INSTITUTIONS AND FINANCIAL SYSTEM DEVELOPMENT IN AFRICA

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DEDICATION

To Tj, MP, Mum, and Dad

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ABSTRACT

Recent research suggests that financial system development is important for economic development and for reducing financing constraints of firms (Levine, 2005). Consequently, researchers started investigating the factors that determine financial system development. A group of factors that have been identified are institutional factors. Many researchers have investigated the theoretical and empirical links among historical institutional factors, current institutional factors, and financial system development (Beck and Levine, 2005). There are, however, few studies that have investigated extensively the theoretical and empirical links among institutional factors and financial system development within the African context. Africa provides an interesting context to empirically validate and refine many of the theories that have been postulated to explain the relationships among historical and current institutional factors and financial system development. This is because Africa is in the process of developing its institutions and reforming existing ones and offers an opportunity to examine the impact of institutional factors on financial system development in nascent contexts. Therefore, this dissertation investigated the following research question: To what extent are institutional factors determinants of financial system development in Africa? To answer this research question, this study empirically evaluated the effects on financial system development of historical institutional factors that have been identified by four theories: legal origins theory, disease endowment theory, religion-based theory, and ethnic fractionalisation theory. Moreover, current institutional factors identified by the law and finance theory as possible determinants of financial system development were empirically examined. Furthermore, the links among historical and current institutional factors were empirically studied. The results show that the disease endowment variables are the only historical institutional factors that explain cross-country variation in

financial system development in Africa. Additionally, this study finds that the institutional enforcement quality and efficiency of the judicial system are the only current institutional factors that explain cross-country variation in financial system development in Africa. Current institutional factors such as the efficiency of the legal property system and the quality of the credit information infrastructure do not appear to have effects on financial system development. Moreover, the institutional enforcement quality seems to be one of the possible channels through which disease endowment affects financial system development in Africa. This study also reveals that there are few statistically significant links among historical and current institutional factors within the African context. To my knowledge, this is the first study to show some of these empirical links among historical institutional factors, current institutional factors, and financial system development for the African context. The main conclusion of this dissertation is that institutional factors seem not to be determinants of financial system development in Africa to a large extent. In essence, institutional factors appear to matter for financial system development in Africa, but not as much as might have been expected judging from many calls for institutional reforms from the World Bank and others. The theoretical and policy implications of the findings of this dissertation are discussed, and future areas of research are also proposed.

Keywords: Africa, institutions, legal institutions, financial system development, legal origins theory, disease endowment theory, religion-based theory, ethnic fractionalisation theory, and law and finance theory.

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1. Introduction

> *For the first time in World history, due to the sustained economic growth which China and India have experienced over the past 20 years, the majority of the world's poor (living on $1 a day or less) are in Africa. The income per-capita of the poorest countries such as Ethiopia or Sierra Leone differ from those of prosperous OECD [Organisation for Economic Cooperation and Development] countries by a factor of about 40. These income differences come along with huge differences in welfare, health, economic opportunities and life chances (Acemoglu and Robinson, 2010, pp. 21-22).*

Africa's economic underdevelopment continues to capture the attention of many researchers. The high expectations of the 1960s, after many African countries gained independence from their European colonisers, seemed to have been dashed by the terrible economic performance of many African countries a few decades after. The causes of Africa's economic backwardness have been a matter of recent academic debates. Some of the factors that have been identified as possible causes of Africa's low level of economic development include ethnic fractionalisation (Easterly and Levine, 1997); slave trade (Nunn, 2008); deficient and poor economic and political institutions (Acemoglu and Robinson, 2010); low level of education and public health (Artadi and Sala-i-Martin, 2004); poor economic and domestic policies, poor infrastructure and public goods provision, geographical and climatic factors, and disease endowment (Bhattacharyya, 2009; Collier and Gunning, 1999; Sachs and Warner, 1997).

In spite of the continent's economic situation in the last two decades of the twentieth century, there have recently been improvements that are causes of hope for a brighter future. A

recent special report by *The Economist* (August, 2013) on Africa presents the following optimistic picture:

> War, famine, and dictators have become rarer. People still struggle to make ends meet, just as they do in China and India. They don't always have enough to eat, they may lack education, they despair at daily injustices and some want to emigrate. But most Africans no longer fear a violent or premature end and can hope to see their children do well…Over the past ten years real income per person has increased by more than 30%, whereas in the previous 20 years it shrank by nearly 10%. Africa is the world's fastest-growing continent just now…Africans rightly worry about unemployment, inequality and a host of other problems. But over the past decade winners have outnumbered losers. (pp. 3-24)

Hence there is positive news for Africa and the challenge remains to find ways to drive economic development, create a vibrant private sector, generate employment opportunities, and reduce poverty as quickly as possible. Recent research suggests that financial system development is important for economic development, poverty alleviation, and reducing financing constraints for firms (Beck, Maimbo, Faye, and Triki, 2011; Honohan and Beck, 2007; Levine, 2005). Therefore one of the channels through which economic well-being may be improved upon, especially for countries in Africa that still have low income levels and underdeveloped financial systems, is through improvements in the financial system. This dissertation attempts to understand the factors that drive financial system development. More specifically, this study focuses on a particular group of factors that may act as its determinants: institutional factors.

In this introductory chapter, the foundations, contributions, scope, and structure of the dissertation are presented. First, the background of the research is discussed. Second, the

research question, objectives, and contributions to the literature are delineated. In developing the research question, the justifications for carrying out the present study are also stated. Third, the scope of the study is set down to show the focus of the research. Finally, the outline of the dissertation is summarised.

1.1. Background of the research

Over the past few decades, there has been renewed interest in the effects of financial system development on economic development. In global samples empirical results show a positive direct effect of financial system development on economic development (Levine, 2005). There are, however, others that are sceptical about the positive direct effect of financial system development on economic development (e.g., see Andersen, Jones, and Tarp, 2012). Going beyond trying to establish a robust statistical association between financial system development and economic development, many researchers have also been trying to understand the channels through which financial system development positively affect economic development. Early evidence suggests that one of the channels through which financial system development positively affects economic development is through reducing external financing constraints facing firms (Levine, 2005).

Nevertheless, even if financial systems do not have direct effects on economic development, other recent studies have shown how well-developed financial systems reduce the financing constraints faced by firms, especially small and medium-size enterprises (SMEs), and increase access to finance with positive consequences for the performance and growth of firms (e.g., Ayyagari, Demirguc-Kunt, and Maksimovic, 2008a; Beck, Demirguc-Kunt, and

Maksimovic, 2005; Beck and Demirguc-Kunt, 2006; Beck, Demirguc-Kunt, and Maksimovic, 2008; Demirguc-Kunt, Love, and Maksimovic, 2006).

The assertion that financial system development is important for economic development, for easing access to finance for operations and growth of firms, especially SMEs, and for poverty alleviation have led researchers to investigate the factors that determine the characteristics, evolution, and development of the financial system. More specifically, researchers are seeking to understand why some countries have more developed financial systems than other countries (Beck and Levine, 2005). Some of the factors that have been identified as key determinants of financial system development are institutional factors (Beck and Levine, 2005). The goal of this dissertation is to understand to what extent institutional factors act as determinants of financial system development within the African context. The specific research question and research objectives tackled by the dissertation are discussed in the next section.

1.2. Research question, objectives, and contributions

The last few decades have witnessed a tremendous amount of research on the impact of institutions on economic outcomes (see Acemoglu, Johnson, and Robinson, 2001; Acemoglu and Robinson, 2010; Gagliardi, 2008; Hodgson, 1998; Hodgson, 2006; Knack and Keefer, 1995; North, 1990; North, 2005; Rodrik, Subramanian, and Trebbi, 2004). There seems to be an emerging consensus that institutions matter for economic outcomes, and the research agenda increasingly focuses on ascertaining which institutions are important for different economic outcomes and identifying how institutions affect economic outcomes (see Acemoglu, Johnson, and Robinson, 2005; La Porta, Lopez-de-Silanes, and Shleifer, 2008b; Menard and Shirley, 2008; North, 1994; North, Wallis, and Weingast, 2009; Shirley, 2008). More related to the aim

of this dissertation is the more recent and burgeoning research that tries to specify the institutional factors that may act as determinants of a particular type of economic outcome: financial system development.

Since the seminal papers of La Porta, Lopez-de-Silanes, Shleifer, and Vishny (e.g., see La Porta, Lopez-De-Silanes, Shleifer, and Vishny, 1997 and La Porta, Lopez-de-Silanes, Shleifer, and Vishny, 1998; these four authors will be referred to hereafter as LLSV), many researchers have devoted their attention to the study of the institutional determinants of financial system development. Some of these studies have developed and tested theories about the effects of historical institutional factors on financial system development in an effort to explain the cross-country variation in financial system development worldwide (e.g., see Beck, Demirguc-Kunt, and Levine, 2003). The historical institutional factors identified so far are mostly rooted in colonial effects. Hence they act as exogenous determinants of financial system development in different countries because they are neither current policy outcomes nor the results of current events and are not affected by the current policy decisions of the countries under investigation in the cross-country studies.

At the same time that research has focused on identifying the historical institutional factors that affect financial system development, another stream of research has emerged that attempts to isolate the current institutional factors acting as determinants of financial system development and as channels through which historical institutional factors affect financial system development. Also pioneered by LLSV, several studies have investigated the direct effects of current institutional factors on financial system development (Beck and Levine, 2005; La Porta et al., 2008b). Recent research has shown that institutions such as those that make up the contractual and credit information infrastructures may be necessary for the efficient and

effective functioning of a financial system. The contractual and credit information infrastructure are components of the financial system infrastructure. Honohan and Beck (2007) suggest that the current knowledge, backed up by empirical evidence, is that improving macroeconomic stability, contractual infrastructure, and credit information infrastructure enhances financial system development. There is some empirical evidence that the quality of contractual infrastructure and the quality of credit information infrastructure are positively associated with financial system development, and that they may also act as channels through which historical institutional factors affect financial system development (Djankov, McLiesh, and Shleifer, 2007).

Africa is one of the regions in the world (the other region is Latin America) that has lagged behind in economic development (Shleifer, 2009). Because there is evidence that a well-developed financial system has positive effects on economic development, firm financing, and poverty alleviation (Beck et al., 2011), it is important to seek ways of improving financial system development in Africa; in this way Africa can also reap the benefits of financial system development for economic development, growth in firms, increased firm performance, and poverty alleviation. In recent years and after many years of political, economic, and social reforms, there is evidence of improvements in financial system development in Africa. Beck et al. (2011) make the following observation:

> Cautious hope is in the air for finance in Africa. While the global crisis may have dented some of the progress made since the beginning of the 21st century, one feels the optimism and sees the positive trends. A deepening of financial systems can be observed in many African countries, with more financial services, especially credit, provided to more enterprises and households…However, many challenges remain, and the journey toward deeper, more-efficient, and more inclusive financial systems will be long and

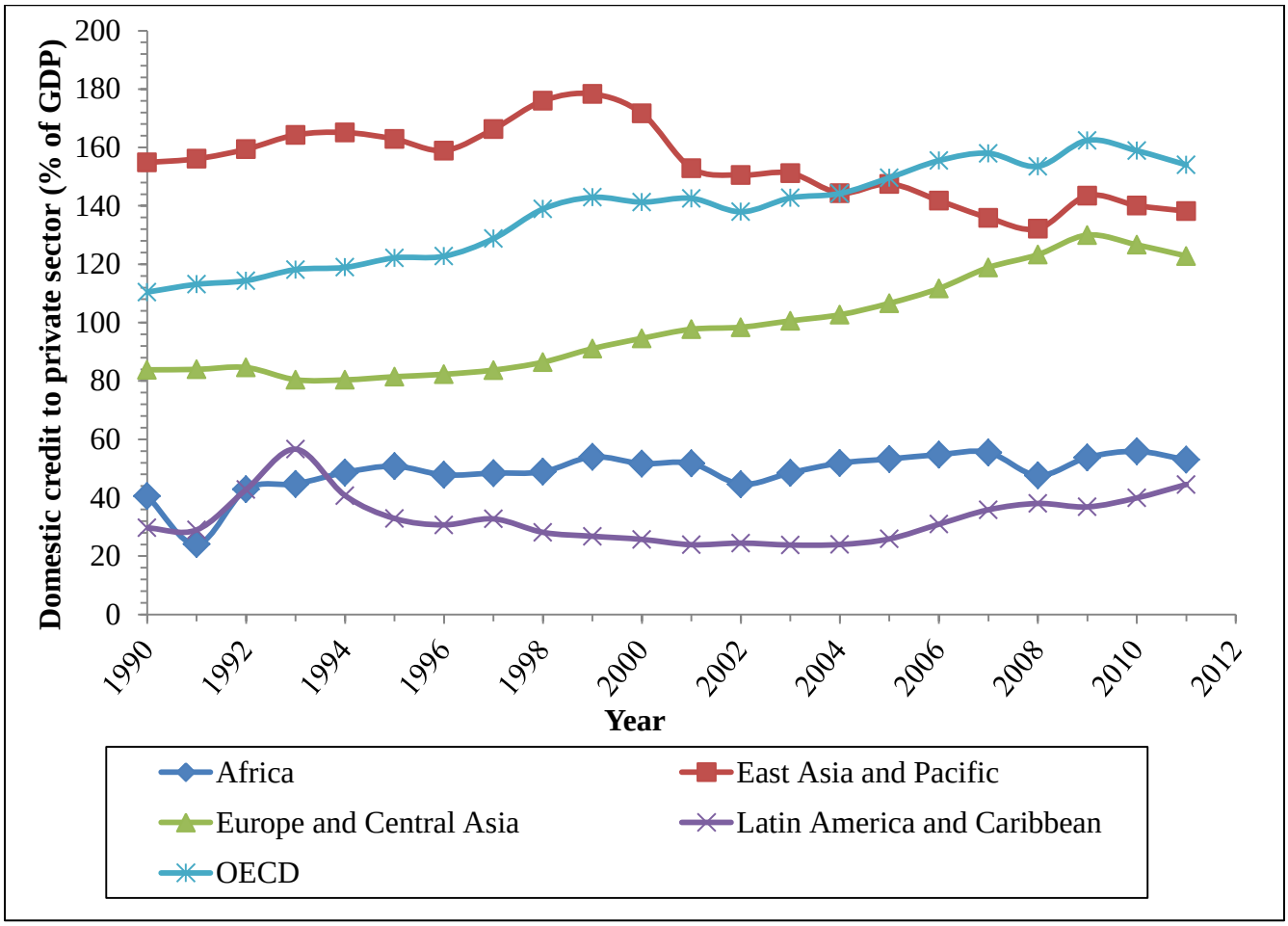
> fraught with many difficult choices in many countries in Africa. Africa's financial systems have progressed over the past 20 years. Yes, the promise of the efforts at liberalization, privatization, and stabilization in the 1980s has only been partly fulfilled, though African finance has been stable for quite a while now. (p. 1)

To get a picture of the state of financial system development in Africa over the preceding 20 years and in comparison with some other regions and economic groups of the world, Figure 1.1 plots a proxy measure of financial system development called domestic credit to the private sector as a percentage of GDP[1] from 1990 to 2011 for Africa and some other regions and economic groups of the world. Figure 1.1 shows that the domestic credit to private sector/GDP values for Africa have a positive trend and have been relatively stable over the past 20 years. Figure 1.1 also indicates that Africa is performing better than the Latin America and the Caribbean region, but is performing much worse than the East Asia and Pacific, Europe and Central Asia, and the OECD[2] groups. Hence African financial systems still have a lot of room for development.

With the recent growth and stability in financial system development in Africa, it is of theoretical and practical importance to understand the factors that may have an impact on financial system development within the African context. Although there may be many factors that determine financial system development, the focus of this dissertation is on understanding the possible effects of institutional factors, both historical and current, on financial system development in Africa.

[1] GDP = Gross Domestic Product
[2] OECD = Organisation for Economic Cooperation and Development

Figure 1.1: Domestic credit to private sector/GDP from 1990 to 2011 for different regions and economic groups of the world



Sources: African development indicators (2013) and World development indicators (2013)
Note: The regional and economic group classifications are those of the World Bank. GDP = Gross Domestic Product; OECD = Organisation for Economic Cooperation and Development

Many studies have examined the effects of institutional factors on financial system development in global samples and in other non-African samples, but more studies are needed that focus on the African context. Africa is one of the regions in the world where the impact of institutional and other reforms on desired economic outcomes may be better understood because African countries are underdeveloped in many dimensions (Honohan and Beck, 2007), but are developing new institutions and reforming existing ones in order to catch up with the other high-

income countries in the world (World Bank, 2012a). In essence, Africa provides a testing ground and a nascent context to understand the impact of institutions that are argued to be beneficial for achieving desired economic outcomes.

The knowledge gained from investigating the effects of historical and current institutional factors on financial system development in Africa can go a long way in helping us recognise which theories are relevant to understanding the effects of institutions on financial system development in Africa and hence the validity of existing theories for the African context. Moreover, the possible historical constraints on institutional reforms, the relevant current institutions that matter for financial system development, and the most urgent institutional reforms required to enhance financial system development in Africa may be better understood. Hence identifying the institutional factors that matter most for financial system development in the African context can guide the reform process so that the scarce economic resources of African countries can be spent on the most urgent and necessary reforms.

As noted earlier, many recent studies have identified historical and current institutional factors that matter for financial system development. Therefore for theoretical and policy purposes it seems desirable to investigate to what extent the identified historical and current institutional factors act as determinants of financial system development within the African context. Hence the research question that this dissertation seeks to answer is the following:

To what extent are institutional factors determinants of financial system development in Africa?

African countries, of which practically all are former European colonies, offer a useful context to test and evaluate the different theories that claim to specify the historical institutional factors that act as determinants of financial system development. To my knowledge this is one of the first research works to carry out an in-depth empirical analysis, specifically for the African context, of four theories that identify different historical institutional factors that may act as determinants of cross-country variation in financial system development: legal origins theory, disease endowment theory, religion-based theory, and ethnic fractionalisation theory, and the possible current institutional factors, identified based on the law and finance theory, that may act as channels of the historical institutional factors.

Honohan and Beck (2007) briefly discuss three of the theories of historical institutional determinants: legal origins theory, disease endowment theory, and ethnic fractionalisation theory. They, however, do not present regression results that control for other determinants of financial system development and for other possible confounding factors. Moreover, they do not empirically examine possible current institutional factors that may act as channels of these historical institutional factors as is done in this dissertation. A recent paper, Fowowe (2013), tests the legal origins theory for the African context while controlling for the historical institutional factors identified by the other three theories.

Fowowe (2013), however, does not investigate the links among historical and current institutional factors, and does not examine the possible current institutional factors acting as channels through which historical institutional factors may affect financial system development in Africa as carried out in this study. Fowowe (2013) also does not use panel estimation techniques to test the effects of current institutional factors on financial system development in Africa while this dissertation takes advantage of panel estimation techniques in analysing the

effects of current institutional factors on financial system development in Africa. This dissertation confirms the main results of Fowowe (2013) and extends his work using more recent financial system development data, a larger sample of African countries, and updated and more current measures of historical and current institutional factors.

Although African countries still have weak legal and statutory institutions and low-income levels, efforts are being made to increase the pace of institutional reforms (Aryeetey, 2003; Doing Business Project, 2013; Fosu, Kimenyi, and Ndung'u, 2003). A key problem, however, is to identify the current institutions which, when reformed, will have the most substantial and immediate impact on financial system development within the African context (Doing Business Project, 2013). Honohan and Beck (2007) highlight that reforms that are focused on improving the quality of the credit information infrastructure and the efficiency of the legal property and judicial systems (i.e., court procedures) in Africa are urgent. This study will investigate whether the quality of the credit information infrastructure, and the efficiency of the legal property and judicial systems have any effect on financial system development in Africa and consequently whether reforms to these current institutions are warranted and as urgent as suggested by Honohan and Beck (2007).

The studies of LLSV and colleagues seem to have had some impact in many discussions and policy recommendations about how to improve financial system development in many countries (Aguilera and Williams, 2009). The Doing Business Project of the World Bank is an example. The methodologies used in the development of the indices of legal rules and regulations argued to be important for the well-functioning of the private sector in many countries are based on the studies of LLSV and colleagues (Doing Business Project, 2012a). Moreover, the indices developed by the Doing Business Project are used for policy

recommendations by international development organisations such as the World Bank and for policy discussions and reforms by individual governments, and hence these indices are gaining prominence in many policy reform discussions worldwide (World Bank, 2013, p. 22-23).

With the availability of these current indices of legal rules and regulations developed by the Doing Business Project of the World Bank, a large database of cross-sectional and panel data on legal rules and regulations for many African countries now exists. Thus the effects of relevant current legal rules and regulations on financial system development in Africa can more easily be evaluated. Therefore this dissertation will evaluate whether cross-country differences in current institutional factors such as the quality of the contractual infrastructure, the quality of the credit information infrastructure, and the efficiency of the legal property, judicial and insolvency systems explain differences in financial system development in Africa. Moreover, this dissertation will analyse whether reforms to these current institutional factors affect financial system development within the African context.

To answer the research question, the following research objectives are pursued in this dissertation:

i. To determine the historical institutional factors that act as determinants of financial system development in Africa

ii. To determine the current institutional factors that are associated with financial system development in Africa, and concurrently the effects of the reforms in current institutional factors on financial system development in Africa

iii. To investigate the interaction effects among some current institutional factors

iv. To verify the links among historical institutional factors and current institutional factors, and consequently to discover the current institutional factors that may act as channels through which the historical institutional factors affect financial system development in Africa

By attaining these research objectives, the key findings from the dissertation contribute to the literature, and help arrive at an answer to the research question. The results found and contributions to the literature are summarised below:

a) By empirically testing four theories that identify historical institutional factors that may act as determinants of financial system development, specifically the legal origins theory, the disease endowment theory, the religion-based theory, and the ethnic fractionalisation theory, this dissertation finds support for the disease endowment theory. More specifically, this dissertation finds that cross-country differences in financial system development among a sample of African countries are explained only by the disease endowment variables. The foregoing finding suggests that the disease environment of African countries may have affected the colonisation strategy of the colonisers and the institutions that the colonisers established in their colonies; these established institutions seem to still have implications for current financial system development in the former colonies. In other words, this dissertation shows that financial system development in Africa is not statistically significantly associated with the coloniser identity of African countries, the type of legal family to which African countries belong, the dominant religions, the presence of Islamic law in the legal system of African countries, and the ethnic diversity of African countries.

   To my knowledge, this is one of the first studies to reach these conclusions for the African context using recent financial system development data from 2004 to 2011. The

foregoing results are generally in agreement with the results of Beck et al. (2003) who find in a global sample that legal origin does not have a robust direct effect on financial system development; that disease endowment has a robust direct effect on financial system development; that differences in dominant religions do not seem to matter for differences in financial system development; and that ethnic fractionalisation does not have a robust direct impact on financial system development. These foregoing results are also in agreement with Fowowe (2013) who finds that legal origins do not explain cross-country variation in financial system development in his sample of African countries from 1996 to 2005. Another contribution of this dissertation is that different measures of disease endowment from those employed by Beck et al. (2003) and Fowowe (2013) were used to evaluate the effects of disease endowment within the African context and to confirm the results of Beck et al. (2003) and Fowowe (2013). Moreover, another contribution of this dissertation is the use of the presence of Islamic law in the legal system of some African countries to evaluate the effect of religion, specifically Islam, on financial system development in Africa.

b) Out of the current institutional factors investigated in this dissertation, only the institutional enforcement quality and the efficiency of the judicial system had statistically significant effects on financial system development within the African context. Although there have been reforms to many of the current institutional factors investigated in this dissertation (Doing Business Project, 2013) and theoretical arguments that point to their effects on financial system development, many of these current institutional factors had no statistically significant effect on financial system development within the African context. Moreover, the interaction effects among some current institutional factors were not statistically significant

even though the literature points to the existence of these interaction effects. To my knowledge this is the first study that shows that the efficiency of the legal property system and the efficiency of the insolvency system do not have any statistically significant effects on financial system development within the African context.

c) The historical institutional factors investigated in this dissertation, specifically legal origins, disease endowment, religion, and ethnic fractionalisation, explained in different degrees the cross-country differences in the current institutional factors investigated in this dissertation. The legal origins variables were statistically significantly associated with the largest number of current institutional factors while the ethnic fractionalisation variable was statistically significantly associated with the smallest number of current institutional factors. One of the current institutional factors, specifically the institutional enforcement quality, was found to be the channel through which disease endowment may be affecting financial system development in Africa. Legal origins may have an indirect effect on financial system development in Africa through the effect of one of the legal origin variables on one current institutional factor that was statistically significantly associated with financial system development. Religion, specifically Islam, may not be a hindrance to financial system development within the African context because countries categorised as having Islamic law in their legal system or countries with Islam as dominant religion do not always have worse legal institutions; and these countries are not statistically significantly different in those current institutional factors that matter for financial system development from other countries in Africa that do not have Islamic law in their legal system or do not have Islam as a dominant religion. Ethnic fractionalisation may have any indirect effect on financial system

development within the African context through its effect on one of the current institutional factors that was statistically significantly associated with financial system development. To my knowledge, this is one of the first studies to reveal these links among historical institutional factors, current institutional factors, and financial system development within the African context.

Based on the results and contribution to knowledge delineated above, the research question of this dissertation can now be answered. The answer to the research question and the main conclusion of this dissertation is that institutional factors seem not to be determinants of financial system development in Africa to a large extent. Moreover, some current institutional factors such as the quality of creditor rights institutions and the quality of the credit information infrastructure that have been claimed to be necessary for the effectiveness of financial systems (see, e.g., Honohan and Beck, 2007) do not appear to have effects on financial system development within the African context, even after reforms to these current institutional factors over the years 2004 to 2011. In essence, this study finds that institutional factors matter for financial system development in Africa, but not as much as might have been expected judging from many calls for institutional reforms to drive financial system development by the World Bank Doing Business Project reports (World Bank, 2012a) and other studies (e.g., Beck et al., 2011; Honohan and Beck, 2007).

