasticity, Autocorrelation

Regressions	1	2	3	4	5	6

Breusch-Godfrey Serial Correlation LM test F-statistic	1.713	1.776	1.085	2.221	2.156	1.889
White Heteroskedasticity Test F-statistic	1.824	1.431	1.811	2.587	1.650	1.532
Durbin-Watson Statistic (Autocorrelation) F-statistic	2.207	1.801	1.021	1.476	1.384	0.854