1.3. The scope of the dissertation

This dissertation is focused on the effects of institutional factors on financial system development in Africa. Hence the sample for the empirical study will be limited to a sample of African countries. A focus on Africa implies that the results from the analysis in this dissertation

may not be generalisable to other contexts. The reasons for choosing Africa as a setting for this study, in addition to those briefly discussed earlier, are provided in the Methods section (i.e., Section 3.1) of the dissertation.

The study is a cross-country study and the variables and measures used for the empirical analyses are at the country level. The cross-country nature of this study enables the discovery of broad trends and relationships among the dependent and explanatory variables. These broad trends and relationships can then serve as guides for more fine-grained investigations at the firm-level and individual level.

In examining the current institutional factors, this study will be concerned with current legal institutions. The focus on current legal institutions does not imply that current nonlegal institutions do not matter[3]. The choice of current legal institutions was primarily driven by the availability of cross-country data of current legal institutions for a broad set of African countries. The World Bank Doing Business indices used in this study consist of data on current legal rules and regulations for a large set of African countries and hence these indices provide an opportunity to examine the effects of current legal institutions on financial system development in Africa. Thus there is room for a study similar to the one presented in this dissertation that employs current nonlegal institutions once data on current nonlegal institutions for a broad set of African countries become available.

1.4. Outline of the dissertation

The remainder of the dissertation is organised into four additional chapters. Chapter 2 presents a review of the main literature that is of interest in this dissertation, and outlines the hypotheses

[3]The difference between legal and nonlegal institutions will be explained in the literature review section on institutions (i.e., Section 2.3)

deduced from the literature review that will be tested in subsequent chapters. Chapter 3 offers a discussion of the research method used in this dissertation. In more detail, this chapter delineates the research setting and explains why Africa is chosen for the empirical investigation. Chapter 3 also provides the sample selection criteria, defines the variables that are used in the study, and explains the econometric models and estimation techniques.

Chapter 4 is the results section of this dissertation and delineates the findings of the empirical analyses carried out to test out the hypotheses developed in Chapter 3. Finally, Chapter 5, the concluding chapter, discusses the results in the context of the existing literature and offers an overall interpretation of the findings. In discussing results, Chapter 5 also outlines the contributions of this dissertation to the literature and presents the theoretical and policy implications of the findings. In addition, this concluding chapter presents suggestions for future research.

1.5. Conclusions

This introductory chapter has set the stage for the research presented in this dissertation. First, the background to the research documented was presented. Second, the research question, research objectives, and contributions of this dissertation to the literature were discussed. Third, the scope of the dissertation was delineated. Finally, the outline of the dissertation was presented.

In the next chapter, Chapter 2, the extant research relevant to the present study will be presented. Specifically, Chapter 2 will explain the concepts of financial system, financial system development, and legal institutions as used in this dissertation, and will delve into the literature that explains the links among historical institutional factors, current institutional factors, and

financial system development. Moreover, Chapter 2 will present the relevant hypotheses that will be empirically tested in this dissertation.

2. Discussion of key concepts, literature review and hypotheses development

The main literature relevant for the research carried out in this dissertation is presented in this chapter. First, the concept of the financial system is defined and the concept of financial system development briefly explained. Second, an overview of the literature on the effects of financial system development on economic development is given. Third, the concepts of institutions and legal institutions are defined. Fourth, the literature on the effects of historical institutional factors and current institutional factors on financial system development and the effects of historical institutional factors on current institutional factors are reviewed. Furthermore, several testable hypotheses are developed from the foregoing literature review and will be tested in later sections of the dissertation. These hypotheses will enable the investigation of the effects of historical and current institutional factors on financial system development, and the effects of historical institutional factors on current institutional factors within the African context. Finally, a conceptual model that captures the links among historical and current institutional factors and financial system development and a summary of the developed hypotheses are presented.

2.1. Financial system development

A conceptually useful definition of financial system that aligns with many of the studies on financial systems (e.g., see Allen and Gale, 2004; Allen, Chui, and Maddaloni, 2004; Levine, 2002; Rajan and Zingales, 2001) is given by the OECD: "A financial system consists of institutional units and markets that interact, typically in a complex manner, for the purpose of mobilizing funds for investment, and providing facilities, including payment systems, for the financing of commercial activity" (OECD, 2005). This definition is also very similar to that

provided by Hartmann, Maddaloni, and Manganelli (2003, p. 182): "A financial system is defined by the set of institutions (markets and intermediaries) through which households, corporations, and governments obtain funding for their activities and invest their savings".

In other words, for the purposes of this dissertation, the financial system of a country, also termed financial sector (Beck, Demirguc-Kunt, and Levine, 2010; Beck et al., 2011; Rajan and Zingales, 2001; Rajan and Zingales, 2003; World Bank, 2012b) or financial services sector (Greenwood and Scharfstein, 2013), is defined as the system of banks, nonbank financial companies, and financial markets in that country. The nonbank financial companies include insurance companies, pension funds, and mutual funds. Financial markets refer to the buyers and sellers (that is, the market participants) of financial assets and the processes, activities, and tools employed in the exchange of financial assets. Financial markets include the organised stock exchange and the over-the-counter (OTC) markets for financial assets.

Financial systems are usually characterised based on their structure (also termed architecture) (Hartmann et al., 2003). Hartmann et al. (2003, p. 182) state that "in a given financial system, the mixture of financial markets and intermediaries operating in the economy defines the financial structure of that system". Two categories of financial systems, based on financial system structure, are recognised: bank-based (or bank-dominated) financial systems and market-based (or market-dominated) financial systems (Levine, 2002; Levine, 2005; Rajan and Zingales, 2001). In a general and loose way, African financial systems may be categorised as being bank-based due to the dominance of banks and the lack of active stock markets and other types of nonbank financial companies in many African countries (Beck et al., 2011). Beck et al. (2011, p. 23) note that "Africa's financial systems continue to be small in absolute and relative terms. They are based heavily on banks; few stock markets have sufficient liquidity; and the

contractual savings industry [nonbank financial companies] is small and weak in most countries".

Levine (2005) notes that a financial system has the following five functions: first, it aggregates together the savings from economic agents with excess money; second, it provides the relevant information that can help in investment decisions and consequently allocates money to where it is needed; third, it monitors investments and helps provide strong corporate governance systems for supervising the money invested; fourth, it facilitates risk management by providing the means to trade, manage, and diversify risk (both intertemporal and cross-sectional) across different investors; and fifth, it provides the means to facilitate the mutually-beneficial exchange of goods (both material goods and services), particularly through the provision of payment systems.

Levine (2005) argues that a financial system is more developed the better it carries out these foregoing five functions. He contends that these five functions reduce, without necessarily eliminating, market frictions such as information acquisition costs, financial contracting costs, and transaction costs, and that these functions can affect savings and investment decisions of economic agents, consequently leading to economic development. Rajan and Zingales (2001) note that a financial system has two main functions: it channels financial resources to where they are most productive and it allocates risks effectively. These functions can be seen to be a subset of those stated by Levine (2005). In addition, Rajan and Zingales (2003) argue that a financial system is developed if the following features are present: (a) the financial system gives assurance to investors that they will get satisfactory returns on their investments; and (b) the financial system makes it easy for business owners, specifically entrepreneurs, or firms with sound business investments and ideas to obtain needed finance.

Putting the arguments of Levine (2005), Rajan and Zingales (2001) and Rajan and Zingales (2003) together, it can be said that a financial system is developed when it can carry out the five functions listed above in an effective and satisfactory way. In essence, if financial system A channels more financial resources to economic agents than financial system B, then financial system A is more developed than financial system B. In this dissertation, financial system development, financial sector development and financial development will be used synonymously and interchangeably.

Beck et al. (2011) state that Levine (2005)'s above mentioned five functions align well with the practitioner's view of financial system functions or services: savings and deposit services; credit services; risk management and insurance services; and transaction and payment services. Moreover, Beck et al. (2011) argue that these five financial system functions can be grouped into three categories based on the different beneficiary groups of the functions and different time horizons (i.e., short-term or long-term) that the functions serve. These three categories are finance for markets, finance for growth, and finance for all. In essence, financial systems can principally focus on providing financial services to drive market-exchange and these services are grouped under the finance for markets category; financial systems can mainly focus on the provision of financial services that drive economic growth through financing investments and these services are grouped under the finance for growth category; and financial systems can provide financial services that drive market-exchange and economic growth for everyone in the society, especially the underserved portions of the society's population, and these financial services are grouped under the finance for all category.

The finance for markets, finance for growth, and finance for all categories of financial system functions are not mutually exclusive, but different countries at different stages of

economic development will have financial systems that offer more services in a particular category than in other categories. All countries, however, would want to have all categories of functions running smoothly, but different country circumstances such as income levels will make some categories of functions more difficult to have (Beck et al., 2011). According to Beck et al. (2011, p. 9), the goal of a country interested in developing its financial system is to have a financial system that is developed to the point where it is "providing a sound and effective platform for the market-based exchange of goods and services [finance for market functions], attracting and intermediating the necessary resources for long-term private and public investment [finance for growth functions], and expanding financial services to larger segments of the population so as to offer, at least, access to transaction services [finance for all functions]". The more a country's financial system fulfils the aforementioned functions, the more developed that country's financial system. Moreover, a key policy issue for a country interested in reaping the economic development benefits of a developed financial system is how to design its financial system so that it effectively carries out its finance for growth functions, moving beyond carrying out only finance for market functions (Beck et al., 2011).

Levine (2005) notes that although advances have been made on the empirical methods, especially the use of sophisticated econometric techniques, for testing the finance-economic development nexus, one of the main shortcomings in the empirical tests of this link is the lack of direct measures of financial system functions and consequently the lack of direct measures of financial system development. Basically, Levine (2005) argues that the measures of financial system development used in the literature may not capture well the functions of the financial system stated above. Financial system development has been measured in different ways in the literature. These measures include private credit of deposit money banks/GDP, private credit of

deposit money banks and other financial companies/GDP, bank branch density (i.e., number of bank branches/population size), broad money (M2)/GDP, liquid liabilities of the financial system/GDP, stock market capitalisation/GDP, stock market total value traded/GDP, and stock market turnover ratio. These measures of financial system development are, however, merely proxy measures. Thus they only provide preliminary evidence for the finance-economic development link until better measures of financial system development are identified.

Levine (2005) and Beck and Levine (2004) argue that stock market capitalisation/GDP and stock market total value traded/GDP are poor proxies for financial system development and do not reflect the functions of financial systems as regards improving resource allocation and driving economic development. Furthermore, Aguilera and Williams (2009) claim that stock market capitalisation/GDP seems to measure more the financialisation of a market economy than financial system development. Aguilera and Williams (2009) contend that if excessive financialisation (through high rates of growth in stock market capitalisation/GDP) leads to stock market bubbles that can burst with real negative economic consequences, such as observed in the United States recession that started in 2001 after the bust of the dot-com bubble in 2000/2001, then growth in stock market capitalisation/GDP in economies that are more market oriented may be reflecting potential negative economic outcomes rather than positive ones (Aguilera and Williams, 2009).

Levine (2005) argues that there is need for better and more detailed data that can provide more robust measures of financial system functions and hence more robust measures of financial system development, even though progress has been made over the years to use more appropriate measures of financial system development. Beck and Levine (2004) note that the proxy measures of financial system development that seem to have less measurement problems are credit from

the financial system to the private sector/GDP (as a measure of intermediation activities of the financial system for the benefit of private sector activities such as firm financing) and stock market turnover ratio (as a measure of liquidity of stock markets).

The main function of a financial system that affects economic development is the channelling of savings of society to the best use, thereby improving resource allocation and productivity (Beck et al., 2011). This implies that when a country's financial system is not carrying out this main function, then it may not directly affect economic development as desired, even though the financial system may be carrying out other functions such as savings and payment services that may indirectly affect economic development. In a recent study, Beck, Degryse, and Kneer (In press) argue that non-lending (or non-intermediation) financial system activities (e.g., fee-generating activities such as proprietary trading, market making, and non-interest income generating activities) in low-income countries seem neither to contribute to economic development nor to curb volatility in economic development. Beck et al. (In press) find that in high-income countries, non-lending activities contribute to economic development, but at the cost of higher volatility in economic development. In a global sample of high and low-income countries, Beck et al. (In press) find that in the long run lending (or intermediation) activities are positively associated with economic development while in the medium run these lending activities are not correlated with economic development.

The focus of this dissertation as regards financial system functions and when examining financial system development is on how well a financial system is fulfilling its finance for growth functions. Hence in examining financial system development the specific focus of this study will be on how well financial systems channel pooled savings to entrepreneurs and firms in need of money for their business operations and growth. Consequently, financial system

development measures that try to capture the intermediation role of the financial system will be used for the empirical analysis conducted later in this study. In the next section, the literature on the effects of financial system development on economic development is examined.

2.2. Financial system development and economic development

In the past few decades, the link between financial system development and economic development (sometimes called the finance-growth nexus) has been under intense investigation. Recent literature reviews document the key findings from this research. This section will present the findings from these literature reviews and from other extant research.

Levine (2005) concludes, after reviewing a large body of empirical literature that employs different econometric methods such as cross-country growth regression methods, panel data methods, and time-series methods, that the existing evidence suggests a positive relationship between financial system development and economic development[4]. In other words, well-functioning financial intermediaries and markets positively affect the economic development of a country. Levine (2005) argues that the statistically significant positive effect of financial system development on economic development in the empirical studies reviewed is not due to simultaneity bias or reverse causality; he also notes that one of the channels through which financial system development positively affects economic development is by reducing constraints on external financing for firms and for the expansion of industries.

Honohan and Beck (2007, p. 3) report that "careful comparative analysis of the growth rates of different countries over a 30-year period has produced convincing evidence that having a

[4]Economic development is measured in terms of real GDP per capita, either in growth rates or in levels. For a recent discussion on the deficiencies of GDP as a measure of economic well-being and the need to go beyond GDP as a measure of economic development, see Stiglitz, Sen, and Fitoussi (2009)

deeper financial system contributes to growth—and is not merely a reflection of prosperity…Countries with deep financial systems also seem to have a lower incidence of poverty than others at the same level of national income. At the firm level, growth also responds to access to credit and to the conditions that favor such access". Furthermore, Beck et al. (2011, p. 9) argue that "ample evidence based on various levels of aggregation and distinct methodologies has been accumulated on the growth-enhancing effect of financial sector development. Even accounting for reverse causation, research has established the robust positive impact of financial sector deepening on economic development".

Murinde (2012) argues that the existing evidence supports the proposition that financial system development positively affects economic development. He claims that new evidence points to corporate finance, poverty alleviation, and distribution of income across generations as some of the channels through which financial system development positively affects economic development. In essence, he contends that financial system development affects economic opportunities for people and consequently affects income distribution and poverty levels, with positive consequences for economic development. Murinde (2012) also notes that the positive relationship between financial system development and economic development has to be taken with caution because there are cases where financial system development may lead to financial fragility and therefore may negatively affect economic development.

In his review of the literature on finance-economic development nexus, Murinde (2012) also examines a large body of empirical literature focused on African countries and concludes that the empirical evidence for African samples is mixed. He recommends that instead of carrying out more 'chicken and egg' studies (i.e., studies based on time-series econometric methods that investigate causality at the country level) more effort should be directed towards

investigating the channels through which financial system development affects economic development because 'chicken and egg' studies may not give any other additional knowledge. For example, he advocates for studies focused on the financing needs of young firms in developing countries and how the large corporate sector can be the channel through which financial system development affects economic development. Murinde (2012, p. 47) states that "if companies are unable to expand because organized capital markets are inefficient and unable to generate the necessary finance, the effects on economic performance may be pervasive, both in depressing activity and in channelling finance through the informal sectors. In this respect, an efficient stock market and efficiently financed companies make important contributions to economic growth".

On a more cautionary and sceptical note, Andersen et al. (2012) review the theoretical and empirical literature that supports the finance-economic development nexus and conclude that the case for causality between financial system development and economic development remains weak. In essence, Andersen et al. (2012) claim that the existing mainstream consensus arguing that financial system development induces economic development rests on theoretical vagueness and unpersuasive empirical evidence. Furthermore, they argue that the existing results of the finance-economic development nexus should not be taken as already settled knowledge and as definitive for policy development.

Andersen et al. (2012) note that even though financial system development matters for economic development, it may not always be the necessary condition that unlocks economic development or the key factor that induces economic development as argued in much of the literature. They argue that in addition to financial system development other factors such as the quality of the educational and healthcare systems matter for economic development and hence

there should not be an excessive focus on financial system reform to the detriment of reforms to other necessary areas that may also lead to economic development.

Beck et al. (In press), after reviewing some recent studies on the non-linear relationship between financial system development and economic development, acknowledge that more finance is not necessarily better for economic development as evidenced from the non-linear results uncovered in recent literature. They then show empirically that the types of activities of financial systems that matter for economic development are the intermediation activities of financial systems as captured by a measure of financial system depth called the bank credit to the domestic private sector/GDP. In essence, non-intermediation activities that increase the size of the financial system may not necessarily affect economic development, and may even lead to increased volatility in economic development. Beck et al. (In press) note that the long-run relationship between intermediation and economic development is based on a partial correlation and therefore should not be taken as a causal relationship; they also state that over the period 1980 to 2007 the positive effect of intermediation activities on economic growth has reduced with time.

The literature reviewed above generally points to a positive association between financial system development and economic development. But even if financial system development may not have a robust positive association with economic development, financial system development may still have an indirect effect on economic development through the effects of financial system development on the growth and performance of firms. Moreover the effect of financial system development on the growth and performance of firms can provide valuable knowledge for its own sake that can help improve the performance of firms, without trying to argue that financial system development affects economic development through its effect on firm growth

and performance. In essence, the importance of financial system development can be justified from its impact on firm growth and performance without necessarily linking financial system development to economic development. Accordingly, several studies have investigated the effects of financing obstacles or access to finance on the growth and performance of firms and these studies are reviewed below.

Ayyagari, Demirguc-Kunt, and Maksimovic (2008a) examine different constraints/obstacles in the business environment that can affect the growth and performance of firms. These business environment obstacles include financing constraints, poor quality infrastructure, inadequate definition and protection of property rights, poor taxation and regulation, corruption, and macroeconomic instability. They note that although a firm reports that many obstacles in the business environment hamper its growth, not all of them seem to be binding on firm growth, and some of them affect firm growth indirectly through their effects on other more binding obstacles. Ayyagari et al. (2008a) find that financing constraints, crime, and policy instability are the key direct obstacles to firm growth, with financing constraints being the most robust binding one in the global sample used in their study while crime and policy instability seem to be binding constraints more in transition and in African economies than in the global sample used in their study.

Beck et al. (2005) examine the effects on firm growth of financing, corruption, and legal obstacles to business operations. They also investigate whether financial system development, country-level corruption, and legal system development moderate the effects of the aforementioned obstacles on firm growth rates. Beck et al. (2005) find that financing, corruption, and legal obstacles negatively affect firm growth. Furthermore, they also find that more developed financial and legal systems reduce the adverse effects of the examined obstacles

on firm growth while greater corruption increases their adverse effects on firm growth. Beck et al. (2005, p. 171) note that their paper provides "evidence confirming that indeed, small and medium-sized firms face greater financial, legal, and corruption obstacles compared to large firms, and that the constraining impact of obstacles on firm growth is inversely related to firm size…it is the small firms that stand to benefit the most from improvements in financial development and a reduction in corruption".

Demirguc-Kunt et al. (2006) study the effects of the business and institutional environment on firms' decision to incorporate and the effects of having a corporate form on access to finance and firm growth rates. They find that firms are more likely to incorporate in countries with more developed financial and legal systems, more effective bankruptcy systems, lower taxation and registration costs, and stronger shareholder and creditor rights. They also find that incorporated firms experience lower obstacles to growth and operations than unincorporated firms in countries with a more developed institutional environment. Moreover, they find that in these countries, incorporated firms grow faster than unincorporated ones. Demirguc-Kunt et al. (2006, p. 2989) conclude their study by asserting that their results "show that in countries with strong business environment the corporate form has advantages over other business forms in relaxing financing constraints and reducing legal obstacles. However, these advantages manifest mainly in countries with better developed financial and legal systems".

Beck and Demirguc-Kunt (2006) discuss and summarise the literature about the effects of financing constraints on firms' access to finance, especially access to finance by SMEs, and find that lack of access to finance limits the growth of SMEs and that financial and legal system development moderate the effects of financing constraints on the growth of SMEs. Notwithstanding the fact that workers employed by SMEs make up a huge proportion of total

employment in many countries, they argue that SMEs may not contribute to economic development when they operate in a hostile business environment. They claim that a focus on subsidising and driving a large SME sector without improving the business environment may not achieve the goal of making SMEs grow fast, operate efficiently and contribute to economic development. They argue that reforming the business environment first may provide the enabling conditions that reduce the constraints that SMEs face, especially financial ones, which will then enable these firms to achieve their potential, and drive economic development. Beck and Demirguc-Kunt (2006, p. 2942) state that the existing literature suggests that "a focus on improving the institutions and the overall business environment is probably the most effective way of relaxing the growth constraints SMEs face and facilitate their contribution to economic growth".

Beck, Demirguc-Kunt, and Maksimovic (2006) find that the size of the largest firms in a country is also affected by the degree of financial system and legal system development in that country. They discover that firms are larger in countries with better developed financial systems while there is a positive but not robust effect of legal system development on firm size. Beck et al. (2006, p. 3013) claim that their "results do not support the view that large firms with internal markets and hierarchies can compensate for the underdevelopment of financial and legal institutions in a country. Rather, well-developed institutions are a pre-requisite for the development of large corporations".

Beck et al. (2008) examine financing patterns across firms of different sizes in a global sample and find that the most common source of external finance for firms in their global sample is financing from banks. They find that small firms use less external finance, especially financing from banks, than large firms; and that better property rights protection increases small firms'

access to external finance, especially financing from banks, more than for large firms. In addition, Beck et al. (2008) also find that large firms use less informal finance than small firms, that large firms use more finance from development banks and government sources than small firms, and that there is a limit to which small firms can compensate for external finance from other sources different from bank finance in a country with underdeveloped financial and legal systems. Beck et al. (2008, p. 485) argue that "the most effective way of improving small firms' access to external finance appears to be through institutional reforms addressing the weaknesses in legal and financial systems".

In sum, the discussion and evidence above about the effects of financial system development on economic development points to a positive relationship. Moreover, financial system development may indirectly affect economic development through its effect on increasing firms' access to finance to foster the growth and operations of firms, especially SMEs. Furthermore, even if financial system development does not have any robust positive association with economic development, the positive impact of financial system development in alleviating financing constraints for firms, especially small firms, is valuable in its own sake. Consequently, it is worthwhile to understand the factors that affect financial system development in an effort to understand ways to foster it. The factors of interest in this dissertation are institutional factors. The subsequent sections will focus on discussing the literature that explains the effects of historical and current institutional factors on financial system development, and the links between historical and current institutional factors.

2.3. Institutions

Before reviewing the literature and examining the theories about historical institutional factors, current institutional factors, and financial system development relevant to this dissertation, the concept of institution will be defined. A widely stated definition of institutions is the one given by North (1990, p. 3) who defines institutions as "the rules of the game in a society or, more formally, are the humanly devised constraints that shape human interaction. In consequence they structure incentives in human exchange, whether political, social, or economic". North (1990, pp. 3-4) identifies the way we drive automobiles, bury the dead, and greet other human beings as types of institutions, implying that institutions are involved in many human interactions, human practices, and human activities, whether at the macro or micro-level of the society.

There are other definitions that are closely related to that provided by North (1990). For Menard and Shirley (2008, p. 1), "Institutions are the written and unwritten rules, norms and constraints that humans devise to reduce uncertainty and control their environment. These include (i) written rules and agreements that govern contractual relations and corporate governance, (ii) constitutions, laws and rules that govern politics, government, finance, and society more broadly, and (iii) unwritten codes of conduct, norms of behavior, and beliefs". In a clarification of the concept of institutions, Hodgson (2006) gives the following definition and explanation of institutions:

> Institutions are the kinds of structures that matter most in the social realm: they make up the stuff of social life. The increasing acknowledgement of the role of institutions in social life involves the recognition that much of human interaction and activity is structured in terms of overt or implicit rules. Without doing much violence to the relevant literature, we may define *institutions* as systems of established and prevalent social rules

> that structure social interactions… Generally, institutions enable ordered thought, expectation, and action by imposing form and consistency on human activities. They depend upon the thoughts and activities of individuals but are not reducible to them. Institutions both constrain and enable behaviour. The existence of rules implies constraints. However, such a constraint can open up possibilities: it may enable choices and actions that otherwise would not exist. For example: the rules of language allow us to communicate; traffic rules help traffic to flow more easily and safely; the rule of law can increase personal safety. Regulation is not always the antithesis of freedom; it can be its ally. (p. 2, emphasis in original)

Hence for the purposes of this dissertation and synthesising the ideas from the definitions given above, an institution will be defined as a system of rules that guides (i.e., enables and constrains) human interactions, that guides human practices and human activities, and that guides the pursuit of collective and group actions by being social solutions to collective action problems. These rules have in common the property that they are transmitted socially and create immanent normative dispositions that guide human action by specifying that in circumstances C do A (Hodgson, 2006; Hodgson, 2007) where C represents different circumstances and A stands for a class of human actions. In essence, institutions exist to guide human interactions, human activities, and human practices.

Institutions are usually categorised as formal and informal (Menard and Shirley, 2008; North, 1990; North, 2005). Hodgson (2006), however, argues that this classification is problematic, and after discussing the problems with this taxonomy he makes the following point:

> Many writers attempt distinctions between "formal" or "informal" institutions or rules. However, these terms have been used misleadingly and in different ways. Does the term *formal* mean legal, written, explicit, codifiable, or something else? The ambiguities surrounding these terms mean that they cannot be taken for granted. One is required to specify more clearly what is meant in each case or use more transparent terms such as *legal, nonlegal,* and *explicit* instead. (p. 18, italics in original)

In order to avoid any ambiguities with the formal/informal taxonomy and following the recommendation of Hodgson (2006) stated above, institutions are broadly categorised into legal institutions (e.g., statutory legal rules and regulations) and nonlegal institutions (e.g., social norms and individual codes of conduct). Legal institutions are systems of rules that are enforced by the state, that is, they are specifically enforced through the courts and other law enforcement organisations of the state. The nonlegal institutions are those that are not enforced by the state. Due to the lack of comparative measures of current nonlegal institutions for a large number of countries within the African context, current nonlegal institutions will not be examined in this dissertation. The current institutional factors that will be the focus of this dissertation will be legal institutions because many comparative measures of current legal institutions for a large number of African countries are now readily available. These comparative measures of current legal institutions for a large number of African countries make possible a better examination of the effects of current legal institutions on financial system development within the African context.

The foregoing brief discussion has given us the definition of institutions in general and legal institutions in particular as will be used in this dissertation. The next sections present the literature on the theories and empirical evidence on the effects of institutional factors, both

historical and current, on financial system development, and their effects on each other. In reviewing this literature, the hypotheses that will be tested in a sample of African countries in an effort to achieve the research objectives and provide answers to the research question of this dissertation will be developed.

2.4. Historical institutional factors

Four theories that identify historical institutional factors that act as determinants of the cross-country variation in financial system development have been proposed in the literature (Ayyagari, Demirguc-Kunt, and Maksimovic, 2008b; Beck et al., 2003; La Porta et al., 2008b; Stulz and Williamson, 2003). The four theories of historical institutional factors are the legal origins theory, the disease endowment theory, the religion-based theory, and the ethnic fractionalisation theory. In these theories, it is accepted that current institutional factors that protect contracting and private property rights and that enable private contracting are important for financial system development. Moreover, it is also accepted that current institutional factors act as the channels through which historical institutional factors affect recent financial system development. Furthermore, these theories of historical institutional factors are generally concerned with the effects of colonisation on recent financial system development in former colonies. Hence these theories of historical institutional factors claim to specify exogenous explanatory variables that are linked to the effects of colonisation and that can explain cross-country variation in recent financial system development.

As a general summary, these four theories of historical institutional factors throw light on the sources/origins of the institutions that make up the financial system infrastructure and that may matter for financial system development in different countries. In addition, these theories

illuminate the worldviews that guide the design of institutions and that sustain the durability of institutions over time. These four theories of historical institutional factors and their corresponding hypotheses as regards explaining the cross-country variation in financial system development in the African context are discussed below.

2.4.1. Legal origins theory

La Porta et al. (2008b) review the law and finance literature and the legal origins literature, providing a summary and a unified explanation of the important empirical results of LLSV and others, and introduce the legal origins theory. La Porta et al. (2008b, p. 286) give the concept of legal origin a broad definition by defining legal origin as "a style of social control of economic life (and maybe other aspects of life as well)". Even though the LLSV legal origins literature recognises four major legal origins, specifically English common law, French civil law, German civil law and Scandinavian civil law, La Porta et al. (2008b) focus on the English common law legal origin and French civil law legal origin based on the argument that each of them influenced a large number of countries and represent the "two most distinct approaches to law and regulation" (La Porta et al., 2008b, p. 290). La Porta et al. (2008b) also speak about the socialist law, socialist legal system, and socialist legal origin, but they emphasise that countries in the former Soviet Union and Eastern Europe are no longer classified as part of socialist legal origin. Only a few countries such as North Korea, Cuba, and Myanmar are classified as part of the socialist legal origin family.

As a broad summary, a key idea of the legal origins theory is that institutions and worldviews that matter for economic outcomes come from the different colonisers, and different colonisers imposed their different institutions and worldviews on their corresponding colonies. In

essence, based on the legal origins theory, England always imposed the same English-style institutions and worldview in all their colonies, with consequences for economic outcomes in the colonies; France always imposed the same French-style institutions and worldview on their colonies, with consequences for economic outcomes in the colonies.

The legal origins theory identifies two broad categories of legal origins: the English common law legal origin developed in England and the French civil law legal origin developed in France. La Porta et al. (2008b, p. 286) argue "that common law stands for the strategy of social control that seeks to support private market outcomes, whereas civil law seeks to replace such outcomes with state-desired allocations". La Porta et al. (2008b) explain that these two different styles of social control of economic activities developed in England and France many centuries ago and became more like guiding principles and organising strategies that affected many activities including the following: the development of laws and regulations; the organisation of the legal system; the formation of human capital of those in the legal system; and the formation of human capital of politicians and other citizens. Moreover, these styles of social control make up the beliefs and values of the citizens of these countries as regards the "broad ideas of how the law and the state should work" (La Porta et al. 2008b, p. 307) and thus the best ways to organise economic activities.

La Porta et al. (2008b) posit and show with many empirical findings that the English common law legal origin is associated with greater protection of contracting rights and private property rights and with a greater level of contract enforcement than French civil law legal origin, leading to greater financial contracting and better financial system development. Based on the empirical results, La Porta et al. (2008b) maintain that shareholders and creditors have better protection in common law countries than in French civil law countries, with positive

consequences for financial system development in common law countries. Moreover, La Porta et al. (2008b) claim that common law countries have better financial system development than French civil law countries because their strategies for regulation are focused on sustaining rather than replacing markets and hence common law countries encourage greater financial contracting than French civil law countries. In summarising their review of empirical findings, La Porta et al. (2008b) conclude in the following way:

> In sum, there is by now a great deal of evidence that legal origins influence legal rules and regulations, which in turn have substantial impact on important economic outcomes—from financial development, to unemployment, to investment and entry, to the size of unofficial economy, to international trade. Much of this evidence suggests that common law is associated with better economic outcomes than French civil law. (p. 302)

La Porta et al. (2008b) contend that legal origins were transplanted to many countries in the world through conquest and colonisation as each country received from their colonisers either a common law or civil law legal origin. La Porta et al. (2008b) claim that

> When common and civil law were transplanted into much of the world through conquest and colonization, the rules, but also human capital and legal ideologies, were transplanted as well. Despite much local legal evolution, the fundamental strategies and assumptions of each legal system survived and have continued to exert substantial influence on economic outcomes…In our conception, legal origins are central to understanding the varieties of capitalism. (pp. 286-287)

In essence, over time, there may be changes in the specific legal rules in the former colonies, but the reformed rules will be consistent with the relevant legal origins. This is because legal origins bring not only legal systems but also other things such as ideologies, values, beliefs,

interpretation principles, guiding principles, regulatory principles, and human capital that are consistent with a given legal origin. They argue that legal origins persist not only because they remain purely ideologies or cultures but also because they are embedded in laws, regulations, educational systems, and human capital, and are transmitted from one generation to the following generation. La Porta et al. (2008b) state the following about the persistence of legal origins:

> The central point is that the reason for persistence is that the beliefs and ideologies become incorporated in legal rules, institutions, and education and, as such, are transmitted from one generation to the next. It is this incorporation of beliefs and ideologies into the legal and political infrastructure that enables legal origins to have such persistent consequences for rules, regulations, and economic outcome…*the empirical prediction of the Legal Origin Theory is that the differences between legal origins are deep enough that we observe them expressed in the different strategies of social control of economic life even after centuries of legal and regulatory evolution*. Perhaps because the legal system is such a difficult-to-change element of social order, supported by legal institutions, human capital, and expectations, legal origins survive both time and transplantation. This, we submit, is what gives them explanatory power. (pp. 308-309, emphasis added)

Based on the discussion above, it can be seen that the concept of legal origin has gone beyond the legal systems of countries and can be seen as encompassing also the worldview and guiding principles that citizens of countries have as regards the choice between private contracting solutions and state-desired allocation solutions to economic problems. Moreover, it seems more tenable that the colonisers did not impose only a legal system in their colonies. The colonisers

may have also transmitted a worldview and sets of guiding principles that direct and condition the development and adoption of statutory laws, legal rules, regulations, social norms, economic policies, educational systems, and so forth for the social control of economic activities.

Consequently, the broader concept of legal origin as presented and discussed by La Porta et al. (2008b) may be better captured by the identity of a country's coloniser rather than by the legal family to which the coloniser belongs to. This is the argument that Klerman, Mahoney, Spamann, and Weinstein (2011) are already making in the literature in an effort to understand and measure better the broader concept of legal origin introduced by La Porta et al. (2008b) that refers to the style of social control of economic activities and that is not restricted to the type of legal system of the coloniser or the colonised. Klerman et al. (2011) argue that even though colonisers imposed their legal systems, specifically English common law legal system or different civil law legal systems, on their colonies colonisers also differed from each other in terms of their educational policies, healthcare policies, infrastructure development policies, immigration policies, and so forth. Hence apart from legal system differences, these other coloniser differences may have consequences for institutional and economic outcomes. Klerman et al., (2011, p. 3) note that "the identity of the colonizing power mattered for reasons other than whether that power brought British common law or Continental civil law".

Klerman et al. (2011) suggest that their findings imply that the broader conception of legal origin as defined by La Porta et al. (2008b) may be better captured by the identity of the coloniser than by legal family categorizations. Klerman et al. (2011) point out the following:

> While the results of this paper undermine some of the earlier, *more simplistic explanations* for the correlation between economic performance and legal origin, they are not incompatible with more recent interpretations. In their 2008 survey, La Porta et al.

> (2008, 286) "adopt a broad conception of legal origin as a style of social control of economic life." …*This broad conception of legal origin might be better measured by the identity of the dominant colonial power* than by comparative lawyers' classification of legal systems. (p. 4, emphasis added)

Hence in order to avoid confusion in the meaning of the legal origin concept based on past and present interpretations and re-evaluations, the newer interpretation of legal origins theory that takes a broader conception of legal origin was given the following name: the coloniser identity theory. The earlier interpretation of legal origins theory that takes a narrower conception of legal origin as legal families/traditions was given the following name: the legal family theory. In essence, the coloniser identity theory and the legal family theory can be viewed as two ways in which the legal origins theory has been interpreted in the literature, with the latter referring to earlier interpretations and the former referring to more recent interpretations.

Based on the two broad styles of social control of economic activities identified by La Porta et al. (2008b), the coloniser identity theory has different predictions for financial system development for countries colonised by England compared to those colonised by France. In essence, the coloniser identity theory claims that countries colonised by England prefer economic activities based on private contracting to economic activities based on state-desired allocations; it predicts that countries colonised by England have better protection of contracting and private property rights and better level of enforcement than those colonised by France, with positive consequences for financial system development. It argues that countries colonised by France prefer economic activities based on state-desired allocations to economic activities based on private contracting; it predicts that countries colonised by France have worse protection of contracting and private property rights and lower level of enforcement than those colonised by

England, with negative consequences for financial system development. The foregoing predictions imply that countries colonised by England have higher financial system development than those colonised by France. Hence the following hypothesis is proposed for testing:

Hypothesis 1a (H1a): On average, former British colonies have higher financial system development than former French colonies.

In order, however, to also have results comparable with the earlier interpretations of legal origins theory that have been called legal family theory here, countries belonging to the English common law family will be compared to those belonging to the French civil law family. The legal family theory contends that countries belonging to the English common law legal family prefer economic activities based on private contracting to economic activities based on state-desired allocations, while countries belonging to the French civil law legal family prefer state-desired allocations to private contracting. The legal family theory predicts that countries belonging to the English common law legal family have better protection of contracting and private property rights and better level of enforcement than those belonging to the French civil law legal family, with positive consequences for financial system development. Hence the following hypothesis is going to be tested:

Hypothesis 1b (H1b): On average, countries belonging to the English common law legal family have higher financial system development than countries belonging to the French civil law legal family.

Notwithstanding the theoretical insights provided by the legal origins theory and the empirical evidence used in supporting the theory as discussed above, the theory is not without its

critics. The criticisms against the legal origins theory (especially its initial formulations and more simplistic interpretations as noted by Klerman et al., 2011) are concerned with the following: (a) legal origins theory's conceptual arguments about the exogeneity of the legal origin of many countries and the channels through which legal origin affects legal rules and regulations, financial system development, and other economic outcomes (see Aguilera and Williams, 2009; Armour, Deakin, Lele, and Siems, 2009; Armour, Deakin, Mollica, and Siems, 2009; Pistor, 2009; Roe, 2006); (b) its explanatory and forecasting power (see Fairfax, 2009; Pistor, 2009; Roe, 2006); (c) its empirical methods (see Armour, Deakin, Lele et al., 2009; Armour, Deakin, Mollica et al., 2009; Armour, Deakin, Sarkar, Siems, and Singh, 2009; Pistor, 2009; Siems and Deakin, 2010; Spamann, 2010); and (d) its validity for policy reforms, especially the emphasis of legal origins theory in recommending the English common law legal origin based on the claim that the English common law legal origin promotes better economic outcomes (see Armour, Deakin, Sarkar et al., 2009; Deakin, 2009; Fairfax, 2009; Jackson and Roe, 2009; Pistor, 2009; Roe and Siegel, 2009). Moreover, a recent paper, Fowowe (2013), finds in a sample of 39 African countries that legal families do not explain cross-country variation in financial system development from 1996 to 2005. By testing the above hypotheses derived from the legal origins theory, whether in the form of coloniser identity theory or legal family theory, in the African context, more light can be thrown on the validity and generalisability of the legal origins theory, especially given the criticisms and empirical invalidations of the theory.

2.4.2. Disease endowment theory

The disease endowment theory, as proposed by Acemoglu et al. (2001), also considers the effect of the colonisers on the institutions developed in their colonies, just as in the legal origins theory

discussed above. This theory, however, emphasises not the identity of the coloniser as the key exogenous explanatory variable to explain cross-country variation in current institutions and consequently current economic outcomes, but the mortality rates facing would-be colonisers. Acemoglu et al. (2001, p. 1373, emphasis added) stress the difference between the disease endowment theory and legal origins theory by noting that "in contrast to this approach [legal origins theory] which focuses on the identity of the colonizer, we emphasize the conditions in the colonies. Specifically, in our theory - and in the data - *it is not the identity of the colonizer or legal origin that matters*, but whether European colonialists could safely settle in a particular location: where they could not settle, they created worse institutions".

As a general summary, a proposition of the disease endowment theory is that the institutions and worldview that matter for economic outcomes come from the colonisers, but that the different colonisers can impose similar European-style worldviews and corresponding institutions on their colonies depending on the hospitability of the disease environment of the colony. Essentially, based on the disease endowment theory, England and France imposed the same types of European-style worldviews and corresponding institutions that could positively affect financial system development if both countries found the disease environment of their colonies conducive for settlement. If England and France, however, did not find the disease environment of their colonies conducive for settlement, they imposed worldviews and corresponding institutions that could negatively affect financial system development.

Acemoglu et al. (2001) delineate the three premises of the disease endowment theory. First, European colonisers chose different colonisation strategies that affected the institutions established in their colonies. These colonisation strategies had two extremes. On the one hand, in the colonies where the European colonisers did not settle, they set up institutions, specifically

extractive institutions, that did not protect private property rights and did not check government expropriation of resources. The colonisers set up these extractive institutions in order to extract resources from the colonies. On the other hand, in the colonies where the European colonisers settled they set up European-style institutions that protected private property rights and that checked government power. Second, European colonisation strategies were affected by the coloniser's settlement possibilities in the different colonies based on the colonies' environment hospitability. A colony's environment may be inhospitable due to the diseases prevalent in that colony. The colonisers were more likely to impose extractive institutions in colonies with inhospitable environments. Third, the extractive or European-style institutions set up by the European colonisers persisted after the independence of the colonies.

Hence the causal chain and summary of Acemoglu et al. (2001)'s disease endowment theory is that the expected settler mortality rates for early European settlers during the period of colonisation led to the choice of European settlement strategy that led to the type of institutions formed during colonisation; these colonial time institutions persisted after independence and guided the formation of current institutions; current institutions determine current economic outcomes of former European colonies. Acemoglu et al. (2001, p. 1371) summarise the disease endowment theory by stating that "(potential) settler mortality rates were a major determinant of settlements; settlements were a major determinant of early institutions (in practice, institutions in 1900); and there is a strong correlation between early institutions and institutions today".

Acemoglu et al. (2001) use the expected mortality rates as an exogenous instrument of their measure of current institutions in their regression analysis and find strong effects of their measure of current institutions on the income levels measured by GDP per capita in their sample of countries. Acemoglu et al. (2001) argue that settler mortality rates serve as good instruments

as these rates do not have direct effects on current income levels apart from their effects on current institutions.

Following the key arguments of the Acemoglu et al. (2001)'s disease endowment theory geographic areas prone to diseases such as malaria are more likely to have received extractive institutions that are not conducive to good economic outcomes. Malaria is known as a disease that is strongly affected by climatic and geographic conditions. Specifically in the case of Africa, malaria is more highly prevalent in the tropical areas that have absolute latitudes close to the equator and that have large numbers of resilient and active mosquitoes acting as vectors for malaria (Kiszewski, Mellinger, Spielman, Malaney, Sachs, and Sachs, 2004). The prevalence and stability of malaria in the tropical areas of Africa appear to have been unfavourable to the early European settlers, possibly leading to the formation of extractive institutions (Acemoglu et al., 2001). Consequently, African countries in geographic areas prone to malaria would be expected to have institutions that are detrimental to economic outcomes such as financial system development.

Beck et al. (2003) apply the Acemoglu et al. (2001)'s disease endowment theory to explain financial system development. Beck et al. (2003, p. 140) note that "according to the endowment theory, differences in endowments shaped initial institutions and these initial institutions have had long-lasting repercussions on private property rights protection and financial development". In essence, applying the Acemoglu et al. (2001)'s disease endowment theory to explain financial system development, former colonies that did not have environments favourable to the settlement of European colonisers have less developed financial systems. Beck et al. (2003), working with a global sample of former European colonies, find empirical support for a robust relationship between initial disease endowments and financial system development,

whether using settler mortality rates or the absolute latitude of a country as measures of initial disease endowments that may have affected the colonisation strategies of European settlers.

Beck et al. (2003) use the absolute latitude of a country as an alternative exogenous explanatory variable to the settler mortality rates. Beck et al. (2003), however, state that the absolute latitude variable may be a coarser measure of disease endowment than settler mortality rates in their global sample of former European colonies. Beck et al. (2003) do not examine only African former European colonies, but use a dummy representing African countries as one of their control variables. Beck et al. (2003) note the problem of using continent dummies when they state that "continent dummies do not proxy for a clear explanation of why countries in these regions [Africa and Latin America] have worse institutions or perform more poorly" (Beck et al., 2003, p. 152). This study seeks to open the black box of the African dummy variable in order to find explanations for cross-country variation in financial system development in Africa. Already opening the black box of the African dummy variable, a recent paper, Fowowe (2013), shows that absolute latitude explains cross-country variation in financial system development in a sample of African countries. Based on the arguments and results of Acemoglu et al. (2001), and Beck et al. (2003) and Fowowe (2013) that applied the Acemoglu et al. (2001)'s disease endowment theory to explain financial system development, the following hypothesis is posited for testing:

Hypothesis 2 (H2): On average, the malaria disease endowment is negatively associated with financial system development.

2.4.3. Religion-based theory

Religion has been argued to affect economic activities and economic outcomes (McCleary and Barro, 2006). In these religion-based arguments, religion is seen as a source of values, beliefs, worldviews, moral norms, and legal rules expected to guide human behaviour and attitudes in different human activities, including economic activities (McCleary and Barro, 2006; Stulz and Williamson, 2003). Beck et al. (2003, p. 151) note that "many scholars argue that religion shapes national views regarding property rights, competition, and the role of the state".

Arrunada (2010) evaluates Catholicism and Protestantism to identify the contribution of these two Christian religions to behaviours and attitudes that have consequences for economic activities. He tests two hypotheses: the work ethic hypothesis and the social ethics hypothesis. The social ethics hypothesis has three dimensions: social control, rule of law, and homogeneous values. Arrunada (2010) does not find support for the work-ethic hypothesis that argues that Protestants work more than Catholics. Instead he finds support for the social ethics hypothesis that argues that Protestants exert more mutual social control, support legal institutions and institutional enforcement more strongly, and hold more homogeneous values than Catholics.

Arrunada (2010) argues that his findings suggest that Protestantism appears more conducive to private contracting, impersonal exchange, and the formation of anonymous markets than Catholicism. Arrunada (2010, p. 908) states that "with its relatively more homogeneous standards, Protestantism seems, however, better adapted [than Catholicism] for impersonal trading between anonymous parties, such as those in commerce, finance and industry". Hence, based on the foregoing findings of Arrunada (2010), comparing countries dominated by Catholicism to those dominated by Protestantism, one would expect to find those dominated by Protestantism to have a higher financial system development than those dominated by

Catholicism. This is because, according to the arguments and empirical results of Arrunada (2010), those countries dominated by Protestantism will engage in more financial contracts, which manifests as higher financial system development.

Stulz and Williamson (2003), while intending to study the effects of culture on creditor rights protection, end up using religion as their proxy for culture. Consequently their arguments can be interpreted as referring to a religion-based theory in which religion determines culture and hence affects worldviews, values, moral norms, and the design of legal institutions, with consequences for financial system development. Stulz and Williamson (2003) affirm that their goal is to show that religion, as a proxy for culture, should be taken seriously as a key explanatory variable in explaining cross-country differences in the quality of legal institutions across countries, and religion should be seen as a determinant of financial system development.

Stulz and Williamson (2003) state that culture can affect finance through a minimum of three channels: culture affects the values that are prevalent in a country, culture affects the design of institutions in a country, and culture affects resource allocation. They also argue that their proxy for culture, specifically the primary religion in each country in their sample, is not a proxy for the legal origin variable as regards explaining the quality of legal institutions. They argue and empirically show that a country's principal religion explains the cross-country variation in the LLSV creditor rights index. More specifically, Stulz and Williamson (2003) find strong effects of religion on the quality of creditor rights protection in the countries in their sample, with countries where the dominant religion is Catholicism having weaker creditor rights protection and weaker enforcement of rights than countries where the dominant religion is Protestantism. Besides, they find that the religion variable is associated with the quality of creditor rights

protection while controlling for legal origin, with legal origin variable not being statistically significant.

Stulz and Williamson (2003) find that religion is associated with debt markets and banking development; they do not find any difference in creditor protection between Protestant countries with English common law legal system and Protestant countries with civil law legal system. They, however, find a difference in the quality of creditor rights protection between Catholic countries with civil law legal system and Protestant countries with civil law legal system; they also show that Protestant countries have better enforcement of rights than Catholic countries. Stulz and Williamson (2003) argue and show that, even though legal origin and religion variables are correlated, religion matters more than legal origin in explaining the quality of creditor rights protection and credit market development; they find that legal origin matters more in explaining the quality of shareholder rights protection and equity market development.

Hence, based on the foregoing arguments and results of Stulz and Williamson (2003), comparing countries dominated by Catholicism to those dominated by Protestantism, one would expect to find those dominated by Protestantism to have a higher financial system development than those dominated by Catholicism. This is because those countries where Protestantism is the dominant religion, according to the argument and findings of Stulz and Williamson (2003) and Arrunada (2010), are expected to have higher quality legal institutions that should affect financial system development positively than those countries where Catholicism is the dominant religion. The arguments above lead to the following hypothesis:

Hypothesis 3a (H3a): On average, countries with a majority adhering to Catholicism have lower financial system development than countries with a majority adhering to Protestantism.

La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1999) argue that countries where Catholicism and Islam are the dominant religions have more government intervention as evidenced by worse protection of property rights and regulation than countries where Protestantism is the principal religion. La Porta et al. (1999) claim that Catholicism and Islam are more hierarchical than Protestantism and hence Catholicism and Islam play a greater role in shaping political activities and in encouraging more state power and greater government intervention than Protestantism, with negative consequences for institutions, policies, and public goods that are meant to foster better economic outcomes. In essence, La Porta et al. (1999) argue that Catholicism and Islam are used for political purposes in a way that undermines the development of markets.

La Porta et al. (1999) note that their findings do not support the argument that Catholics are less productive than Protestants; this work ethics argument is similar to the arguments and findings of Arrunada (2010) that were already discussed above. La Porta et al. (1999) claim that the effect of Islam, as compared to Protestantism, is similar to that of Catholicism; moreover, they note that the effect of Islam is stronger than that of Catholicism. Therefore, based on the arguments and empirical results of La Porta et al. (1999), in the same way as it has been hypothesised above comparing countries dominated by Catholicism to those dominated by Protestantism, the following hypothesis relates countries dominated by Islam to those dominated by Protestantism:

Hypothesis 3b (H3b): On average, countries with a majority adhering to Islam have lower financial system development than countries with a majority adhering to Protestantism.

Besides, some authors argue that the effects of Islam on institutions and financial system development in a country are through the effects of Islamic law in the legal system of the country. Grosjean (2011) finds that Islamic law that was in force in South Eastern European countries during the Ottoman Empire negatively affected current financial development in these South Eastern European countries. Kuran (2005) argues that Islamic law prevented the financial modernisation and development of the banking system in the Middle East as compared to the development of the banking system in Western Europe where Islamic law was not in force and Christianity was the dominant religion.

Kuran (2005) identifies different institutions that were affected by Islamic law and which limited the development of the banking system in the Middle East. These institutions include the following: rules banning the charging of interest on loans, rules regulating commercial partnerships, rules guiding the inheritance system, rules related to the cash waqf system, and aversion of Islamic law to the legal personhood of the corporation due to the individualistic focus of Islamic law. Although Kuran (2005) argues that legal reforms have modernised the institutions guiding the functioning of the banking system of Islamic states, Islamic law may still have lingering effects on current financial system development as shown by Grosjean (2011).

Kuran (2008) notes that the delay in economic modernisation produced by Islamic law may have created a weak private sector, a weak civil society, and highly interventionist states that do not maintain the rule of law, that do not protect private economic and political freedoms,

and that are resistant to economic and political liberalisation, with negative consequences for economic outcomes. Kuran (2004, p. 73) argues that "in spite of a long string of institutional reforms over the past century and a half, traditional Islamic institutions remain a factor in the Middle East's economic backwardness. For example, weaknesses of the region's private economic sectors and their deficiencies of human capital are rooted in applications of Islamic law". Kuran (2004) also notes that the historical effects of Islamic law may have caused the current high levels of corruption and nepotism and have limited private enterprise, with negative consequences for desirable economic outcomes. Consequently, countries with Islamic law as part of the legal system should be expected to have lower performing financial systems than others without Islamic law. This leads to the following hypothesis:

> **Hypothesis 3c (H3c)**: On average, countries with Islamic law as part of the legal system have lower financial system development than countries without Islamic law as part of legal system.

2.4.4. Ethnic fractionalisation theory

Although the ethnic fractionalisation theory seems to have been developed to explain economic development and the policies and institutions that affect economic development (e.g. Easterly and Levine, 1997; Easterly, Ritzen, and Woolcock, 2006), some researchers have applied the ethnic fractionalisation theory to explain financial system development and the institutions that affect financial system development (e.g. Ayyagari, Demirguc-Kunt, and Maksimovic, 2008b; Beck et al., 2003). Present day ethnic fractionalisation in each country in Africa can well be seen as exacerbated by colonisation that led to the creation of artificial borders that enclosed disparate ethnic groups into each country. Easterly and Levine (1997, p. 1213) note that "the borders of

African nations were determined through a tragicomic series of negotiations between European powers in the nineteenth century that split up ethnic groups and exacerbated pre-existing high levels of ethnic and linguistic diversity". Hence colonisation is now part of the story of the present day levels of ethnic fractionalisation in Africa.

Ethnic fractionalisation theory posits that ethnic fractionalisation makes a country more socially polarised, with negative consequences for private contracting and hence for financial system development. Social polarisation makes it difficult to adopt growth-enhancing policies; to reach consensus on social and public goods; to choose infrastructure that promotes economic growth (Easterly and Levine, 1997; Easterly et al., 2006); and to develop institutions that will provide a level playing field for economic activities among all members of a society. Therefore social polarisation is expected to lead to greater intervention by the government of the ruling ethnic group in the allocation of economic resources.

Moreover, social polarisation and extensive rent-seeking by the ruling ethnic group is likely to ensure the suppression of legal institutions that protect property rights and that enable private contracting among other members of a society as the ruling ethnic group wants to control all resource allocations for the groups' own private benefits. La Porta et al. (1999) argue and empirically show that countries that are more ethnically diverse have lower quality institutions, lower quality policies, lower quality infrastructure, and lower quality public goods. La Porta et al. (1999) contend that their empirical results suggest that ethnic groups in power in ethnically diverse countries foster redistribution of wealth in a way that favors the ethnic group in power and seeks to maintain the ethnic group in power instead of working towards the creation of wealth for the social benefits of all citizens in a country.

Beck et al. (2003) summarise the arguments of the ethnic fractionalisation theory when applied to explaining financial system development:

> Recent studies show that in highly ethnically diverse economies, the group that comes to power tends to implement policies that: (a) expropriate as many resources as possible from the ethnic losers; (b) restrict the rights of other groups; and, (c) prohibit the growth of industries or sectors that threaten the ruling group … When this view is applied to the financial sector, the implication is clear: greater ethnic diversity implies the adoption of policies and institutions that are focused on maintaining power and control, rather than on creating an open and competitive financial system. (p. 151)

Consequently ethnic fractionalisation may weaken and limit the effectiveness of the legal system and legal contract enforcement system in a country, with negative consequences for financial system development. The weakening of the legal system and the legal contract enforcement system can lead to more personalised transactions that are supported by trust, social identity, cultural and ethnic ties, and reputation-based mechanisms of contract enforcement (Carr and Landa, 1983; Greif, 1992; Greif, 1993; Landa, 1981). Personalised transactions founded on reputation-based mechanisms, social identity, and cultural and ethnic ties can be limited in the volume of transactions they can support as compared to transactions based on impersonal exchange that are sustained by non-reputation-based mechanisms and legal enforcement systems (Cooter and Landa, 1984; Greif, Milgrom, and Weingast, 1994). Therefore ethnic fractionalisation, by weakening the quality of legal institutions and legal enforcement system, limits impersonal exchange, with negative consequences for financial system development.

Summing up, the ethnic fractionalisation theory draws attention to the possible impact of ethnic divisions on the design and adoption of institutions and the quality of legal enforcement

system. Moreover, especially in the context of weak, ineffective or corrupt state legal systems, ethnic fractionalisation theory argues that ethnic divisions may promote more intra-ethnic transactions based on kinship ties and reputation than inter-ethnic transactions based on effective legal institutions and enforcement systems. The predominance of intra-ethnic transactions as opposed to inter-ethnic ones may limit private market, credit and financial contracting among citizens in a country, with negative consequences for financial system development. The arguments from the ethnic fractionalisation theory suggest that countries that are more ethnically diverse are less likely to have clearly delineated and enforced legal institutions that protect contracting and private property rights. Moreover, the ethnic fractionalisation theory implies that countries that are more ethnically diverse will have less impersonal market transactions as there will be more intra-ethnic than inter-ethnic financial contracting, with negative consequences for financial system development. Consequently, the following hypothesis is advanced for testing:

> **Hypothesis 4 (H4)**: On average, ethnic fractionalisation is negatively associated with financial system development.

2.5. Current institutional factors

In order to provide a structure that may make it easier to understand the literature on current institutional factors, such factors are divided into core and non-core current institutional factors. The core current institutional factors are those legal institutions such as creditor rights institutions, institutional enforcement quality, and credit information infrastructure that have been discussed and appear to have been investigated more in the literature as key determinants of financial system development (Djankov et al., 2007).The non-core current institutional factors are those legal institutions that determine the efficiency of the legal property, judicial, and

insolvency system and which have been mentioned as determinants of financial system development, but seem to have been less investigated than the core ones within the African context.

This classification of current institutional factors into core and non-core may make it easier to understand existing literature on current institutional factors by pointing out extensively researched areas and less extensively researched areas. In this way, it is easier to compare this study to existing literature and to see how this research contributes to the literature on the effects of core and non-core current institutional factors on financial system development within the African context. The following two sub-sections review the literature on core and non-core current institutional factors and develop relevant testable hypotheses that will be empirically evaluated.

2.5.1. Core current institutional factors

La Porta et al., (1997, p. 1132) provide one of the arguments of the law and finance theory by stating that "to the extent that better legal protections enable the financiers to offer entrepreneurs money at better terms…countries with better legal protections should have more external finance in the form of both higher valued and broader capital markets". La Porta et al. (1997) show that their indices of shareholder and creditor rights, calculated from different legal institutions that delineate and protect shareholder and creditor rights, were positively associated with financial system development in a cross-section of 49 countries. La Porta et al. (1997) also find that institutional enforcement quality was positively associated with financial system development. Beck and Levine (2005), in reviewing the law and finance theory, summarise some of its arguments by stating the following:

> The law and finance theory holds that in countries where legal systems enforce private property rights, support private contractual arrangements, and protect the legal right of investors, savers are more willing to finance firms and financial markets flourish. In contrast, legal institutions that neither support private property rights nor facilitate private contracting inhibit corporate finance and stunt financial development. (p. 251)

As regards the relationship between protection of creditor rights and financial system development, the law and finance theory argues that "creditor rights protection stimulates both lenders and borrowers to enter into financial contracts and to abide by their clauses and thus constitutes an essential ingredient of financial development" (Galindo and Micco, 2004, p. 30). Djankov et al. (2007) test two economic theories of credit that suggest under which conditions private credit will flow more easily to entrepreneurs and firms from the financial system, with positive consequences for financial system development. These two theories are the power and information theories of credit.

The power theory argues that creditors are more willing to lend if they have their rights protected by legal institutions that allow them to force repayment of loans or get adequate compensation in the case of bankruptcy/loan default. The information theory argues that creditors are more willing to lend if they have information about their potential debtor's past credit history; this information in turn helps overcome information asymmetry problems such as adverse selection. Consequently, the two economic theories suggest that legal institutions that better protect creditor rights and that provide relevant credit information about potential credit-worthy debtors are likely to increase the amount of credit provided by the financial system to the private sector. These two economic theories can be seen as forming components of the law and

finance theory because they reveal the possible mechanisms through which legal institutions affect credit market development.

Djankov et al. (2007) test the power and information theories and find in their sample of 129 countries that their creditor rights index and the presence of credit registries are positively associated with financial system development as measured by the credit to private sector/GDP ratio. Furthermore, they find in a panel analysis that reforms that increase the creditor rights index or lead to the opening of credit registries are positively associated with credit to private sector/GDP ratio. Finally, they find that protection of creditor rights are more important for the increase in credit to private sector in richer countries, while credit registries are more important for the increase in credit to private sector in poorer countries. The results of Djankov et al. (2007) provide empirical support for the law and finance theory that claims that the legal institutions that make up the contractual infrastructure and credit information infrastructure are determinants of financial system development. In essence, the legal institutions that make up the contractual infrastructure and credit information infrastructure are argued as providing the necessary conditions for the effective functioning of the financial system (Honohan and Beck, 2007, pp. 8-9).

Safavian and Sharma (2007) find in their cross-country and panel estimates a positive interaction effect between creditor friendly laws and court contract enforcement efficiency on bank credit to firms in their sample of 27 Eastern and Central European countries. Safavian and Sharma (2007) also find a positive interaction effect between creditor rights index and court contract enforcement efficiency on ratio of private credit to GDP in the same global sample used by Djankov et al. (2007). Brown, Jappelli, and Pagano (2009) show in their cross-country and panel estimates that on average the quality of credit information infrastructure is positively

associated with more abundant and lower cost of credit to firms in their sample of 24 transition economies in Eastern Europe and former Soviet Union. Brown et al. (2009) also find that greater quality credit information infrastructure improves access and lowers cost of credit to firms in countries with weak creditor rights protection, but not in countries with strong creditor rights.

The works of LLSV and their colleagues have led to a new research project that some authors have called comparative law and finance (see Siems and Deakin, 2010). Siems and Deakin (2010, p. 120), while commenting on the research method developed by LLSV and their colleagues, note that "this research method codes how well the laws of different countries protect certain interests, such as those of shareholders or creditors. The resulting data can then be used in order to test which legal institutions (if any) matter for the growth of financial markets". In other words, this new research project called comparative law and finance, which was pioneered by the works of LLSV and their colleagues, attempts to quantify differences in legal rules and regulations around the world and to examine whether these differences can explain differences in financial system development. If differences in legal rules and regulations explain differences in financial system development, then we can get clues as to which legal rules and regulations are more effective for improving financial system development in different countries.

Honohan and Beck (2007, pp. 7-8) affirm that "three of the most important background aspects of the economic and institutional environment contributing to efficient financial sector functioning are macroeconomic stability, certainty of contract enforcement, and availability of information". Honohan and Beck (2007, pp. 7-12) suggest that the received and undisputed knowledge, backed up by evidence, is that improving macroeconomic stability, the quality of the contractual infrastructure, and the quality of the credit information infrastructure enhances financial system development. Essentially, Honohan and Beck (2007) argue that low and stable

inflation and fiscal discipline; the existence of a high quality contractual infrastructure that clearly defines and enforces legal rights of borrowers, creditors and investors; and the existence of a high quality credit information infrastructure that entails the presence of credit registries/bureaus and adequate credit information disclosure rules and standards, improves financial system development.

Huang (2010a) investigates the different determinants of financial development. He summarises the several factors identified in extant literature that may affect financial development. These factors include institutional factors (legal and regulatory infrastructure), political factors, macroeconomic outcomes such as GDP per capita, and macroeconomic policies. He notes that some of these factors such as institutional factors may affect more the supply-side than the demand-side of the financial system; some others such as macroeconomic policies and political factors may affect either the demand-side or the supply-side of the financial system; and some others such as macroeconomic outcomes may affect more the demand-side than the supply-side of financial system. Huang (2010a) analyses 107 countries that cut across six geographical regions worldwide. Starting with 39 explanatory variables categorized into different groups and working with a composite index of financial development based on eight different variables, Huang (2010a) finds that institutional quality is one of the most important determinants of financial development in the countries in his sample.

Deakin, Demetriades, and James (2010) find in their time-series analysis, which controls for endogeneity problems and can give greater causal interpretation to their econometric results, that the strengthening of creditor rights in India in the 1990s and 2000s increased the level of bank credit to the private sector. This result lends support to the law and finance theory that argues that the quality of creditor rights institutions matters for financial system development

because higher quality creditor rights institutions increases the volume of financial contracts. In essence, Deakin et al. (2010)'s results support the claim that strengthening creditor rights may make banks and other creditors more willing to provide more credit to the private sector.

As regards Africa-focused studies, McDonald and Schumacher (2007) study 37 countries in Sub-Saharan Africa (SSA) over the period 1983 to 2004. McDonald and Schumacher (2007, p. 3) state that the "insufficient legal protection of creditor rights and information asymmetries about borrowers' ability and willingness to repay debts could explain why some financial markets remain shallow". McDonald and Schumacher (2007) find that the quality of institutional enforcement and the availability of information sharing systems were positively associated with financial development. McDonald and Schumacher (2007, p. 7) note that "while the financial liberalisation reforms of the late 1980s and early 1990s were necessary, they were not sufficient; the countries where financial sectors deepened are those with solid legal institutions".

Singh, Kpodar, and Ghura (2009) note that the results of the financial liberalisation in SSA have been mixed, even though the financial systems of countries in SSA were liberalised in the 1980s and 1990s with the expectation that the financial systems will become deeper. Singh et al. (2009) claim that financial liberalisation and macroeconomic stability seem necessary for financial system development, but that both factors may not lead to financial system development without the necessary legal institutions that make macroeconomic policies effective. Singh et al. (2009, p. 6) argue for the need to improve the contractual and information infrastructure to provide the necessary conditions for the financial system to function effectively. In their study of financial system development in SSA, Singh et al. (2009) examine 40 SSA countries, 14 being in the CFA Franc Zone, over the period 1992 to 2006, and find that the presence of credit information sharing organisations, the quality of property rights institutions,

and the institutional enforcement quality were positively associated with financial system development.

Andrianaivo and Yartey (2010) study the determinants of financial system development, specifically banking sector development and stock market development, in Africa. They analyse the banking sectors in 53 African countries and the stock markets in 17 African countries over the period 1990 to 2006. They find that the protection of creditor rights is a determinant of banking sector development; whereas institutional quality is a determinant of stock market development.

Fowowe (2013) finds in a sample of 39 African countries and financial system development data from 1996 to 2005 that the quality of creditor rights institutions does not explain cross-country variation in financial system development while institutional enforcement quality explains cross-country variation in financial system development.

Summarising the above literature on core current institutional factors, some claims of the law and finance theory have received empirical support. In essence, in global samples, non-African samples, and African samples, the following results have been found:

a) A positive association between the quality of creditor rights institutions and financial system development.
b) A positive association between the quality of credit information infrastructure and financial system development.
c) A positive association between the quality of institutional enforcement and financial system development.

This dissertation intends to confirm the above three findings in a sample of African countries with more recent institutional and financial system development data. Hence the following hypotheses are proposed for testing:

> **Hypothesis 5 (H5)**: On average, the quality of creditor rights institutions is positively associated with financial system development.
>
> **Hypothesis 6 (H6)**: On average, the quality of credit information infrastructure is positively associated with financial system development.
>
> **Hypothesis 7 (H7)**: On average, the quality of institutional enforcement is positively associated with financial system development.

The literature review above revealed claims that credit information systems and creditor rights institutions are complementary and reinforce each other's effects on financial system development. For example, Djankov et al. (2007, p. 301) argue that "creditor power and information theories are not mutually exclusive. Both ex ante (and interim) better information and ex post stronger creditor rights can contribute to credit market development". Similarly, the topic chapter of getting credit of the Doing Business 2012 report contains the following statement:

> Doing Business measures two types of institutions and systems that can facilitate access to finance and improve its allocation: credit information registries or bureaus and the legal rights of borrowers and lenders in secured transactions and bankruptcy laws…*These institutions and systems work best together*. Information sharing helps creditors assess the

creditworthiness of clients (though it is not the only risk assessment tool), while legal rights can facilitate the use of collateral and the ability to enforce claims in the event of default. (Doing Business Project, 2012g, emphasis added)

Hence for theoretical and policy purposes it seems interesting and useful to know whether the expected positive interaction effect between the quality of creditor rights institutions and the quality of credit information infrastructure on financial system development holds in the African context. Thus the following hypothesis is posited for investigation:

Hypothesis 8 (H8): On average, the quality of creditor rights institutions has a greater positive effect on financial system development as the quality of credit information infrastructure increases.

Furthermore, the literature review above shows that the interaction effect between the quality of creditor rights institutions and quality of institutional enforcement has not been explicitly evaluated by studies focused on Africa. If clearly defined and enforced creditor rights that are delineated and protected by creditor rights institutions affect positively financial system development as argued by the law and finance theory, then one would expect that as the quality of institutional enforcement increases, the quality of creditor rights institutions has a stronger positive association with financial system development[5]. La Porta et al. (2008b, p. 300) emphasise the importance of the foregoing interaction effect when they note that "the available

[5]McDonald and Schumacher (2007) use explanatory variables that combined measures of the quality of creditor rights institutions with measures of the quality of institutional enforcement and call this combined measure the "effective creditor rights index". They, however, do not explicitly test for the interaction effect of the two variables. Moreover, the way they combine these two explanatory variables does not seem to be multiplicative in the way required of an interaction term, while this dissertation uses a multiplicative interaction term to examine the interaction effects.

evidence suggests that both good rules and their enforcement matter, and that the combination of the two is generally most effective".

Moreover, as discussed earlier, Safavian and Sharma (2007) show a positive interaction effect between creditor rights institutions and institutional enforcement quality in their global sample and sample of Eastern and Central European countries. Hence for theoretical and policy reasons, it seems appealing and valuable to know whether this law and finance theory prediction for the interaction effect between creditor rights institutions and institutional enforcement quality on financial system development holds in the African context. Consequently, the following hypothesis is offered for testing:

> **Hypothesis 9 (H9)**: On average, the quality of creditor rights institutions has a greater positive effect on financial system development as the quality of institutional enforcement increases.

2.5.2. Non-core current institutional factors

The law and finance theory (see Beck and Levine, 2005 and La Porta et al. 2008b for a review of this literature) argues that legal institutions that clearly delineate and protect contracting and private property rights have a positive effect on financial system development. As already discussed in the previous section, the contractual infrastructure that is made up of the legal rules and regulations that protect contracting and private property rights seem important for financial system development. Moreover, the credit information infrastructure that is made up of the legal rules and regulations that increase information availability seem essential for financial system development. The literature review in the previous section also revealed that when examining the effects of the contractual infrastructure, many studies so far have focused on investigating the

effects of core current institutional factors, specifically creditor rights institutions and institutional enforcement quality, on financial system development.

There are, however, other non-core current institutional factors that affect contracting and private property rights and that have been suggested to have effects on financial system development, but which have been less empirically investigated within the African context. These non-core current institutional factors are the legal rules and regulations that determine the efficiency of the legal property, judicial, and insolvency systems in different countries. The World Bank Doing Business Project recommends that improving the registering property, enforcing contracts, and resolving insolvency indicators, being measures of the efficiency of the legal property, judicial, and insolvency systems respectively, may positively affect financial system development. This is because the general claim is that inefficient legal property, judicial, and insolvency systems negatively affect financial system development. From the literature review, there has not been much empirical investigation into the effect of many of these efficiency measures of the legal property, judicial, and insolvency system, as defined by the Doing Business Project, on financial system development within the African context. Hence this study seeks to investigate to what extent the efficiency of the legal property, judicial, and insolvency systems affect financial system development in Africa.

Some studies have examined the effect of some measures of the efficiency of the judicial system as defined by the Doing Business Project, specifically contract enforcement days (Beck et al., 2006; Brown et al., 2009; Djankov et al., 2007) and cost of contract enforcement (McDonald and Schumacher, 2007), on financial system development and have found statistically significant links between these efficiency measures and financial system development. Therefore for theoretical and policy reasons, it seems appealing and valuable to examine whether the efficiency

of the judicial system has any positive effects on financial system development in the African context. If this study discovers that the efficiency of the judicial system is positively associated with financial system development within the African context then these findings lend some justification to reforms to the legal rules and regulations that determine the efficiency of the judicial system. Consequently, the following hypothesis is postulated for testing:

> **Hypothesis 10 (H10)**: On average, the efficiency of the judicial system is positively associated with financial system development.

The World Bank Doing Business Project recommends that improving the efficiency of the legal property system may positively affect financial system development. It is expected that a more efficient legal property system may increase collateralisation possibilities and hence encourage more credit from the financial system, leading to increased financial system development. De Soto (2001), in discussing how to unleash economic development in low-income countries, argues that a robust and efficient legal property system can increase collateralisation possibilities by converting many assets in low-income countries to valid collateral and hence encourage more credit from the financial system, with positive consequences for financial system development. Similar arguments about the benefits of an efficient legal property system for financial system development can be found in other papers. For example, McDonald and Schumacher (2007) note the following in their recommendations for institutional reforms in Africa:

> The institutional infrastructure should also be revised to make collateralized loans more generally available. For example, the ability to *register property efficiently* would help to build financial markets, because banks prefer land and buildings as collateral (they are

> difficult to move or hide) and the availability of collateral is crucial for bank willingness to grant credit…Good legislation on debt recovery depends on *efficient property registration* and land surveying in both cities and countryside. (p. 11, emphasis added)

The Doing Business Project has developed an indicator called 'Registering Property' that measures the efficiency of the legal property system. World Bank (2012a), while describing the 'Registering Property' indicator, states that

> Doing Business records the full sequence of procedures necessary for a business (buyer) to purchase a property from another business (seller) and to transfer the property title to the buyer's name so that the buyer can use the property for expanding its business, *use the property as collateral in taking new loans* or, if necessary, sell the property to another business". (p. 47, emphasis added)

Since it is expected that a more efficient legal property system will enable more efficient transfer of property, consequently increasing collateralisation possibilities that will enable business owners expand their businesses through taking loans, the efficiency of the legal property system may have a positive effect on financial system development. If the efficiency of the legal property system has an effect, then reforms to components of the "Registering Property" indicator of the Doing Business Project may more likely improve financial system development. Hence these reforms should be seen as urgent in the eyes of African governments that want to develop their countries' financial system. However if the efficiency of the legal property system does not have any effect on financial system development, the efficiency of the legal property system may still have an effect on other areas of business expansion that are not the focus of this study. Consequently, the following hypothesis is offered for testing:

Hypothesis 11 (H11): On average, the efficiency of the legal property system is positively associated with financial system development.

There is also evidence that the efficiency of insolvency systems is positively associated with financial system development (Djankov, Hart, McLiesh, and Shleifer, 2008). The Doing Business Project has a 'Resolving insolvency' indicator that includes an efficiency measure of insolvency systems called the recovery rate for creditors. This 'recovery rate for creditors' measure was developed along the lines of the efficiency measure of insolvency systems used in Djankov et al. (2008). Therefore for theoretical and policy reasons, it seems worthwhile to examine whether the efficiency of the insolvency system has any positive effects on financial system development in the African context. If this study discovers that the efficiency of the insolvency system is positively associated with financial system development within the African context then these findings lend some justification to reforms to the legal rules and regulations that determine the efficiency of the insolvency system. This leads to the following hypothesis:

Hypothesis 12 (H12): On average, the efficiency of the insolvency system is positively associated with financial system development.

2.6. Current institutional factors as possible channels of historical institutional factors

The two previous sections have discussed the theories and the corresponding hypotheses that highlight how historical and current institutional factors may affect financial system development. In discussing the theories that identify the historical institutional factors that act as determinants of financial system development above, it was also noted that these theories of

historical institutional factors identify current institutional factors as possible channels through which historical institutional factors may affect financial system development.

As stated earlier, the theories of historical institutional factors seek to identify the sources/origins of the current institutional factors that make up the financial system infrastructure and that may matter for financial system development worldwide. In addition, these theories illuminate the worldviews that guide the design of current legal institutions and that sustain the durability of legal institutions over time. This section presents the hypotheses that link the historical institutional factors discussed earlier to the current institutional factors identified above; these hypotheses will help to empirically identify which current institutional factors act as possible channels through which historical institutional factors affect financial system development in the African context.

According to the coloniser identity theory discussed earlier, the legal institutions that exist in countries colonised by England offer better protection of contracting and private property rights, have better level of institutional enforcement, and are more suited for financial contracting than the legal institutions that exist in countries colonised by France. The implication of the coloniser identity theory for the six current institutional factors is given in the following hypothesis:

> **Hypothesis 13a (H13a)**: On average, the quality of current legal institutions is higher in former British colonies than in former French colonies

Hypothesis 13a implies more specifically that, on average, the quality of creditor rights institutions is higher in former British colonies than in former French colonies; the quality of

credit information infrastructure is higher in former British colonies than in former French colonies; the quality of institutional enforcement is higher in former British colonies than in former French colonies; the efficiency of the judicial system is higher in former British colonies than in former French colonies; the efficiency of the legal property system is higher in former British colonies than in former French colonies; and the efficiency of the insolvency system is higher in former British colonies than in former French colonies.

The legal family theory presented above predicts that the legal institutions that exist in countries belonging to the English common law legal family offer better protection of contracting and private property rights, have better level of institutional enforcement, and are more suited for financial contracting than the legal institutions that exist in countries belonging to the French civil law legal family. The legal family theory suggests the following hypothesis for the six current institutional factors:

> **Hypothesis 13 (H13b)**: On average, the quality of current legal institutions is higher in countries belonging to the English common law legal family than in those belonging to the French civil law legal family

Hypothesis 13b implies more specifically that, on average, the quality of creditor rights institutions is higher in countries belonging to the English common law legal family than in those belonging to the French civil law legal family; the quality of credit information infrastructure is higher in countries belonging to the English common law legal family than in those belonging to the French civil law legal family; the quality of institutional enforcement is higher in countries belonging to the English common law legal family than in those belonging to

the French civil law legal family; the efficiency of the judicial system is higher in countries belonging to the English common law legal family than in those belonging to the French civil law legal family; the efficiency of the legal property system is higher in countries belonging to the English common law legal family than in those belonging to the French civil law legal family; and the efficiency of the insolvency system is higher in countries belonging to the English common law legal family than in those belonging to the French civil law legal family.

As delineated while reviewing the disease endowment theory above, a key prediction of this theory is that in former colonies that did not have environments favourable to the settlement of European colonisers, specifically environments conducive to the prevalence, stability, and transmission of malaria, legal institutions have lower quality compared to legal institutions in former colonies that had environments favourable to the settlement of European colonisers. The consequence of the disease endowment theory for the six current institutional factors is given in the following hypothesis:

> **Hypothesis 14 (H14)**: On average, the quality of current legal institutions is negatively associated with malaria disease endowment

Hypothesis 14 entails more particularly that, on average, the quality of creditor rights institutions is negatively associated with malaria disease endowment; the quality of credit information infrastructure is negatively associated with malaria disease endowment; the quality of institutional enforcement is negatively associated with malaria disease endowment; the efficiency of the judicial system is negatively associated with malaria disease endowment; that the efficiency of the legal property system is negatively associated with malaria disease

endowment; and the efficiency of the insolvency system is negatively associated with malaria disease endowment.

One of the arguments of the religion-based theory is that legal institutions in countries dominated by Catholicism have lower quality than legal institutions in countries dominated by Protestantism. Hence, the religion-based theory has the following prediction for the six current institutional factors presented in the following hypothesis:

> **Hypothesis 15a (H15a)**: On average, the quality of current legal institutions is lower in countries with a majority adhering to Catholicism than in countries with a majority adhering to Protestantism.

In essence, for the current institutional factors, Hypothesis 15a means that, on average, the quality of creditor rights institutions is lower in countries with a majority adhering to Catholicism than in countries with a majority adhering to Protestantism; the quality of credit information infrastructure is lower in countries with a majority adhering to Catholicism than in countries with a majority adhering to Protestantism; the quality of institutional enforcement is lower in countries with a majority adhering to Catholicism than in countries with a majority adhering to Protestantism; the efficiency of the judicial system is lower in countries with a majority adhering to Catholicism than in countries with a majority adhering to Protestantism; the efficiency of the legal property system is lower in countries with a majority adhering to Catholicism than in countries with a majority adhering to Protestantism; and the efficiency of the insolvency system is lower in countries with a majority adhering to Catholicism than in countries with a majority adhering to Protestantism.

Moreover, the religion-based theory also argues that legal institutions in countries dominated by Islam have lower quality than legal institutions in countries dominated by Protestantism. Consequently, the following hypothesis summarises the prediction of the religion-based theory for the six current institutional factors:

> **Hypothesis 15b (H15b)**: On average, the quality of current legal institutions is lower in countries with a majority adhering to Islam than in countries with a majority adhering to Protestantism.

Hypothesis 15b means that, on average, the quality of creditor rights institutions is lower in countries with a majority adhering to Islam than in countries with a majority adhering to Protestantism; the quality of credit information infrastructure is lower in countries with a majority adhering to Islam than in countries with a majority adhering to Protestantism; the quality of institutional enforcement is lower in countries with a majority adhering to Islam than in countries with a majority adhering to Protestantism; the efficiency of the judicial system is lower in countries with a majority adhering to Islam than in countries with a majority adhering to Protestantism; the efficiency of the legal property system is lower in countries with a majority adhering to Islam than in countries with a majority adhering to Protestantism; and the efficiency of the insolvency system is lower in countries with a majority adhering to Islam than in countries with a majority adhering to Protestantism.

Besides, the religion-based theory also argues that legal institutions in countries with Islamic law as part of legal system have lower quality than legal institutions in countries without

Islamic law as part of legal system. Thus, the religion-based theory makes the following prediction for the six current institutional factors presented in the following hypothesis:

> **Hypothesis 15c (H15c)**: On average, the quality of current legal institutions is lower in countries with Islamic law as part of legal system than in countries without Islamic law as part of legal system.

Hypothesis 15c means that, on average, the quality of creditor rights institutions is lower in countries with Islamic law as part of legal system than in countries without Islamic law as part of legal system; the quality of credit information infrastructure is lower in countries with Islamic law as part of legal system than in countries without Islamic law as part of legal system; the quality of institutional enforcement is lower in countries with Islamic law as part of legal system than in countries without Islamic law as part of legal system; the efficiency of the judicial system is lower in countries with Islamic law as part of legal system than in countries without Islamic law as part of legal system; the efficiency of the legal property system is lower in countries with Islamic law as part of legal system than in countries without Islamic law as part of legal system; and the efficiency of the insolvency system is lower in countries with Islamic law as part of legal system than in countries without Islamic law as part of legal system.

The ethnic fractionalisation theory argues that countries that are more ethnically diverse are more likely to have legal institutions that do not clearly delineate and protect contracting and private property rights. Furthermore, ethnic fractionalisation theory argues that countries that are more ethnically diverse are more likely to have less impersonal market transactions as there will be more intra-ethnic than inter-ethnic transactions. The arguments of ethnic fractionalisation

theory imply that legal institutions in countries that are more ethnically diverse are more likely to be of lower quality than legal institutions in countries that are less ethnically diverse. The hypothesis given below summarises the implications of the ethnic fractionalisation theory for the six current institutional factors:

> **Hypothesis 16 (H16)**: On average, the quality of current legal institutions is negatively associated with ethnic fractionalisation.

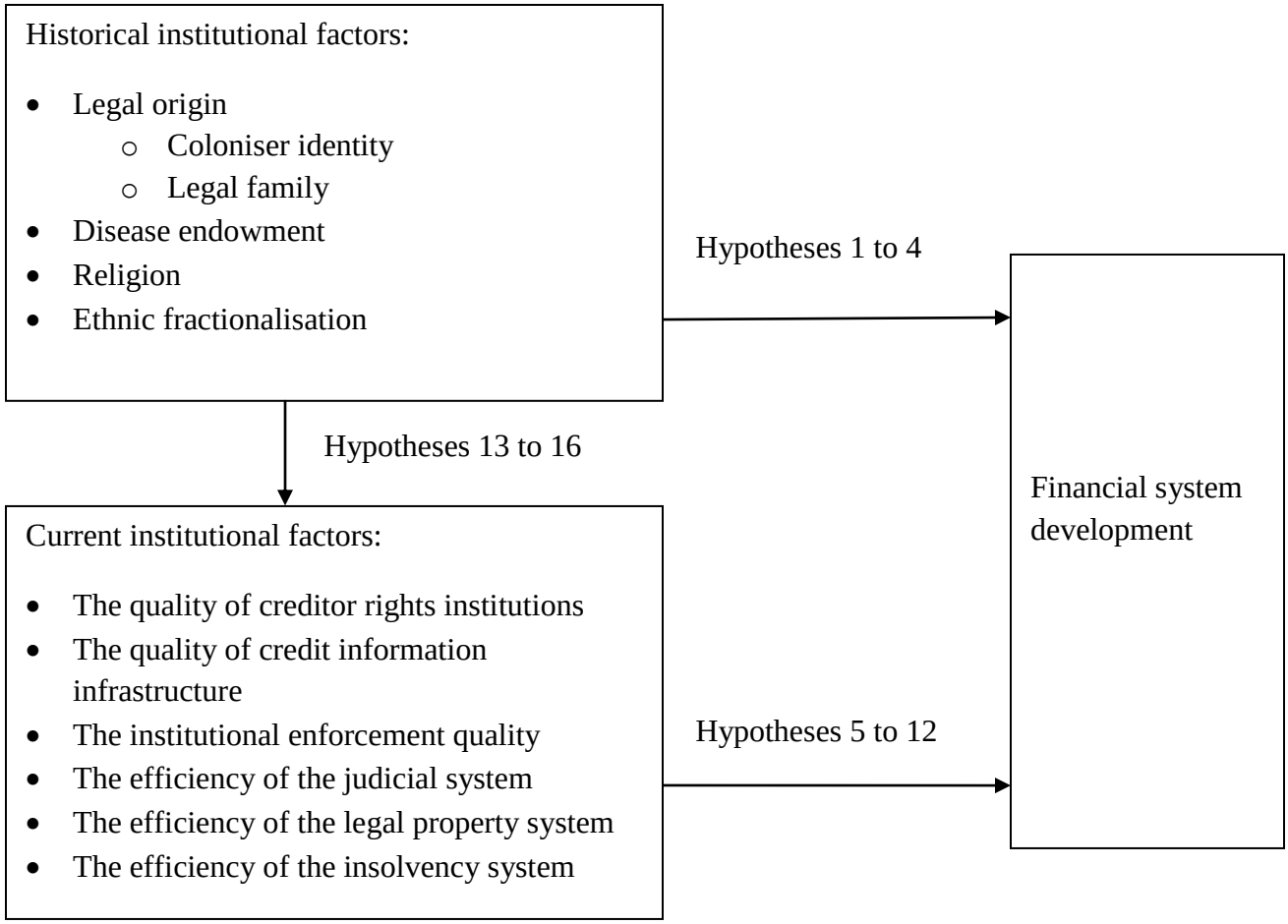
Hypothesis 16 implies more specifically that, on average, the quality of creditor rights institutions is negatively associated with ethnic fractionalisation; the quality of credit information infrastructure is negatively associated with ethnic fractionalisation; the quality of institutional enforcement is negatively associated with ethnic fractionalisation; the efficiency of the judicial system is negatively associated with ethnic fractionalisation; the efficiency of the legal property system is negatively associated with ethnic fractionalisation; and the efficiency of the insolvency system is negatively associated with ethnic fractionalisation.

The foregoing discussion has presented the hypotheses that show how the historical institutional factors are related to the current institutional factors. The following section concludes this chapter by presenting a conceptual model that summarises the proposed relationships among the historical and current institutional factors and financial system development. This concluding section also lists all the hypotheses developed in this chapter.

2.7. Conclusions

In this chapter, the theories and corresponding empirical results from the extant literature that try to identify and to explain how historical and current institutional factors affect financial system development and how historical and current institutional factors are linked to each other in the African context were reviewed. In addition, several hypotheses based on the literature review that will be empirically tested in later parts of this dissertation were also developed. Figure 2.1 presents a conceptual model that summarises the links among historical institutional factors, current institutional factors, and financial system development.

Figure 2.1: Conceptual model



The hypotheses developed above are listed below:

- **Hypothesis 1a (H1a)**: On average, former British colonies have higher financial system development than former French colonies.
- **Hypothesis 1b (H1b)**: On average, countries belonging to the English common law legal family have higher financial system development than countries belonging to the French civil law legal family.
- **Hypothesis 2 (H2)**: On average, the malaria disease endowment is negatively associated with financial system development.
- **Hypothesis 3a (H3a)**: On average, countries with a majority adhering to Catholicism have lower financial system development than countries with a majority adhering to Protestantism.
- **Hypothesis 3b (H3b)**: On average, countries with a majority adhering to Islam have lower financial system development than countries with a majority adhering to Protestantism.
- **Hypothesis 3c (H3c)**: On average, countries with Islamic law as part of legal system have lower financial system development than countries without Islamic law as part of legal system.
- **Hypothesis 4 (H4)**: On average, ethnic fractionalisation is negatively associated with financial system development.
- **Hypothesis 5 (H5)**: On average, the quality of creditor rights institutions is positively associated with financial system development.
- **Hypothesis 6 (H6)**: On average, the quality of credit information infrastructure is positively associated with financial system development.

- **Hypothesis 7 (H7)**: On average, the quality of institutional enforcement is positively associated with financial system development.
- **Hypothesis 8 (H8)**: On average, the quality of creditor rights institutions has a greater positive effect on financial system development as the quality of credit information infrastructure increases.
- **Hypothesis 9 (H9)**: On average, the quality of creditor rights institutions has a greater positive effect on financial system development as the quality of institutional enforcement increases.
- **Hypothesis 10 (H10)**: On average, the efficiency of the judicial system is positively associated with financial system development.
- **Hypothesis 11 (H11)**: On average, the efficiency of the legal property system is positively associated with financial system development.
- **Hypothesis 12 (H12)**: On average, the efficiency of the insolvency system is positively associated with financial system development.
- **Hypothesis 13a (H13a)**: On average, the quality of current legal institutions is higher in former British colonies than in former French colonies.
- **Hypothesis 13b (H13b)**: On average, the quality of current legal institutions is higher in countries belonging to the English common law legal family than in those belonging to the French civil law legal family.
- **Hypothesis 14 (H14)**: On average, the quality of current legal institutions is negatively associated with malaria disease endowment.

- **Hypothesis 15a (H15a)**: On average, the quality of current legal institutions is lower in countries with a majority adhering to Catholicism than in countries with a majority adhering to Protestantism.
- **Hypothesis 15b (H15b)**: On average, the quality of current legal institutions is lower in countries with a majority adhering to Islam than in countries with a majority adhering to Protestantism.
- **Hypothesis 15c (H15c)**: On average, the quality of current legal institutions is lower in countries with Islamic law as part of legal system than in countries without Islamic law as part of legal system.
- **Hypothesis 16 (H16)**: On average, the quality of current legal institutions is negatively associated with ethnic fractionalisation.

In the following chapter, the research methods that will be used in investigating the hypotheses discussed above will be discussed, while Chapter 4 presents the results from the empirical analyses that test the hypotheses, achieve the research objectives, and answer the research question.

3. Methods: Data, variables, and estimation techniques

The Methods section of this dissertation is contained in this chapter. First, the research setting is discussed. Second, the sample selection criteria are explained. Third, the variables, their definitions, and their measures are delineated. Finally, the econometric model specification and estimation techniques are presented.

3.1. Research setting

The setting for the testing of the hypotheses is the African continent. Since the late 1980s and more so in the 2000s African countries have been implementing economic, political, and institutional reforms in an effort to improve their economic situation and their standard of living (Honohan and Beck, 2007). With all the reforms, however, African countries still have low-income levels and low standard of living as compared to other regions of the world (Shleifer, 2009). Given Africa's developmental problems and needs, more research that considers countries in Africa as a more unique group facing similar developmental challenges is needed in order to understand and improve the performance of businesses and firms in Africa.

Africa provides an interesting context to empirically validate and refine many of the theories that have been postulated to explain the relationships between institutions and economic outcomes. This is because Africa is in the process of developing its institutions and reforming existing ones and offers an opportunity to examine the impact of institutional factors on economic outcomes in nascent contexts. Because African countries have been reforming their legal rules and regulations in recent times (Beck et al., 2011), it seems valuable for theoretical and policy purposes to analyse the impact of these legal rules and regulations in generating the

expected economic outcomes. In essence, more studies that test different economic and institutional theories in the African context are needed in order to access the usefulness and explanatory power of these theories within the African context.

Honohan and Beck (2007, pp. 5-7) delineate some characteristics of the economic environment in Africa that in recent times seem to differentiate African countries from countries in other regions and that point to the homogeneity of African countries in some key social, economic, political, and institutional dimensions. These characteristics include the following: (a) the scale (i.e., low GDP, low GDP per capita and sparse population) of African economies; (b) the informality (i.e., the existence of large informal sectors) of the economies in Africa; (c) the governance problems in the private and public sectors in African countries; and (d) the shocks (i.e., conflicts, famine, economic and politico-societal meltdowns, high risk for small entrepreneurs and firms, and individual households below or bordering on the poverty line) experienced by African countries.

Moreover, African countries started to exist mainly from the 1960s after independence from their European colonisers and since then African countries have struggled to live up to their independence dreams after many years of self-governance and reforms. The fact that after all these years since independence African countries still share some similar characteristics as discussed by Honohan and Beck (2007, pp. 5-7) suggests that Africa may be a unique context that requires more Africa-focused studies. Therefore for theoretical and policy purposes we may gain a better understanding of Africa's unique characteristics, developmental problems, and required reforms by comparing African countries to each other than by comparing African countries to countries in other continents. In essence, it seems justifiable to treat countries in Africa as more homogeneous along many key social, economic, political, and institutional

dimensions as compared to countries in other continents; and, yet heterogeneous enough in key dimensions of interest in this study to enable cross-country comparison.

For theoretical purposes the African continent offers a fascinating context to examine the four theories of the historical institutional factors discussed in Chapter 2. First, because most African countries were colonised by European countries and recently obtained their independence some decades ago, African countries form a homogeneous group of recently independent former colonies, mainly British and French former colonies. Therefore African former European colonies offer a good context to test the legal origins theory in its two forms: coloniser identity theory and legal family theory. The European colonial experience of African former European colonies can justify the argument that the legal origin broadly construed as the style of social control of economic activities (La Porta et al. 2008b) is exogenous for African former European colonies. This is because African former European colonies inherited the business and company laws, type of legal system, educational system, and so forth of their former colonisers (Klerman et al., 2011).

Second, the conduciveness of Africa to malaria (Kiszewski et al., 2004; Sachs and Chambers, 2009) makes it a good context to examine the disease endowment theory because Africa is most likely the continent that may have affected significantly the settlement strategies of the colonisers due to its fatal disease environment. Third, it is clear that some religious beliefs, in the case of present day African countries, came from the major religions such as Christianity that were not developed locally in African countries, but came from the European colonisers of African countries. Hence, Christianity can be viewed as an exogenous source of worldviews for African countries because Christianity, either as Catholicism or Protestantism, can be mainly attributed to influence of the European colonisers.

Moreover, Islam was not also developed locally in African countries and can be seen as an exogenous source of worldviews and institutions for African countries where Islam is practised. Because African former European colonies received the Christian religion from their European colonisers, African former European colonies offer a good context to examine the economic effects of exogenously supplied religious beliefs and values. Fourth, ethnic fractionalisation theory notes how the agglomeration of disparate ethnic groups into countries by the artificial borders set up by the European colonisers exacerbated ethnic divisions in African countries during the colonisation period. Alesina, Devleeschauwer, Easterly, Kurlat, and Wacziarg (2003) note that countries in Africa are the most ethnically fractionalized, which suggests that ethnic fractionalisation may manifest its greatest economic effects in a context such as Africa.

In addition it can more easily be argued for the purposes of the empirical analyses that the explanatory variables identified by the four theories of historical institutional factors discussed in Chapter 2 are exogenous in the African context. Consequently, the African continent provides a good context to examine the four theories of historical institutional factors discussed in Chapter 2 that suggest possible effects of historical institutional factors linked to colonisation on the financial system development of African countries.

Studies focused on the African continent seem to produce results different from other global samples. Empirical relationships such as the finance-economic development nexus (see Levine, 1997 and Levine, 2005 for a review of the literature) that have been found to exist in global samples seem to have mixed results for Africa (Murinde, 2012). Huang (2010b) does not find any relationship between political institutional improvement, specifically improvement in the level of democratisation, and financial system development in his sample of African

countries, but he finds a positive relationship in the global sample and in other non-African samples. These different findings for Africa-focused studies appear to be pointing to the relative uniqueness of Africa in key economic and institutional dimensions.

Moreover, some studies tend to find different results for a particular relationship in high-income and low-income countries. For example, Djankov et al. (2007) find that what matters for private credit in high-income countries is the protection of creditor rights, while what matters for low-income countries is the quality of the credit information infrastructure. Beck et al. (In press) find that non-intermediation activities increase volatility in economic growth in high-income countries, while non-intermediation activities have no effect on volatility in economic growth in low-income countries. The foregoing results show that different empirical results can be found from using smaller similar groups as opposed to studying a global sample, and that results found in global samples may actually be driven by a smaller group within the global sample.

Therefore studying groups made up of relatively similar countries along some dimensions can help explain some desired relationships and can provide a more fine-grained result than studying global samples. Consequently, to understand Africa's developmental needs by comparing apples to apples, there is a need for more comparative Africa-focused studies. Moreover, Africa-focused studies may more adequately guide the reform decisions of individual governments and international development organisations such as the World Bank and the International Monetary Fund.

Thus, from the foregoing discussion, a better understanding of Africa's developmental problems and possible attainable solutions may be achieved when African countries are compared with each other than when African countries are compared with countries in other

continents. Hence the focus of this dissertation is on a comparative study of countries within Africa; more specifically the focus of this dissertation is on African former European colonies because the theories of historical institutional factors entail arguments linked to former European colonies. The next section documents the criteria for arriving at the sample of African former European colonies that will be examined in the empirical tests and the time period of the study.

3.2. Sample selection

Because the theories about the historical institutional factors deal with the impact of colonisation on current financial system development in Africa, the African countries of interest in testing these theories will be those that were former European colonies. Moreover, because the current institutional factors that act as channels for the historical institutional factors will also be investigated, only African countries that were former European colonies will make up the sample for testing the hypotheses about current institutional factors. Given that only two African countries were not colonised by European countries out of a total of about 54 African countries in the African continent, this sample selection of African former European colonies still reflects practically all African countries. Besides, apart from removing African countries that were not colonised by European countries, those African countries that lack the relevant data for the empirical analyses were also removed.

Hence those African countries that were never colonised by Europeans from the nineteenth to the twentieth century and also those African countries that had missing data for our dependent and explanatory variables were dropped. The African countries that were never colonised by Europeans are Ethiopia and Liberia, while the countries that had missing data are Libya, South Sudan, Somalia, and Zimbabwe. With these two sample selection criteria, a sample

of 48 countries out of a total of about 54 African countries (for a current list of African countries see African Union, 2013) was developed. Consequently, the full sample for the empirical study below is made up of 48 countries and the countries are listed in Table 3.1.

The period of study is from 2004 to 2011. The start date is 2004 because some of the measures of the current institutional factors from the Doing Business Project, such as the depth of credit information index, the strength of legal rights index, and the registering property indicator, were available starting 2004 (African development indicators, 2013). The end date is 2011 because one of the measures of financial system development, specifically the private credit from deposit money banks and other financial companies/GDP ratio, are available until 2011 (Beck, Demirguc-Kunt, and Levine, 2013). Consequently, the dataset used for this study is a strongly balanced panel dataset with 48 countries and 8 years of data for each country although some countries have less than 8 years of data on some of the variables. The next section describes the variables used in the empirical analyses and how they were measured.

3.3. Variables and their measurement

The variables used in this study, including their description, source, and the published works that have used them, are summarised in Table 3.2. The financial system development, historical and current institutional variables, and their measures used to test the hypotheses and to carry out other empirical analyses are discussed in the following subsections.

3.3.1. Financial system development variables

As discussed in Chapter 2, financial system development captures how well financial systems fulfil their relevant functions that have been identified in the literature, and especially the

function of channelling money from economic agents with surplus money to economic agents in need of money. Because direct empirical measures of financial system development are not yet available, researchers have been using size measures of financial systems as proxies of financial system development (Beck et al., 2010). In line with the literature, size measures of financial systems were used as proxies of financial system development in this study. Because few countries in Africa have organised equity markets and the financial system is dominated by the banking system (Beck et al., 2011), financial system development was measured by using proxies related to the size of other sectors of the financial system, predominantly the banking system.

A common proxy variable of financial system development in the literature is the credit to the private sector to GDP ratio because this proxy variable measures the volume of credit, which is a key measure of the credit allocation and intermediating function of financial system, and because of the findings that a higher ratio is associated with economic development and poverty alleviation (Beck et al., 2010). Consequently, higher values of this proxy variable imply better functioning financial systems and therefore higher financial system development. Following the literature, the dependent variable used to proxy financial system development in this study is the domestic credit to the private sector/GDP (hereafter **DCP**). **DCP** acts as a proxy that measures how well financial systems channel credit to economic agents in the private sector. **DCP** is used in this study because it is typical in the literature (e.g., Klerman et al., 2011) and is also readily available for a large number of African countries in the sample (African development indicators, 2013), thus enabling the empirical analyses of the hypotheses for a broad group of African countries.

For robustness checks, two other proxy variables of financial system development that are closely related to **DCP** and strongly correlated to **DCP**, although calculated differently from **DCP**, are used. These two proxy variables are called private credit by deposit money banks/GDP (hereafter **DMB**) and private credit by deposit money banks and other financial companies/GDP (hereafter **DMBOFI**). These two proxy variables are common in the literature (see, e.g., Beck et al., 2003; Beck et al., 2006; Beck et al., 2010; Djankov et al., 2007). **DMB** only measures the volume of credit from banks to the private sector (Beck et al., 2010), while **DCP** and **DMBOFI** measure the volume of credit to the private sector from banks and other sources apart from financial markets. **DMB** and **DMBOFI** are used for robustness checks to help ensure that the empirical results gotten by using **DCP** are not driven by the way **DCP** is calculated or sourced. There are, however, data for 47 out of 48 countries for the **DMB** and **DMBOFI** variables because Eritrea does not have data for these two variables, while there are data for 48 countries for the **DCP** variable.

3.3.2. Historical institutional variables

The historical institutional variables refer to the variables and measures of the historical institutional factors that were discussed in Chapter 2 and given in hypotheses 1 to 4 and 13 to 16. These historical institutional variables are discussed below.

To measure coloniser identity, two dummy variables, specifically **French colony** and **Other colony**, were used to produce three groups of countries, with the third (and omitted group) that forms the base group for these dummy variables being the British colony group, based on the data from Klerman et al. (2011) and Central Intelligence Agency (2012). In line with Klerman et al. (2011) the coloniser identity was coded based on the most recent and relatively

long lasting dominant colonial power of the African former European colonies from the nineteenth century to their independence in the twentieth century. Klerman et al. (2011) argue that their coding technique is based on the theory that the most recent and long lasting dominant colonial power is the one that would have affected many policies and systems of social and economic organisation in the former colonies at the time of independence.

French colony is a dummy variable that takes the value of 1 for countries colonised by France and zero otherwise. The **French colony** variable categorises the group of African countries that were colonised by France. **Other colony** is a dummy variable that takes the value of 1 for countries neither colonised by France nor by England and zero otherwise. The **Other colony** variable categorises the group of African countries that were neither colonised by France nor by England. The French and Other colony dummy variables form three groups, and the omitted group categorises the group of African countries that were colonised by England. In the full sample of 48 African former European colonies, 20 countries are categorised as colonised by France, 16 are categorised as colonised by England, and 12 are categorised as colonised by neither France nor England.

To measure legal family, a dummy variable called the **French legal family** was defined. **French legal family** takes the value of 1 for countries categorised as French civil law and zero otherwise, based on the data provided by La Porta et al. (1999) and La Porta, Lopez-de-Silanes, and Shleifer (2008a). The base group (and omitted group) for the French legal family dummy is the group called English legal family made of countries categorized as English/British common law. The legal family of Swaziland as given in La Porta et al. (1999) and La Porta et al. (2008a) was recoded into French legal family instead of English legal family based on the coding in Klerman et al. (2011) and verified from JuriGlobe (2013). For the 48 African former European

colonies that make up the full sample, 34 countries are classified as French civil law, while 14 countries are classified as English common law.

To test the hypotheses related to the disease endowment theory, measures of the disease endowment of African former European colonies are required. Acemoglu et al. (2001, p. 1387) state that "the relationship between settler mortality and institutions is weaker within Africa", suggesting that settler mortality rate may be a weak historical institutional variable to test the disease endowment theory within the African context. In addition, the settler mortality rates of Acemoglu et al. (2001) are only available for about half of the African countries in the full sample. Moreover, the data on settler mortality rates used in Acemoglu et al. (2001) have been recently questioned for their accuracy by Albouy (2012), and Acemoglu, Johnson, and Robinson (2012) have responded, with several robustness checks, to Albouy (2012)'s complaints to their data, noting that the key results of Acemoglu et al. (2001) remain robust and sometimes strengthened by responding to the complaints.

Hence a challenge to testing the hypotheses related to the disease endowment theory within the African context lies in identifying other variables that can help proxy for the malaria disease endowment in Africa. In essence, variables that can help proxy for potential death risks from dangerous diseases such as malaria for European colonisers are needed. As discussed in Chapter 2, the absolute **latitude** of a country has been used in the literature as a measure of disease endowment of a country (Ayyagari et al. 2008b; Beck et al., 2003). Ayyagari et al. (2008b) argue that they use absolute **latitude** as a measure of endowments in their main results because it is available for more countries than settler mortality data. The absolute **latitude** variable was complemented by adding two other exogenous variables that have been used in the economic development literature, but seem not to have been used much in the financial

development literature. The **malaria stability index** that was developed by Kiszewski et al. (2004) and the percentage of land area of each African former European colony within the Koppen-Geiger tropical climate classification system that was developed by Mellinger, Sachs, and Gallup (2000) were used.

The **malaria stability index** measures potential malaria transmission stability and is constructed from biological and climatic variables in a way that makes it an exogenous measure of malaria endemic geographic areas. Kiszewski et al. (2004, p. 486) state that the **malaria stability index** was developed "based on the most powerful intrinsic properties of anopheline mosquito vectors of malaria that interact with climate to determine vectorial capacity. Because this index [malaria stability index] examines potential transmission stability, it includes regions where malaria is not currently transmitted, but where it had been transmitted in the past or where it might be transmitted in the future". Moreover, Kiszewski et al. (2004, pp. 491-492) note that the "index of malaria stability depicts the regional resiliency of malaria perpetuation…it explicitly depicts the effects of ambient temperature on the force of transmission of malaria". The **malaria stability index** has already been used as an exogenous variable in studies in economic development (e.g., Carstensen and Gundlach, 2006; Sachs, 2003).

The Koppen-Geiger climate classification system classifies the worldwide climate to reflect the different types of vegetation and is based on temperature and precipitation values (Mellinger et al., 2000). Mellinger et al. (2000) calculate the percentage of land area that falls within the different climate zones in the Koppen-Geiger climate classification system. The percentage of land area that falls in the tropical region was selected as relevant for testing the hypotheses related to the disease endowment theory. The percentage of land area within Koppen-Geiger tropical climate classification system variable would be called **KGtropics** hereafter.

Studies have shown that the tropical areas of Africa are the most conducive to malaria prevalence and transmission in the world, and even more conducive to malaria prevalence and transmission than tropical areas in other parts of the world (Kiszewski et al., 2004; Sachs and Chambers, 2009).

In essence, tropical Africa is the least favourable for human inhabitation because of its conduciveness to malaria prevalence and transmission (Kiszewski et al., 2004; Sachs and Chambers, 2009). If tropical Africa has been lethal for the local indigenes over the centuries because of malaria, even more so had tropical Africa been lethal for the European colonisers that most likely had less resistance to malaria than the African indigenes. Acemoglu et al. (2001) discuss how malaria was a greater lethal threat to the European colonisers than to the local adult indigenes. Hence **KGtropics** seems an appropriate measure of the malaria disease endowment that may have affected the colonisation strategy of European colonisers.

Because the **malaria stability index** seems more closely linked to malaria prevalence than **latitude** and **KGtropics** based on how the **malaria stability index** was developed (i.e., malaria stability index includes biological and climatic factors while latitude and KGtropics are mainly climatic and geographical), the **malaria stability index** was used as the main measure of disease endowment whereas **latitude** and **KGtropics** were used for robustness checks. With these three disease endowment variables and based on the hypotheses related to the disease endowment theory, **malaria stability index** is negatively associated with financial system development and with the quality of current legal institutions because there is higher malaria burden at higher values of **malaria stability index**; **latitude** is positively associated with financial system development and with the quality of current legal institutions because there is lower malaria burden at higher absolute latitude; and **KGtropics** is negatively associated with

financial system development and with the quality of current legal institutions because there is higher malaria burden at higher values of **KGtropics**.

It is important to note that these three disease endowment variables do not measure current malaria fatalities or infections, but only proxy for geographical areas and climates in Africa that have always posed a lethal threat to human beings by being conducive for malaria infection and transmission. Hence these three disease endowment variables seem to be appropriate proxies for the malaria disease endowment that the European colonisers encountered during colonisation and which may have affected their colonisation strategies according to the arguments of the disease endowment theory. For the **latitude** variable there are data for the 48 countries in the full sample. For the **malaria stability index** and **KGtropics** variables, there are data for 47 and 43 countries respectively out of the 48 countries that make up the full sample. Seychelles does not have data for the **malaria stability index** variable while Cape Verde, Comoros, Mauritius, Sao Tome and Principe, and Seychelles do not have data for the **KGtropics** variable.

To measure the effect of religion, this study follows Stulz and Williamson (2003) in defining dummy variables representing the religious affiliation of the majority of the population in each country based on the data on religious affiliation developed by La Porta et al. (1999). Three dummy variables, specifically **Catholicism**, **Islam**, and **Other religions**, that define four groups were created, with the fourth (and omitted group) that forms the base group being the Protestantism group. **Catholicism** is a dummy variable that takes the value of 1 if the religious affiliation of the majority of the population in a country is Catholicism and zero otherwise; **Catholicism** dummy variable categorises the group of African former European colonies that have Catholicism as the affiliation of the majority of the population. **Islam** is a dummy variable

that takes the value of 1 if the religious affiliation of the majority of the population in a country is Islam and zero otherwise; Islam dummy variable categorises the group of African former European colonies that have Islam as the affiliation of the majority of the population.

The **Other religions** dummy variable takes the value of 1 if the religious affiliation of the majority of the population in a country is neither Catholicism nor Islam nor Protestantism and zero otherwise; Other religions dummy variable categories the group of African former European colonies that have neither Catholicism nor Islam nor Protestantism as the affiliation of the majority of the population. The omitted group generated by these three dummy variables is the Protestantism group that categorises the African former European colonies that have Protestantism as the religious affiliation of the majority of the population in a country. In the sample, there are data for the different religious affiliation dummy variables for 47 out of the 48 countries that make up the full sample. Eritrea does not have data for these religious affiliation variables (see, La Porta et al., 1999). In the sample, there are 13 countries in the Catholicism group, 16 countries in the Islam group, 3 countries in the Protestantism group, and 15 countries in the Other religions group. To measure the effect of Islamic law, a dummy variable called **Islamic law** that takes the value of 1 if a country has Islamic law in its legal system and zero otherwise was developed. The coding for countries with Islamic law in their legal system is done using the legal system categorisations gotten from JuriGlobe (2013). In the sample, there are 12 countries that have Islamic law in their legal systems.

To measure the effect of ethnic fractionalisation, the updated **ethnic fractionalisation index** compiled by Alesina et al. (2003) is used. Alesina et al. (2003) argue that their updated **ethnic fractionalisation index** is based on a broader measure of ethnicity, which goes beyond language to include racial characteristics such as skin colour and racial origin, and is constructed

to cover a broader cross-section of countries. For **ethnic fractionalisation index**, there are data for 47 out of the 48 countries that make up the full sample. Sao Tome and Principe does not have data for this variable.

3.3.3. Current institutional variables

The current institutional variables include the variables and corresponding measures of the current institutional factors that were discussed in Chapter 2 and given in hypotheses 5 to 16. These current institutional variables are discussed below.

To measure the quality of creditor rights institutions, the **strength of legal rights index** from the Doing Business Project was used. The **strength of legal rights index** measures the degree to which the bankruptcy and collateral laws protect creditors and borrowers in different countries based on the Doing Business Project methodology. More specifically, the **strength of legal rights index** measures the degree to which the rights of borrowers and creditors are protected through collateral laws and the degree to which the rights of secured creditors are protected through bankruptcy laws (Doing Business Project, 2012g). The **strength of legal rights index** is coded to range from 0 to 10 and consists of eight items that refer to legal rights in collateral law and two items that refer to legal rights in bankruptcy law. The index is coded in such a way that higher index scores imply that the collateral and bankruptcy laws are designed to protect the rights of borrowers and creditors in a way that is expected to facilitate financial contracting and to expand availability of credit. Details of the construction of the **strength of legal rights index** are given in Doing Business Project (2012c). There are data for this variable for the 48 countries that make up the full sample.

There is an alternative index that measures the quality of creditor rights institutions and that could have been used in this study (see Armour, Deakin, Mollica et al., 2009 and Siems and Deakin, 2010 for a discussion of this alternative creditor rights index). This alternative index, however, has only one African country, specifically South Africa, in its sample and hence could not be used in this study. Once this alternative index includes a broad cross-section of African countries then it can be used as a robustness check for the results gotten in this study using the **strength of legal rights index**.

The quality of credit information infrastructure was measured using the **depth of credit information index** from the Doing Business Project. The **depth of credit information index** measures the rules and practices that determine the availability of relevant information in public credit registries or private credit bureaus for credit analysis in different countries based on the Doing Business Project methodology (Doing Business Project, 2012g). The **depth of credit information index** measures whether positive and negative credit information are distributed; whether information on firms and individuals are distributed; whether borrowers have the right to access the information in the registry or bureau; and other relevant features of the credit information infrastructure in different countries. Details of the construction of the **depth of credit information index** are given in Doing Business Project (2012c). The index has a range of 0 to 6 and higher values of the index indicate that there is more credit information available from either public credit registries or private credit bureaus that may assist lending judgments and expand the availability of credit. There are data for this variable for the 48 countries that make up the full sample.

The institutional enforcement quality was measured using the control of corruption indicator of the Worldwide Governance Indicators (hereafter **WG control of corruption**) that is

sourced from African development indicators (2013). The **WG control of corruption** measures one of the three main areas of governance identified by Kaufmann, Kraay, and Mastruzzi (2010, p. 4) that have to do with "the respect of citizens and the state for the institutions that govern economic and social interactions among them". The **WG control of corruption** provides a good measure of institutional enforcement quality as it measures the level of corruption in a country. The level of corruption in turn determines the effectiveness of the legal institutions that guide the interactions among citizens and the state because corruption can undermine the effectiveness of these legal institutions. Hodgson and Jiang (2007, p. 1057) argue that "corruption reduces levels of trust in dealing with both business and the state…The efficacy of the general, inclusive and non-discriminatory legal rules that are necessary for the operation of a modern, complex, market economy is undermined".

Furthermore, **WG control of corruption** is used as a measure of institutional enforcement quality because a high level of corruption reflects low government efficiency (La Porta et al., 1999); reduces confidence in the government and law enforcement organisations such as the courts (Clausen, Kraay, and Nyiri, 2011); and reduces the effectiveness of the state in enforcing legal rules and regulations that protect property and contracting rights (Hodgson and Jiang, 2007). Moreover, **WG control of corruption** can be argued to be one-dimensional in that it basically measures the level of corruption and hence identifies a key dimension of governance that can be a focus of reform efforts if found to affect financial system development. The details of the construction of the **WG control of corruption** are given in Kaufmann et al. (2010). The **WG control of corruption** has been designed to have a range from approximately -2.5 to 2.5 and higher values indicate better institutional enforcement quality. There are data for this variable for the 48 countries that make up the full sample.

The efficiency of the judicial system is measured using three measures of efficiency of the judicial system that are compiled by the Doing Business Project. These three measures are **procedures to enforce contracts**, **time to enforce contracts**, and **cost to enforce contracts** and these three measures define the enforcing contracts indicator of the Doing Business Project (Doing Business Project, 2012f). The greater the value of **procedures to enforce contracts**, **time to enforce contracts**, and **cost to enforce contracts**, the less efficient is the judicial system. Hence it is expected that these three judicial efficiency measures are negatively associated with financial system development. Details for the construction of these three measures that define the enforcing contracts indicator are given in Doing Business Project (2012b). There are data for this variable for the 48 countries that make up the full sample.

The efficiency of the legal property system is measured using three measures of efficiency of the legal property system that are compiled by the Doing Business Project. These three measures are **procedures to register property**, **time to register property**, and **cost to register property** and these three measures define the registering property indicator of the Doing Business Project (Doing Business Project, 2012h). The greater the value of **procedures to register property**, **time to register property**, and **cost to register property**, the lower the efficiency of the legal property system. Consequently it is expected that these three efficiency measures of the legal property system are negatively associated with financial system development. Details for the construction of the three measures that define the registering property indicator are given in Doing Business Project (2012d). There are data for this variable for the 48 countries that make up the full sample.

The efficiency of the insolvency system is measured using a variable called the **recovery rate for creditors** that is a component of the resolving insolvency indicator of the Doing

Business Project (Doing Business Project, 2012i). The greater the **recovery rate for creditors**, the higher the efficiency of the insolvency system. Therefore it is expected that the **recovery rate for creditors** is positively associated with financial system development. Details for the construction of this measure of the resolving insolvency indicator are given in Doing Business Project (2012e). There are data for this variable for 43 out of the 48 countries that make up the full sample. Cape Verde, Comoros, Equatorial Guinea, Eritrea, and Guinea Bissau do not have data for this variable.

3.3.4. Control variables

Some control variables have been included to increase the rigour of the empirical analyses. Demand-side factors such as income-level were controlled for using a variable called the **GDP per capita** that is measured using the World Bank GDP per capita data. Researchers argue and empirically show that countries with higher incomes may more easily afford more effective legal institutions and can also drive demand for financial system services, with positive consequences for financial system development (Djankov et al., 2007; La Porta, Lopez-de-Silanes, and Shleifer, 2008b). Although some authors have pointed to some inaccuracies in the existing GDP data of African countries (see Jerven, 2010 and Jerven, 2013 for a discussion on the potential low quality nature of existing GDP data of African countries), the World Bank GDP data are still one of the most reliable comparative GDP data available for a broad cross-section of African countries and have been used widely in the literature (e.g., Beck et al., In press; Djankov et al., 2007). There are data for this variable for the 48 countries that make up the full sample.

Macroeconomic stability was controlled for using a variable called **inflation** that was measured using a measure of inflation because inflation is argued to affect financial system

development (Djankov et al., 2007; Honohan and Beck, 2007). Furthermore, political stability was controlled for using one of the World Governance Indicators called the political stability and absence of violence/terrorism indicator (hereafter called **WG political stability**). **WG political stability** captures "perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism" (Kaufmann et al., 2010, p. 4). The details of the construction of **WG political stability** are given in Kaufmann et al. (2010). The **WG political stability** has been designed to have a range from approximately -2.5 to 2.5 and higher values indicate higher levels of political stability in the country. There are data for **inflation** and **WG political stability** variables for the 48 countries that make up the full sample.

Whether a country is landlocked or not was controlled for using a variable called **landlocked** because being landlocked may be another possible demand-side factor. **Landlocked** is a dummy variable that takes the value of 1 if a country is landlocked and zero otherwise. There are data for the **landlocked** variable for the 48 countries that make up the full sample. The political institutions that regulate political activities and the type of political regime in a country were controlled for using a variable called **democracy index** that is the same as the Polity2 variable from the Polity IV dataset because level of democratisation has been argued to affect financial system development (Girma and Shortland, 2008; Huang, 2010b). Huang (2010b), however, does not find any link between the level of democratisation and financial system development in his sub-sample of African countries, and Yang (2011) does not find a robust link between level of democratisation and financial system development in his global sample. The Polity2 variable from the Polity IV dataset that is called **democracy index** in this study has been used as a measure of the level of democratisation of a country (Girma and Shortland, 2008;

Huang, 2010b; Yang, 2011). There are no **democracy index** data for Seychelles and Sao Tome and Principe and hence there are data for 46 out of the 48 countries that make up the full sample.

An exogenous measure of trade openness developed by Frankel and Romer (1999) was considered as a possible control variable for the possible effects of trade openness (Stulz and Williamson, 2003). However trade openness was not statistically significantly correlated with the financial system development variables in the African context at the 10% significance level and thus the trade openness variable was not included as a control. Including statistically insignificant control variables would likely have reduced the parsimony of the econometric models used in the empirical analyses, unnecessarily taken up degrees of freedom required for calculating the test statistics, and possibly reduced the precision of the estimates of the key explanatory variables of interest in this study. Hence for the empirical analyses, five control variables that were statistically significantly correlated with the financial system development variables in the African context were included: **GDP per capita**, **inflation**, **WG political stability**, **landlocked**, and **democracy index**.

Table 3.1: 48 countries in the sample with country name and abbreviations, former colony, legal family, and Islamic law categorisations

Country name and abbreviation	Former colony, legal family, and Islamic law categorisations	Country name and abbreviation	Former colony, legal family, and Islamic law categorisations	Country name and abbreviation	Former colony, legal family, and Islamic law categorisations
1. Algeria (DZA)	FCO, FLF,YES	17. Equatorial Guinea (GNQ)	OCO, FLF,NO	33. Namibia (NAM)	OCO, ELF,NO
2. Angola (AGO)	OCO, FLF,NO	18. Eritrea (ERI)	OCO, FLF,YES	34. Niger (NER)	FCO, FLF,NO
3. Benin (BEN)	FCO, FLF,NO	19. Gabon (GAB)	FCO, FLF,NO	35. Nigeria (NGA)	BCO, ELF,YES
4. Botswana (BWA)	BCO, ELF,NO	20. Gambia (GMB)	BCO, ELF,YES	36. Rwanda (RWA)	OCO, FLF,NO
5. Burkina Faso (BFA)	FCO, FLF,NO	21. Ghana (GHA)	BCO, ELF,NO	37. Sao Tome and Principe (STP)	OCO, FLF,NO
6. Burundi (BDI)	OCO, FLF,NO	22. Guinea (GIN)	FCO, FLF,NO	38. Senegal (SEN)	FCO, FLF,NO
7. Cameroon (CMR)	FCO, FLF,NO	23. Guinea-Bissau (GNB)	OCO, FLF,NO	39. Seychelles (SYC)	BCO, FLF,NO
8. Cape Verde (CPV)	OCO, FLF,NO	24. Kenya (KEN)	BCO, ELF,YES	40. Sierra Leone (SLE)	BCO, ELF,NO
9. Central African Republic (CAF)	FCO, FLF,NO	25. Lesotho (LSO)	BCO, ELF,NO	41. South Africa (ZAF)	BCO, ELF,NO
10. Chad (TCD)	FCO, FLF,NO	26. Madagascar (MDG)	FCO, FLF,NO	42. Sudan (SDN)	BCO, ELF,YES
11. Comoros (COM)	FCO, FLF,YES	27. Malawi (MWI)	BCO, ELF,NO	43. Swaziland (SWZ)	BCO, FLF,NO
12. Congo, Democratic Republic (ZAR)	OCO, FLF,NO	28. Mali (MLI)	FCO, FLF,NO	44. Tanzania (TZA)	BCO, ELF,NO
13. Congo, Republic (COG)	FCO, FLF,NO	29. Mauritania (MRT)	FCO, FLF,YES	45. Togo (TGO)	FCO, FLF,NO
14. Cote d'Ivoire (CIV)	FCO, FLF,NO	30. Mauritius (MUS)	BCO, FLF,NO	46. Tunisia (TUN)	FCO, FLF,YES
15. Djibouti (DJI)	FCO, FLF,YES	31. Morocco (MAR)	FCO, FLF,YES	47. Uganda (UGA)	BCO, ELF,NO
16. Egypt, Arab Republic (EGY)	OCO, FLF,YES	32. Mozambique (MOZ)	OCO, FLF,NO	48. Zambia (ZMB)	BCO, ELF,NO

Notes: FCO=French colony; BCO=British colony; OCO=neither French nor British colony; FLF=French legal family categorization; ELF= English legal family categorization. The former colony and legal family categorizations are explained in the subsection 3.3.2. YES means Islamic law in legal system and NO means no Islamic law in legal system

Table 3.2: Variables, their definitions and source

Variable	Definition	Source and published works that used the variable where available
Financial system development variables		
1. DCP	The domestic credit to private sector/GDP ratio in %. "Domestic credit to private sector refers to financial resources provided to the private sector, such as through loans, purchases of nonequity securities, and trade credits and other accounts receivable, that establish a claim for repayment. For some countries these claims include credit to public enterprises." (African development indicators, 2013, series FS.AST.PRVT.GD.ZS definition). Data are from 2004 to 2011.	Source: African development indicators (2013) Published works: Klerman et al. (2011)
2. DMB	The private credit by deposit money banks/GDP ratio in %. This variable measures the ratio of claims on the private sector by deposit money banks to GDP and does not distinguish deposit money banks based on their ownership types and does not include securitized loans (Beck et al., 2010, p. 81). Data are from 2004 to 2011.	Source: Beck et al. (2013)
3. DMBOFI	The private credit by deposit money banks and other financial companies/GDP ratio in %. This variable measures the ratio of claims on the private sector by deposit money banks and other financial companies to GDP (Beck et al., 2010, p. 81). Data are from 2004 to 2011.	Source: Beck et al. (2013) Published works: Andrianaivo and Yartey (2010); Beck et al. (2003); and Djankov et al. (2007)
Historical institutional variables		
4. French colony (FCO)	A dummy variable that takes the value of 1 for African countries that were colonised by France between the 19th and 20th century and zero otherwise.	Source: Klerman et al. (2011) and Central Intelligence Agency (2012) Published works: Klerman et al. (2011)
5. Other colony (OCO)	A dummy variable that takes the value of 1 for African countries that were neither colonised by England nor France between the 19th and 20th century and zero otherwise.	Source: Klerman et al. (2011) and Central Intelligence Agency (2012) Published works: Klerman et al. (2011)
6. French legal family (FLF)	A dummy variable that takes the value of 1 for countries categorized as part of the French civil law legal family and 0 otherwise.	Source: La Porta et al. (2008a) Published works: Djankov et al. (2007); Huang (2010a); and La Porta et al. (2008b)

Table 3.2 continues

Variable	Definition	Source and published works that used the variable where available
Historical institutional variables		
7. Malaria stability index (MSI)	The malaria stability index "combines climatic factors and biological properties of the regionally dominant malaria vector into an index of the stability of malaria transmission" (Carstensen and Gundlach, 2006, p. 335). "The index value for a specific country is measured as a function of climatic factors that determine the required habitat of the dominant vector and of biological properties of the region-specific dominant vectors" (Carstensen and Gundlach, 2006, p. 318). The index "is measured on a highly disaggregated subnational level and then averaged for the entire country" (Carstensen and Gundlach, 2006, p. 335). Higher values of the malaria stability index indicate more malaria disease endowment. Details of the construction of the index are given in Carstensen and Gundlach (2006) and Kiszewski et al. (2004).	Source: McCord (2012) Published works: Carstensen and Gundlach (2006) and Sachs (2003)
8. Latitude (LAT)	The absolute value of the latitude of a country and has been scaled to be between zero and one.	Source: La Porta et al. (1999) Published works: Ayyagari et al. (2008b) and Beck et al. (2003)
9. KGtropics (KGT)	The percentage of land in Koppen-Geiger tropical climate zone as calculated by Mellinger et al. (2000) and expressed in decimals.	Source: Gallup (2012) Published works: Mellinger et al. (2000)
10. Catholicism (CAT)	A dummy variable that takes the value of 1 if Catholics are the dominant religious group in the country and zero otherwise.	Source: author's coding based on the percentage of religious groups in different countries worldwide given in La Porta et al. (1999)
11. Islam (ISLAM)	A dummy variable that takes the value of 1 if Muslims are the dominant religious group in the country and zero otherwise.	Source: author's coding based on the percentage of religious groups in different countries worldwide given in La Porta et al. (1999)
12. Other religions (OTHR)	A dummy variable that takes the value of 1 if the dominant religious group in the country is from a religion other than Protestantism, Catholicism, and Islam, and zero otherwise.	Source: author's coding based on the percentage of religious groups in different countries worldwide given in La Porta et al. (1999)
13. Islamic law (IL)	A dummy variable that takes the value of 1 if a country has Islamic law in its legal system and zero otherwise	Source: JuriGlobe (2013)
14. Ethnic fractionalisation index (EF)	"This variable indicates the probability that two randomly selected individuals in a country are not from the same ethnic group" (Ayyagari et al., 2008b, p. 1869). Higher values of the ethnic fractionalisation index imply higher ethnic fractionalisation in a given country.	Source: Alesina et al. (2003) Published works: Alesina et al. (2003) and Ayyagari et al. (2008b)

Table 3.2 continues

Variable	Definition	Source and published works that used the variable where available
Current institutional variables		
15. Strength of legal rights index (CRI)	The strength of legal rights index from the Doing Business Project. "The strength of legal rights index measures the degree to which collateral and bankruptcy laws protect the rights of borrowers and lenders and thus facilitate lending…The strength of legal rights index includes 8 aspects related to legal rights in collateral law and 2 aspects in bankruptcy law… The index ranges from 0 to 10, with higher scores indicating that collateral and bankruptcy laws are better designed to expand access to credit" (World Bank, 2012a, pp. 48-49). An explanation of the 10 aspects coded in this index can be found at Doing Business Project (2012g). Data from 2004 to 2011.	Source: African development indicators (2013) Published works: McDonald and Schumacher (2007)
16. Depth of credit information index (CII)	The depth of credit information index from the Doing Business Project. "The depth of credit information index measures rules and practices affecting the coverage, scope and accessibility of credit information available through either a public credit registry or a private credit bureau" (World Bank, 2012a, pp. 49-50). The index ranges from 0 to 6 based on the existence of 6 features of the public credit registry or private credit bureau (or both). An explanation of the 6 features that are coded in this index can be found at Doing Business Project (2012g). Data from 2004 to 2011.	Source: African development indicators (2013) Published works: Singh et al. (2009)
17. WG control of corruption (CC)	WG control of corruption indicator measures "perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests" (Kaufmann et al., 2010, p. 4). Its values range from approximately -2.5 to 2.5, with higher values signifying higher institutional enforcement quality. Data from 2004 to 2011.	Source: African development indicators (2013) Published works: La Porta et al. (2008b).
18. Procedures to enforce contracts (PEC)	The number of procedures to enforce contracts from the Doing Business Project. "A procedure is defined as any interaction, required by law or commonly used in practice, between the parties or between them and the judge or court officer. This includes steps to file and serve the case, steps for trial and judgment and steps necessary to enforce the judgment" (World Bank, 2012a, p. 56). An explanation of the methodology employed can be found at Doing Business Project (2012b). Data from 2004 to 2011.	Source: African development indicators (2013)
19. Time to enforce contracts (TEC)	The number of calendar days to enforce contracts from the Doing Business Project. "Time is … counted from the moment the plaintiff decides to file the lawsuit in court until payment. This includes both the days when actions take place and the waiting periods between. The average duration of different stages of dispute resolution is recorded" (World Bank, 2012a, p. 57). An explanation of the methodology employed can be found at Doing Business Project (2012b). Data from 2004 to 2011.	Source: African development indicators (2013) Published work: Djankov et al. (2007)

Table 3.2 continues

Variable	Definition	Source and published works that used the variable where available
Current institutional variables		
20. Cost to enforce contracts (CEC)	The cost to enforce contract expressed as a % of the claim and from the Doing Business Project. "Cost is recorded as a percentage of the claim, assumed to be equivalent to 200% of income per capita. No bribes are recorded. Three types of costs are recorded: court costs, enforcement costs and average attorney fees" (World Bank, 2012a, p. 57). An explanation of the methodology employed can be found at Doing Business Project (2012b). Data from 2004 to 2011.	Source: African development indicators (2013) Published work: McDonald and Schumacher (2007)
21. Procedures to register property (PRP)	The number of procedures to register property from the Doing Business Project. "A procedure is defined as any interaction of the buyer or the seller, their agents (if an agent is legally or in practice required) or the property with external parties, including government agencies, inspectors, notaries and lawyers…All procedures that are legally or in practice required for registering property are recorded, even if they may be avoided in exceptional cases" (World Bank, 2012a, p. 48). An explanation of the methodology employed can be found at Doing Business Project (2012d). Data from 2004 to 2011.	Source: African development indicators (2013)
22. Time to register property (TRP)	The number of calendar days to register property from the Doing Business Project. "The measure captures the median duration that property lawyers, notaries or registry officials indicate is necessary to complete a procedure [in registering property]. It is assumed that the minimum time required for each procedure is 1 day" (World Bank, 2012a, p. 48). An explanation of the methodology used can be found at Doing Business Project (2012d). Data from 2004 to 2011.	Source: African development indicators (2013)
23. Cost to register property (CRP)	The cost to register property expressed as a % of the property value and is from the Doing Business Project. "Cost is recorded as a percentage of the property value, assumed to be equivalent to 50 times income per capita. Only official costs required by law are recorded, including fees, transfer taxes, stamp duties and any other payment to the property registry, notaries, public agencies or lawyers…If cost estimates differ among sources, the median reported value is used" (World Bank, 2012a, p. 48). An explanation of the methodology used can be found at Doing Business Project (2012d). Data from 2004 to 2011.	Source: African development indicators (2013)
24. Recovery rate for creditors (RRC)	The recovery rate for creditors expressed as cents on a dollar and is from the Doing Business Project. "The recovery rate is recorded as cents on the dollar recouped by creditors through reorganization, liquidation or debt enforcement (foreclosure) proceedings. The calculation takes into account the outcome: whether the business emerges from the proceedings as a going concern or the assets are sold piecemeal" (World Bank, 2012a, p. 58). An explanation of the methodology employed can be found at Doing Business Project (2012e). Data from 2004 to 2011.	Source: African development indicators (2013) Published work: Djankov et al. (2008) used a similar measure.

Table 3.2 continues

Variable	Definition	Source and published works that used the variable where available
	Control variables	
25. GDP per capita (GCAP)	Natural logarithm of the annual "GDP per capita based on purchasing power parity (PPP). PPP GDP is gross domestic product converted to international dollars using purchasing power parity rates. An international dollar has the same purchasing power over GDP as the U.S. dollar has in the United States. GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in constant 2005 international dollars" (African development indicators, 2013, series NY.GDP.PCAP.PP.KD definition). Data available from 2004 to 2011.	Source: African development indicators (2013) Published works: Armour, Deakin, Sarkar et al. (2009) and La Porta et al. (2008b)
26. Inflation (INFL)	"Inflation as measured by the annual growth rate of the GDP implicit deflator shows the rate of price change in the economy as a whole. The GDP implicit deflator is the ratio of GDP in current local currency to GDP in constant local currency" (African development indicators, 2013, series NY.GDP.DEFL.KD.ZG definition). The values are in % and available from 2004 to 2011.	Source: African development indicators (2013) Published work: Djankov et al. (2007)
27. WG political stability (PS)	WG political stability captures "perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism" (Kaufmann et al., 2010, p. 4). Its values range from approximately -2.5 to 2.5, with higher values signifying more political stability. Data from 2004 to 2011	Source: African development indicators (2013)
28. Landlocked (LL)	A dummy variable signifying whether a country is a landlocked country. It takes the value of 1 if a country is landlocked and 0 otherwise.	Source: author's coding based on data from Central Intelligence Agency (2012)
29. Democracy index (DI)	This index corresponds to the Polity2 variable from the Polity IV dataset. The Polity2 variable is the revised combined polity score and combines the democracy and autocracy measures from the Polity IV dataset to give a single regime measure that goes from full institutionalised autocracy (-10) to full institutionalised democracy (+10) . The index values range from -10 to +10 and details of the construction of democracy, autocracy, and Polity2 variables are given in Marshall, Gurr, and Jaggers (2013a). Higher levels of the Polity2 imply higher levels of democratisation. Data from 2004 to 2011.	Source: African development indicators (2013) and Marshall, Gurr, and Jaggers (2013b) Published works: Girma and Shortland (2008); Huang (2010b); and Yang (2011).
Notes: The explanation of the variables summarised above are given in Section 3.3. The acronyms attached to the variable names are used to represent the variables in the pairwise correlation Table 4.2.		

3.4. Econometric model specification and estimation methods for the regression analyses

For the regression analyses, two different econometric model specifications that match the different types of variation in our historical and current institutional variables are developed. Since the historical institutional variables are time-invariant, without within-country variation, the variation in the historical institutional variables that can be used to carry out the analyses is the between-country variation. Hence data for the variables over the 8-year period were averaged to get a cross-section of 48 African former European colonies. This cross-section of 48 African former European colonies is used to test H1 to H4 and H13 to H16. As discussed in Chapter 2 and summarised in Section 2.7, H1 to H4 postulate the relationships between historical institutional factors and financial system development while H13 to H16 point to the links between historical and current institutional factors. For testing H1 to H4 and H13 to H16, the following econometric model is specified:

$$Y_c = \alpha + \boldsymbol{\beta}'\mathbf{X}_c + \boldsymbol{\gamma}'\mathbf{CONTROL}_c + u_c \quad (3.1)$$

The symbols above are defined as follows: c indexes country. Y_c is the dependent variable. For testing Hypotheses 1 to 4 the dependent variable is financial system development. For testing Hypotheses 13 to 16 the dependent variable is the current institutional variables taken one at a time. $\mathbf{X}_c$ is a vector of the key explanatory variables made up of the historical institutional variables. $\mathbf{CONTROL}_c$ is a vector of control variables. For testing Hypotheses 1 to 4 and Hypotheses 13 to 16 the control variables are GDP per capita, inflation, WG political stability, landlocked and democracy index. $\boldsymbol{\beta}$ is the vector of parameters of the key explanatory variables;

$\boldsymbol{\gamma}$ is the vector of parameters of the control variables; and u_c is the error term. The regression coefficients of $\boldsymbol{\beta}$ are of interest in estimating Equation (3.1).

The parameters in the econometric model in Equation (3.1) are estimated using the Ordinary Least Squares (OLS) estimation method for the cross-section of 48 African former European colonies. Since the averaged data is in cross-sectional form and the key explanatory variables can be considered as relatively exogenous determinants (Alesina et al., 2003; La Porta et al., 1999) of the dependent variables, the OLS estimation method can be used for the regression analysis (Wooldridge, 2009). The relatively exogenous nature of the historical institutional variables should reduce reverse causality concerns between the financial system development variables for the period 2004 to 2011 and the historical institutional variables. Moreover, the use of control variables should reduce omitted variable bias concerns in the model. Although there are limitations to the OLS estimation method, it has been used by similar studies in this literature to estimate cross-sectional data (see e.g., Beck et al., 2003; Djankov et al., 2007; La Porta et al., 1998; La Porta et al., 2008b). Hence OLS estimation technique still has some value for cross-sectional studies in this area of study.

To evaluate Hypotheses 5 to 12 that deal with the relationships between current institutional factors and financial system development, a different econometric model is specified because the key explanatory variables, specifically the current institutional variables, have both between and within country variation. Consequently, a panel econometric model and estimation technique were taken advantage of in order to capture the effects of the between and within-country variations in the current institutional variables. Panel econometric models and estimation techniques enable the evaluation of the effects of reforms to the current institutional variables on financial system development because these models capture between and within

country variation over time. Moreover, panel data analysis will also allow the control of year fixed effects and the lagging of the current institutional variables that should reduce reverse causality concerns between the time-varying dependent and time-varying current institutional variables. Thus applying panel econometric models and estimation techniques should reveal a more robust association between the time-varying current institutional variables and financial system development proxies than using an OLS estimation technique. Consequently, the following random effects model is specified:

$$Y_{ct} = \alpha + \boldsymbol{\varphi}'\mathbf{Z}_{ct-1} + \boldsymbol{\gamma}'\mathbf{CONTROL}_{ct-1} + \delta_t + \nu_c + \varepsilon_{ct} \quad (3.2)$$

The symbols above are explained as follows: c indexes country; t indexes years. Y_{ct} is the dependent variable and in testing Hypotheses 5 to 12 the dependent variable is financial system development. $\mathbf{Z}_{ct}$ is a vector of the key explanatory variables made up of the current institutional variables. $\mathbf{CONTROL}_{ct}$ is a vector of control variables. For testing Hypotheses 5 to 12, the control variables are GDP per capita, inflation, WG political stability, landlocked, democracy index, and the statistically significant historical institutional variables from testing Hypotheses 1 to 4. The $\boldsymbol{\varphi}$ is the vector of the parameters of the key explanatory variables; $\boldsymbol{\gamma}$ is the vector of the parameters of the control variables; δ_t signifies year dummies; ν_c denotes unobserved country effects; and ε_{ct} is the error term. The regression coefficients of $\boldsymbol{\varphi}$ are of interest in estimating Equation (3.2). The time-varying key explanatory variables and control variables are lagged by one year in the regression analyses to reduce any potential reverse causality bias and reverse causality interpretations of the regression results. The year dummies represent year fixed effects and are included to control for any systemic shocks that may affect the dependent variable over

our period of study. Hence the year dummies should control for the possible effects of the global financial and economic crisis from 2007 onwards on the financial system development variables.

The parameters in Equation (3.2) were estimated with a random effects estimator using the random effects estimation option of panel data regression (the xtreg command with option re) as implemented in the Stata® statistical software (Cameron and Trivedi, 2010). Another possible estimator is the fixed effects estimator. A random effects model was specified and the random effects estimator was chosen over a fixed effects model and estimator due to the nature of the current institutional variables in the sample. Although there have been within-country changes to the current institutional variables, these changes are not much and some current institutional variables remain constant for many countries over the period of study. For example, the strength of legal rights index has a constant value from 2004 to 2011 for Algeria, Angola, Botswana, Cape Verde, and many other countries in the sample. Moreover, the strength of legal rights index has a mean of 4.45 with a within-country standard deviation of 0.71 and a between-country standard deviation of 2.2, which is about three times that of the within-country variation.

In the same way, the procedures to enforce contract variable has a mean of 39.56 with a within-country standard deviation of 0.43 and a between-country standard deviation of 5.22, which is about 12 times that of the within-country variation. These two examples from the standard deviation of the strength of legal rights index and the procedures to enforce contract variable imply that there is more between than within country variation in the current institutional variables and using the fixed effects estimator may produce imprecise estimates because a fixed effects estimator relies only on within-country variation (Cameron and Trivedi, 2005).

In addition, using a random effects model allows the inclusion of the historical institutional variables that were found to be statistically significantly associated with financial system development from testing H1 to H4 using Equation (3.1). In this way the effects of the statistically significant historical institutional variables on financial system development can be evaluated in the presence of the statistically significant current institutional variables. Notwithstanding the justifications above for choosing the random effects estimator over the fixed effects estimator, the Hausman specification test (Cameron and Trivedi, 2010; Hausman, 1978; Wooldridge, 2009) was used to check whether a random effects model is proper for the analysis. The Hausman test did not reject the random effects model and hence a random effects model and the random effects estimation technique were used to test Hypotheses 5 to 12.

It is noted here that in the cross-sectional and panel analyses, heteroskedasticity-robust standard errors that are White-adjusted heteroskedasticity-consistent standard errors (White, 1980; Wooldridge, 2009) are reported. These White-adjusted heteroskedasticity-consistent standard errors can take care of possible heteroskedasticity problems in the data. In addition, although effort has been made to ensure the robustness of the results gotten from the empirical analyses in this dissertation, it is preferable not to give too strong a causal interpretation to the regression coefficients from the regression analyses. It is better to view the regression coefficients as partial correlations between the key explanatory variables and the dependent variables of interest in this study.

It may be argued that causality can be better investigated when examining the effects of current institutional factors on financial system development by using instrumental variable estimation techniques such as Two-stage Least Squares (2SLS). But as noted by many recent papers (see e.g., Glaeser, La Porta, Lopez-de-Silanes, and Shleifer, 2004; La Porta et al., 2008b),

the instruments that have been employed in the financial system development literature (e.g., the legal origin variables and the disease endowment variables) may not satisfy the necessary exclusion restrictions that make them valid instruments to estimate the causal effects of legal institutions on economic outcomes. Hence in the absence of valid instruments, instrumental variable techniques are not employed in the empirical analyses.

3.5. Conclusions

The research methods used in carrying out the research in this dissertation have been discussed in this chapter. First, the research setting for the research was explained and justified. Second, the sample selection criteria were delineated. Third, the variables, the variable definitions, and the measures for the dependent and explanatory variables were discussed. Finally, the econometric models were specified and the estimation techniques for estimating the models discussed and justified. Chapter 4, the next chapter, will present the results from the empirical analyses carried out with the data, measures, and estimation techniques discussed in this chapter.

4. Results of empirical analyses and hypotheses testing

In this chapter the results from the empirical analyses to test the hypotheses developed in Chapter 2 are presented. First, the descriptive and summary statistics for all the variables used in the empirical analyses are displayed. Second, the results from analysing the effects of historical institutional factors on financial system development are shown. Third, the results from the regressions on the effects of current institutional factors on financial system development are presented. Finally, the results from the analyses of the effects of historical institutional factors on current institutional factors are exhibited. Robustness checks were also carried out in the empirical analyses, and some of the results of the robustness checks are presented in this chapter while the rest are presented in the Appendices.

4.1. Descriptive and summary statistics

The descriptive and summary statistics for the variables used in the empirical analyses below are given in Table 4.1 while the corresponding pairwise correlation matrix for the variables is given in Table 4.2.

Table 4.1: Descriptive and summary statistics

Variable	Number of countries	Number of observations	Mean	Standard deviation	Minimum	Maximum
1. DCP	48	375	23.15	25.31	0.82	167.54
2. DMB	47	358	20.32	18.33	0.89	86.72
3. DMBOFI	47	358	22.21	24.65	0.89	149.78
4. French colony (FCO)	48	384	0.42	0.49	0.00	1.00
5. Other colony (OCO)	48	384	0.25	0.43	0.00	1.00
6. French legal family (FLF)	48	384	0.71	0.46	0.00	1.00
7. Malaria stability index (MSI)	47	376	10.60	8.23	0.00	31.55
8. Latitude (LAT)	48	384	0.15	0.10	0.00	0.38
9. KGtropics (KGT)	43	344	0.46	0.42	0.00	1.00
10. Catholicism (CAT)	47	376	0.28	0.45	0.00	1.00
11. Islam (ISLAM)	47	376	0.34	0.47	0.00	1.00
12. Other religions (OTHR)	47	376	0.32	0.47	0.00	1.00
13. Islamic law (IL)	48	384	0.25	0.43	0.00	1.00
14. Ethnic fractionalisation index (EF)	47	376	0.62	0.25	0.00	0.93
15. Strength of legal rights index (CRI)	48	375	4.45	2.30	1.00	10.00
16. Depth of credit information index (CII)	48	375	1.56	1.65	0.00	6.00
17. WG control of corruption (CC)	48	384	-0.56	0.57	-1.71	1.14
18. Procedures to enforce contracts (PEC)	48	375	39.56	5.24	24.00	54.00
19. Time to enforce contracts (TEC)	48	375	671.56	271.83	230.00	1715.00
20. Cost to enforce contracts (CEC)	48	375	48.36	34.41	14.30	151.80
21. Procedures to register property (PRP)	48	375	6.56	2.26	4.00	14.00
22. Time to register property (TRP)	48	375	86.76	75.76	9.00	397.00
23. Cost to register property (CRP)	48	375	10.55	5.65	0.40	27.80
24. Recovery rate for creditors (RRC)	43	338	22.73	14.20	0.00	64.50
25. GDP per capita (GCAP)	48	382	7.60	1.04	5.58	10.37
26. Inflation (INFL)	48	382	8.76	9.02	-33.13	80.75
27. WG political stability (PS)	48	384	-0.43	0.87	-2.69	1.19
28. Landlocked (LL)	48	384	0.27	0.44	0.00	1.00
29. Democracy index (DI)	46	367	1.83	5.33	-9.00	10.00

Notes: The explanation and sources of the variables above are given in Table 3.2. DCP, DMB, DMBOFI, Cost to enforce contracts, Cost to register property, Recovery rate for creditors, and Inflation are measured in %. French colony, Other colony, French legal family, Catholicism, Islam, Other religions, Islamic law, and Landlocked are dummy variables. Latitude and Ethnic fractionalisation index are measured in decimals. Malaria stability index, KGtropics, WG control of corruption, and WG political stability are measured in units and decimals. Strength of legal rights index, Depth of credit information index, Procedures to enforce contracts, Time to enforce contracts, Procedures to register property, Time to register property, and Democracy index are measured in units. GDP per capita is measured in the natural logarithm of GDP per capita at purchasing power parity in constant 2005 international dollars.

Table 4.2: Pairwise correlation coefficients

	DCP	DMB	DMBOFI	FCO	OCO	FLF	MSI	LAT	KGT	CAT	ISLAM	OTHR	IL	EF
DCP	1.000													
DMB	0.909*	1.000												
DMBOFI	0.995*	0.926*	1.000											
FCO	-0.154*	-0.127*	-0.154*	1.000										
OCO	0.000	0.060	0.010	-0.488*	1.000									
FLF	-0.098*	0.000	-0.093*	0.542*	0.265*	1.000								
MSI	-0.379*	-0.402*	-0.385*	0.354*	-0.317*	0.060	1.000							
LAT	0.493*	0.537*	0.511*	0.087*	-0.152*	-0.040	-0.376*	1.000						
KGT	-0.404*	-0.489*	-0.417*	-0.093*	0.146*	0.040	0.272*	-0.767*	1.000					
CAT	-0.157*	-0.181*	-0.169*	-0.244*	0.445*	0.195*	-0.236*	-0.486*	0.434*	1.000				
ISLAM	-0.020	0.040	-0.010	0.381*	-0.291*	0.080	0.119*	0.347*	-0.347*	-0.444*	1.000			
OTHR	0.170*	0.119*	0.171*	-0.128*	-0.163*	-0.153*	0.123*	0.100*	0.010	-0.423*	-0.492*	1.000		
IL	0.112*	0.216*	0.136*	0.098*	-0.111*	-0.050	-0.235*	0.319*	-0.332*	-0.342*	0.663*	-0.271*	1.000	
EF	-0.215*	-0.320*	-0.225*	0.133*	-0.163*	-0.220*	0.517*	-0.438*	0.390*	-0.097*	-0.132*	0.175*	-0.219*	1.000
CRI	0.315*	0.209*	0.303*	-0.486*	-0.267*	-0.799*	-0.113*	0.050	-0.060	-0.208*	-0.204*	0.305*	-0.070	0.124*
CII	0.535*	0.521*	0.544*	-0.128*	0.176*	0.020	-0.378*	0.391*	-0.265*	-0.060	-0.169*	0.198*	-0.010	-0.260*
CC	0.549*	0.612*	0.552*	-0.194*	-0.060	-0.163*	-0.376*	0.481*	-0.521*	-0.111*	-0.136*	0.212*	-0.070	-0.399*
PEC	-0.367*	-0.324*	-0.369*	0.275*	-0.103*	0.217*	0.124*	-0.080	0.030	0.050	0.340*	-0.390*	0.262*	0.070
TEC	-0.096*	-0.130*	-0.116*	-0.020	0.160*	0.269*	-0.030	0.030	0.020	0.092*	-0.120*	0.149*	-0.100*	0.020
CEC	-0.275*	-0.324*	-0.272*	-0.030	0.125*	0.020	0.193*	-0.251*	0.207*	0.010	-0.280*	0.137*	-0.272*	0.206*
PRP	-0.080	-0.092*	-0.088*	-0.290*	0.151*	-0.215*	-0.159*	-0.050	0.097*	0.040	0.060	-0.060	0.238*	0.159*
TRP	-0.117*	-0.080	-0.110*	-0.030	0.185*	0.156*	0.030	-0.146*	0.250*	0.080	-0.239*	0.208*	-0.183*	0.105*
CRP	-0.188*	-0.223*	-0.194*	0.463*	-0.133*	0.347*	0.516*	-0.194*	0.209*	-0.040	0.080	-0.040	-0.212*	0.305*
RRC	0.374*	0.447*	0.380*	-0.138*	-0.360*	-0.371*	-0.269*	0.489*	-0.349*	-0.249*	0.070	0.206*	0.247*	-0.407*
GCAP	0.433*	0.459*	0.441*	-0.080	-0.070	0.020	-0.305*	0.288*	-0.200*	0.135*	-0.040	-0.040	0.080	-0.406*
INFL	-0.147*	-0.185*	-0.143*	-0.252*	0.161*	-0.113*	-0.020	-0.160*	0.113*	0.155*	-0.104*	-0.020	-0.060	0.040
PS	0.305*	0.360*	0.301*	-0.161*	0.030	-0.070	-0.208*	0.235*	-0.297*	0.040	-0.271*	0.222*	-0.247*	-0.278*
LL	-0.223*	-0.262*	-0.236*	-0.040	-0.135*	-0.125*	0.090*	0.040	-0.245*	0.040	-0.143*	-0.020	-0.352*	-0.108*
DI	0.226*	0.193*	0.225*	-0.175*	-0.040	-0.285*	0.000	0.050	-0.099*	-0.147*	-0.210*	0.303*	-0.269*	0.050

Notes: *significant at 10%. The variable names are given with acronyms and the meaning of each acronym is given in Table 3.2

Table 4.2 continues

	CRI	CII	CC	PEC	TEC	CEC	PRP	TRP	CRP	RRC	GCAP	INFL	PS	LL	DI
DCP															
DMB															
DMBOFI															
FCO															
OCO															
FLF															
MSI															
LAT															
KGT															
CAT															
ISLAM															
OTHR															
IL															
EF															
CRI	1.000														
CII	0.240*	1.000													
CC	0.237*	0.334*	1.000												
PEC	-0.339*	-0.363*	-0.557*	1.000											
TEC	-0.305*	0.030	-0.107*	0.147*	1.000										
CEC	-0.060	-0.128*	-0.239*	-0.060	-0.102*	1.000									
PRP	0.193*	-0.010	-0.185*	0.109*	0.030	-0.089*	1.000								
TRP	-0.179*	-0.111*	-0.159*	-0.020	0.141*	0.097*	0.040	1.000							
CRP	-0.240*	-0.191*	-0.311*	0.134*	0.092*	0.178*	-0.030	0.136*	1.000						
RRC	0.407*	0.290*	0.538*	-0.235*	-0.109*	-0.486*	0.145*	-0.264*	-0.315*	1.000					
GCAP	0.143*	0.480*	0.336*	-0.143*	0.120*	-0.528*	-0.070	-0.197*	-0.155*	0.590*	1.000				
INFL	0.050	-0.097*	-0.085*	0.106*	-0.040	0.060	0.121*	0.040	-0.127*	-0.127*	-0.030	1.000			
PS	0.132*	0.240*	0.675*	-0.479*	0.060	-0.120*	-0.309*	-0.060	-0.130*	0.303*	0.429*	-0.109*	1.000		
LL	0.156*	0.020	0.089*	-0.203*	-0.098*	0.198*	-0.060	-0.060	-0.030	-0.070	-0.275*	-0.060	-0.030	1.000	
DI	0.358*	-0.010	0.369*	-0.199*	0.040	0.156*	-0.130*	-0.060	0.050	0.115*	-0.128*	-0.010	0.285*	0.040	1.000

Notes: *significant at 10%. The variable names are given with acronyms and the meaning of each acronym is given in Table 3.2

As seen in Table 4.2, the pairwise correlation matrix shows that the three financial system development variables, specifically DCP, DMB, and DMBOFI, are highly statistically significantly correlated, with correlation coefficients above 0.90. Table 4.2 also shows that the historical and current institutional variables that are statistically significantly correlated with the financial system development variables generally have the signs as hypothesised, except Islamic law that is positively associated with financial system development instead of being negatively associated with financial system development as hypothesised in H3c.

For the historical institutional variables, French colony, French legal family, malaria stability index, KGtropics, and ethnic fractionalisation have statistically significant negative association with financial system development variables. Latitude and Islamic law are positively and statistically significantly correlated with the financial system development variables. Islam was the only historical institutional variable with statistically insignificant association with financial system development variables.

For the current institutional variables, the strength of legal rights index, the depth of credit information index, the WG control of corruption, and the recovery rate for creditors were positively and statistically significantly associated with the financial system development variables. The procedures to enforce contracts, the time to enforce contracts, the cost to enforce contracts, the procedures to register property, the time to register property and the cost to register property were negatively and statistically significantly associated with financial system development variables.

The control variables also had the hypothesised relationships with the financial system development variables. GDP per capita, WG political stability, and democracy index were

statistically significantly positively correlated with the financial system development variables while inflation and landlocked were statistically significantly negatively correlated with the financial system development variables.

The pairwise correlation results discussed above are simple correlations that do not control for other variables. Multiple regression analyses are used below to access the partial correlations between the key explanatory variables and the dependent variable of interest, while controlling for other explanatory variables. To test the hypotheses developed earlier the regression coefficients of the key explanatory variables summarised in Table 3.2 are examined. A statistically significant regression coefficient of a key explanatory variable that has the expected sign as hypothesised supports the corresponding hypothesis. When the regression coefficient is not statistically significant, the corresponding hypothesis is not supported.

4.2. Regression results: Historical institutional factors

To test Hypotheses 1 to 4 Equation (3.1) is estimated using OLS estimation as discussed in section 3.4. The regression results are given in Table 4.3.

Table 4.3: Effects of historical institutional variables on DCP

	Dependent variable: DCP							
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
GDP per capita	10.53*	10.91*	9.45	7.99	7.93	13.66*	10.84	10.42
	(5.86)	(6.12)	(5.73)	(4.89)	(6.01)	(6.99)	(6.57)	(7.34)
Inflation	-1.57**	-1.21**	-1.17**	-0.74**	-0.84**	-1.19**	-0.98**	-1.05**
	(0.58)	(0.53)	(0.47)	(0.33)	(0.39)	(0.48)	(0.45)	(0.45)
WG political stability	-1.07	-0.19	-1.01	-1.75	-2.57	-2.33	0.94	-0.25
	(4.07)	(4.04)	(4.10)	(4.55)	(4.38)	(5.18)	(4.44)	(3.69)
Landlocked	-9.91*	-8.75*	-7.75*	-9.69*	-13.42**	-5.24	-5.64	-8.91*
	(5.26)	(5.03)	(4.59)	(5.43)	(6.10)	(5.68)	(5.36)	(4.96)
Democracy index	1.24	1.29	1.43	1.36	1.16	1.68	1.53	1.45
	(0.90)	(0.91)	(0.97)	(0.89)	(1.19)	(0.99)	(0.99)	(1.02)
French colony	-12.87							
	(8.22)							
Other colony	-3.61							
	(8.30)							
French legal family		-5.86						
		(7.73)						
Malaria stability index			-0.78**					
			(0.37)					
Latitude				100.20**				
				(40.49)				
KGtropics					-21.26***			
					(7.58)			
Catholicism						-8.55		
						(5.64)		
Islam						-2.72		
						(4.90)		
Other religions						1.16		
						(7.22)		
Islamic law							6.69	
							(8.16)	
Ethnic fractionalisation index								-7.75
								(16.88)
Number of countries	46	46	46	46	43	45	46	46
R-squared	0.39	0.36	0.41	0.48	0.38	0.41	0.36	0.36
Adjusted R-squared	0.281	0.265	0.321	0.396	0.282	0.282	0.265	0.259

Notes: Robust standard errors are given in parentheses. All regressions include the constant term. The omitted colony is the British colony. The omitted legal family is the English legal family. The omitted religion is Protestantism. ***, **, * imply significance at the 1%, 5% and 10% levels.

Table 4.3 shows that only the coefficients of malaria stability index (-0.78), latitude (100.20) and KGtropics (-21.26) are statistically significantly associated with DCP and in the expected direction. As mentioned earlier, latitude and KGtropics act as alternative measures and as robustness checks for the malaria stability index that is the main measure of disease endowment in this study. The statistically significant coefficients of these three measures of disease

endowment lend support to H2 and the disease endowment theory. The robustness of the results in Table 4.3 is examined by using the two other alternative measures of financial system development: DMB and DMBOFI. The results of these analyses are given in Table 4.4 and Table 4.5.

Table 4.4: Effects of historical institutional variables on DMB

	Dependent variable: DMB							
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
GDP per capita	8.38**	8.73**	7.36**	6.06*	4.30	9.00**	8.12**	7.48*
	(3.38)	(3.46)	(3.37)	(3.04)	(2.99)	(3.51)	(3.72)	(3.88)
Inflation	-1.43***	-1.19***	-1.19***	-0.87***	-0.74**	-1.02***	-1.02***	-1.12***
	(0.46)	(0.40)	(0.41)	(0.29)	(0.29)	(0.36)	(0.34)	(0.37)
WG political stability	0.37	0.85	0.48	0.05	-0.44	1.07	2.26	0.60
	(2.23)	(2.16)	(2.40)	(2.78)	(2.85)	(2.60)	(2.57)	(2.30)
Landlocked	-6.74*	-5.89	-5.87*	-7.40*	-10.65**	-5.10	-3.41	-7.46*
	(3.61)	(3.51)	(3.45)	(4.00)	(4.26)	(3.97)	(3.75)	(4.05)
Democracy index	0.90*	0.99*	0.97*	0.88*	0.36	0.95*	1.07*	1.03*
	(0.53)	(0.58)	(0.54)	(0.52)	(0.59)	(0.56)	(0.58)	(0.58)
French colony	-6.83							
	(4.62)							
Other colony	-0.75							
	(5.92)							
French legal family		-1.45						
		(4.00)						
Malaria stability index			-0.52*					
			(0.27)					
Latitude				71.65**				
				(26.91)				
KGtropics					-17.21***			
					(5.88)			
Catholicism						-8.23		
						(5.72)		
Islam						-1.64		
						(4.79)		
Other religions						-2.46		
						(4.79)		
Islamic law							7.61	
							(6.41)	
Ethnic fractionalisation index								-13.02
								(12.54)
Number of countries	45	45	45	45	42	45	45	45
R-squared	0.48	0.46	0.51	0.58	0.50	0.48	0.48	0.48
Adjusted R-squared	0.382	0.372	0.429	0.511	0.411	0.362	0.398	0.400

Notes: Robust standard errors are given in parentheses. All regressions include the constant term. The omitted colony is the British colony. The omitted legal family is the English legal family. The omitted religion is Protestantism. ***, **, * imply significance at the 1%, 5% and 10% levels.

Table 4.5: Effects of historical institutional variables on DMBOFI

	Dependent variable: DMBOFI							
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
GDP per capita	12.02**	12.57**	10.90*	9.20*	8.72	13.13*	12.36*	12.03
	(5.79)	(6.01)	(5.76)	(4.94)	(6.65)	(6.48)	(6.76)	(7.31)
Inflation	-1.69***	-1.45**	-1.35***	-0.93***	-0.98**	-1.18**	-1.23**	-1.29***
	(0.58)	(0.54)	(0.49)	(0.31)	(0.47)	(0.46)	(0.47)	(0.46)
WG political stability	-2.12	-1.67	-1.98	-2.56	-2.73	-1.89	-0.67	-1.60
	(4.09)	(4.07)	(4.12)	(4.53)	(4.46)	(4.85)	(4.73)	(3.81)
Landlocked	-7.69	-6.49	-5.94	-7.93	-11.92**	-4.95	-4.44	-6.68
	(4.92)	(4.83)	(4.53)	(5.23)	(5.70)	(5.30)	(5.19)	(5.11)
Democracy index	1.49	1.56*	1.62	1.51*	1.24	1.54	1.72	1.69
	(0.91)	(0.91)	(0.98)	(0.89)	(1.30)	(0.93)	(1.02)	(1.04)
French colony	-10.89							
	(7.31)							
Other colony	-4.38							
	(8.17)							
French legal family		-5.87						
		(7.12)						
Malaria stability index			-0.67*					
			(0.35)					
Latitude				93.29**				
				(37.15)				
KGtropics					-19.06**			
					(7.27)			
Catholicism						-8.72		
						(5.59)		
Islam						-2.28		
						(4.79)		
Other religions						0.92		
						(6.69)		
Islamic law							4.26	
							(8.82)	
Ethnic fractionalisation index								-7.05
								(16.70)
Number of countries	45	45	45	45	42	45	45	45
R-squared	0.43	0.41	0.45	0.51	0.41	0.42	0.40	0.40
Adjusted R-squared	0.322	0.318	0.359	0.437	0.305	0.293	0.311	0.311

Notes: Robust standard errors are given in parentheses. All regressions include the constant term. The omitted colony is the British colony. The omitted legal family is the English legal family. The omitted religion is Protestantism. ***, **, * imply significance at the 1%, 5% and 10% levels.

Table 4.4 and Table 4.5 reveal the same qualitative results as in Table 4.3. Only the coefficients of malaria stability index, latitude, and KGtropics are statistically significantly associated with financial system development variables and in the expected direction. The coefficients of the other historical institutional variables generally have the hypothesised signs, but are not statistically significant. The positive coefficient of Islamic law suggests that countries with Islamic law in their legal system do not have a lower financial system development than

countries without Islamic law in their legal system and this goes against H3c. The coefficient of Islamic law, however, is not statistically significant. Hence H1a, H1b, H3a, H3b, H3c, and H4 were not supported in the data, while H2 was supported in the data, even after using different financial system development variables.

For further robustness checks, the removal of South Africa from the sample was considered. South Africa had the highest level of DCP and DMBOFI in the sample of African former European colonies. South Africa had average DCP and DMBOFI values of 150.38% and 139.98% respectively, while Mauritius, the country with the next highest level, had average DCP and DMBOFI values of 80.55% and 75.49% respectively. The next country after Mauritius in the level of DCP is Tunisia with an average value of 62.34%. In essence, South Africa had about double the ratio of credit to private sector to GDP of that of Mauritius.

South Africa, however, did not have the highest level of DMB and had about the same level as Mauritius that had the highest level. For DMB, South Africa had 70.51% while Mauritius had 75.49%. The regression results in Table 4.4 with DMB as the dependent variable should provide a kind of indirect evidence that South Africa does not create outlier effects on the regression results presented in Table 4.3 to Table 4.5; this is because we get the same qualitative results using either DCP or DMB or DMBOFI as the dependent variable. In essence, H2 was supported in the data, while H1a, H1b, H3, and H4 were not supported, whether DCP, DMB, or DMBOFI are used as the dependent variable.

Nevertheless South Africa was removed from the sample to check whether it has outlier effects. The results, provided in Appendix 1, Appendix 2, and Appendix 3, were generally qualitatively the same as those gotten in Table 4.3 to Table 4.5, except the coefficient of Islamic

law variable that became statistically significant in Appendix 1. The statistical significance of Islamic law was not robust across the three financial system development variables as can be seen from the insignificant coefficient of Islamic law in Appendix 2 and Appendix 3. Consequently, it can be seen that the results provided in Appendix 1, Appendix 2, and Appendix 3 were qualitatively the same as those gotten in Table 4.3 to Table 4.5. It is worthwhile to note that including South Africa in the sample of African former European colonies for this study is of great theoretical value because South Africa was a settler colony and provides the variation in the data of African former European colonies required to check the effects of colonisation on financial system development in Africa. Hence South Africa was kept in the sample for the subsequent analyses.

A look at Tables 4.3 to 4.5 reveals that many of the control variables, specifically WG political stability and landlocked, were not statistically significant in many estimations. As a robustness check, these two control variables were removed from the models and the regressions were rerun. These results are given in Appendix 4, Appendix 5, and Appendix 6 and are qualitatively the same as those gotten in Table 4.3 to Table 4.5. Hence the results in Table 4.3 to Table 4.5 are robust to the exclusion of statistically insignificant control variables.

In the next section, the effects of current institutional variables on financial system development will be examined. Because among the historical institutional variables the disease endowment variable is the only statistically significant determinant of financial system development, the malaria stability index will be used as a control variable, in addition to the other control variables used in the regressions above, when examining the effects of current institutional variables on financial system development using panel estimation techniques.

4.3. Regression results: Current institutional factors

As discussed in section 3.4 the random effects model and estimation technique is used to test Hypotheses 5 to 12 that are related to the effects of the current institutional variables on financial system development. In order to be sure that the random effects model and estimation technique were suited to the analyses when compared to a fixed effects model and estimation technique, the Hausman specification test was carried out on regressions that included all the current institutional variables and the control variables. The Breusch-Pagan Lagrange Multiplier test for random effects (StataCorp, 2011) was also carried out. A failure to reject the null hypothesis for the Hausman test implies that a random effects model is appropriate, while a rejection of the null hypothesis for the Breusch-Pagan test means that a random effects model is appropriate.

The results are given in Table 4.6 and both the Hausman test (p-value = 1.00) and Breusch-Pagan test (p-value = .00) support the use of a random effects model. Consequently, a random effects model and random effects estimation technique were used to test Hypotheses 5 to 12. The current institutional variables were examined individually while controlling for the control variables. The results are shown in Table 4.7. We can see that among the current institutional variables only the coefficients of WG control of corruption (8.15) and the time to enforce contracts (-0.01) variables were statistically significant and in the hypothesised directions. The other current institutional variables had statistically insignificant coefficients and some of them such as the depth of credit information index and procedures to register property had signs different from the hypothesised signs. To access the robustness of the results in Table 4.7, similar regressions are performed using the two alternative measures of financial system development: DMB and DMBOFI. The results are presented in Table 4.8 and Table 4.9 and they confirm the results given in Table 4.7.

Table 4.6: Hausman specification test for the validity of random effects model.

	Dependent variable: DCP
Explanatory variables	(1)
GDP per capita	9.84**
	(4.26)
Inflation	-0.07**
	(0.03)
WG political stability	0.57
	(1.06)
Landlocked	-10.16
	(6.23)
Democracy index	-0.11
	(0.19)
Malaria stability index	-0.41
	(0.29)
Strength of legal rights index	0.06
	(1.28)
Depth of credit information index	-0.18
	(0.82)
WG control of corruption	5.83**
	(2.76)
Procedures to enforce contracts	-0.86**
	(0.39)
Time to enforce contracts	-0.01*
	(0.01)
Cost to enforce contracts	-0.00
	(0.05)
Procedures to register property	0.79
	(0.88)
Time to register property	0.01
	(0.01)
Cost to register property	-0.03
	(0.15)
Recovery rate for creditors	0.10
	(0.07)
Number of observations	274
Number of countries	41
R-squared (Between)	0.43
Hausman test for random effects (test statistic)	2.66
Hausman test for random effects (p-value)	1.00
Breusch-Pagan Lagrange Multiplier test for random effects (test statistic)	534.14
Breusch-Pagan Lagrange Multiplier test for random effects (p-value)	0.00

Notes: Robust standard errors are given in parentheses. All regressions include year dummies and the constant term. ***, **, * imply significance at the 1%, 5% and 10% levels.

These two statistically significant variables, WG control of corruption and time to enforce contracts, were combined in the same model and the results of the regression with the three financial system development variables as dependent variables are presented in Table 4.10.

Table 4.7: Effects of current institutional variables on DCP

	Dependent variable: DCP									
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
GDP per capita	12.23**	12.54**	10.84**	11.92**	12.61**	12.67**	12.81**	12.75**	12.61**	11.54**
	(4.99)	(4.89)	(4.54)	(5.06)	(5.09)	(5.38)	(5.24)	(5.05)	(5.10)	(4.81)
Inflation	-0.04	-0.04	-0.05*	-0.04	-0.03	-0.04	-0.04	-0.04	-0.04	-0.06
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)
WG political stability	0.49	0.49	-0.13	0.47	0.63	0.49	0.47	0.55	0.47	0.66
	(0.86)	(0.86)	(0.91)	(0.87)	(0.80)	(0.85)	(0.86)	(0.90)	(0.91)	(0.98)
Landlocked	-4.94	-4.41	-6.38	-6.72	-4.86	-4.38	-4.14	-4.28	-4.40	-6.42
	(5.25)	(4.69)	(5.09)	(5.73)	(4.54)	(4.91)	(4.92)	(4.87)	(4.88)	(5.05)
Democracy index	-0.03	-0.00	-0.03	-0.05	-0.02	-0.03	-0.03	-0.04	-0.03	-0.09
	(0.17)	(0.17)	(0.15)	(0.17)	(0.17)	(0.17)	(0.17)	(0.18)	(0.18)	(0.17)
Malaria stability index	-0.65*	-0.68*	-0.52	-0.61*	-0.66*	-0.65*	-0.62	-0.65*	-0.65*	-0.56
	(0.36)	(0.38)	(0.34)	(0.36)	(0.38)	(0.38)	(0.39)	(0.39)	(0.39)	(0.35)
Strength of legal rights index	0.48									
	(1.33)									
Depth of credit information index		-0.26								
		(0.89)								
WG control of corruption			8.15***							
			(3.07)							
Procedures to enforce contracts				-0.86						
				(0.53)						
Time to enforce contracts					-0.01**					
					(0.01)					
Cost to enforce contracts						0.00				
						(0.06)				
Procedures to register property							0.63			
							(0.78)			
Time to register property								0.01		
								(0.01)		
Cost to register property									-0.02	
									(0.16)	
Recovery rate for creditors										0.08
										(0.07)
Number of observations	306	306	314	306	306	306	306	306	306	274
Number of countries	46	46	46	46	46	46	46	46	46	41
R-squared (Between)	0.290	0.267	0.373	0.330	0.298	0.270	0.257	0.268	0.270	0.336

Notes: Robust standard errors in parentheses. All regressions include year dummies and the constant term. ***, **, * imply significance at the 1%, 5% and 10% levels.

Table 4.8: Effects of current institutional variables on DMB

	Dependent variable: DMB									
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
GDP per capita	8.54**	9.00***	7.36**	8.33**	8.66**	8.16**	8.80**	8.88**	8.66**	10.37***
	(3.71)	(3.48)	(3.31)	(3.70)	(3.65)	(3.93)	(3.73)	(3.62)	(3.67)	(3.67)
Inflation	-0.04	-0.04	-0.05	-0.04	-0.03	-0.04	-0.04	-0.04	-0.04	-0.06
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)
WG political stability	0.63	0.60	0.26	0.58	0.77	0.63	0.61	0.67	0.67	0.87
	(0.69)	(0.70)	(0.65)	(0.72)	(0.64)	(0.69)	(0.70)	(0.75)	(0.73)	(0.69)
Landlocked	-4.11	-3.70	-5.43	-5.35	-4.42	-3.72	-3.78	-3.76	-3.89	-4.22
	(3.51)	(3.34)	(3.37)	(4.03)	(3.16)	(3.44)	(3.45)	(3.40)	(3.42)	(3.65)
Democracy index	-0.10	-0.08	-0.09	-0.12	-0.09	-0.10	-0.10	-0.11	-0.10	-0.16
	(0.17)	(0.16)	(0.15)	(0.17)	(0.16)	(0.17)	(0.17)	(0.18)	(0.18)	(0.16)
Malaria stability index	-0.50*	-0.52*	-0.43	-0.47*	-0.51*	-0.50*	-0.48*	-0.50*	-0.52*	-0.34
	(0.28)	(0.28)	(0.26)	(0.27)	(0.27)	(0.28)	(0.28)	(0.28)	(0.29)	(0.25)
Strength of legal rights index	0.19									
	(0.86)									
Depth of credit information index		-0.33								
		(0.74)								
WG control of corruption			5.29**							
			(2.20)							
Procedures to enforce contracts				-0.54						
				(0.40)						
Time to enforce contracts					-0.01**					
					(0.01)					
Cost to enforce contracts						-0.04				
						(0.04)				
Procedures to register property							0.59			
							(0.82)			
Time to register property								0.01		
								(0.01)		
Cost to register property									0.04	
									(0.15)	
Recovery rate for creditors										0.03
										(0.06)
Number of observations	292	292	300	292	292	292	292	292	292	267
Number of countries	45	45	45	45	45	45	45	45	45	41
R-squared (Between)	0.325	0.308	0.437	0.361	0.354	0.322	0.297	0.315	0.317	0.403

Notes: Robust standard errors in parentheses. All regressions include year dummies and the constant term. ***, **, * imply significance at the 1%, 5% and 10% levels.

Table 4.9: Effects of current institutional variables on DMBOFI

	Dependent variable: DMBOFI									
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
GDP per capita	10.23**	11.23***	9.61**	10.04**	10.50**	10.30**	10.62**	10.78**	10.57**	12.43***
	(4.52)	(4.16)	(4.47)	(4.62)	(4.56)	(4.91)	(4.67)	(4.52)	(4.58)	(4.82)
Inflation	-0.03	-0.03	-0.04	-0.03	-0.03	-0.03	-0.04	-0.04	-0.03	-0.06
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)
WG political stability	0.51	0.45	0.18	0.50	0.66	0.51	0.49	0.58	0.57	0.80
	(0.68)	(0.70)	(0.64)	(0.74)	(0.63)	(0.69)	(0.70)	(0.77)	(0.74)	(0.69)
Landlocked	-5.24	-4.27	-5.83	-6.60	-5.23	-4.56	-4.58	-4.50	-4.63	-5.32
	(4.93)	(4.35)	(4.47)	(5.55)	(4.28)	(4.57)	(4.60)	(4.53)	(4.54)	(4.97)
Democracy index	-0.14	-0.10	-0.12	-0.16	-0.13	-0.14	-0.14	-0.16	-0.15	-0.21
	(0.19)	(0.17)	(0.16)	(0.18)	(0.18)	(0.18)	(0.19)	(0.19)	(0.19)	(0.17)
Malaria stability index	-0.67*	-0.70*	-0.62*	-0.64*	-0.69*	-0.68*	-0.66*	-0.67*	-0.70*	-0.52
	(0.36)	(0.39)	(0.37)	(0.36)	(0.38)	(0.38)	(0.38)	(0.38)	(0.39)	(0.36)
Strength of legal rights index	0.58									
	(1.27)									
Depth of credit information index		-0.56								
		(0.91)								
WG control of corruption			4.18*							
			(2.20)							
Procedures to enforce contracts				-0.69						
				(0.55)						
Time to enforce contracts					-0.01**					
					(0.01)					
Cost to enforce contracts						-0.02				
						(0.04)				
Procedures to register property							0.60			
							(0.85)			
Time to register property								0.01		
								(0.01)		
Cost to register property									0.07	
									(0.17)	
Recovery rate for creditors										0.02
										(0.07)
Number of observations	292	292	300	292	292	292	292	292	292	267
Number of countries	45	45	45	45	45	45	45	45	45	41
R-squared (Between)	0.297	0.259	0.337	0.328	0.298	0.272	0.258	0.268	0.272	0.329

Notes: Robust standard errors in parentheses. All regressions include year dummies and the constant term. ***, **, * imply significance at the 1%, 5% and 10% levels.

We can see from Table 4.10 that the coefficients of WG control of corruption and time to enforce contracts were statistically significant when included in the same model. The statistical significance of WG control of corruption and time to enforce contracts lend support to H7 and H10, while the statistical insignificance of the other current institutional variables implies that H5, H6, H11 and H12 are not supported in the data. H8 and H9 that deal with the interaction effects among some current institutional variables are tested in the next section.

Table 4.10: Effects of current institutional variables on financial system development

	Dependent variables		
	DCP	DMB	DMBOFI
Explanatory variables	(1)	(2)	(3)
GDP per capita	10.78**	7.36**	9.57**
	(4.52)	(3.33)	(4.44)
Inflation	-0.04*	-0.04	-0.03
	(0.03)	(0.03)	(0.03)
WG political stability	0.23	0.56	0.51
	(0.87)	(0.64)	(0.62)
Landlocked	-6.76	-5.81*	-6.24
	(4.80)	(3.14)	(4.22)
Democracy index	-0.04	-0.10	-0.14
	(0.17)	(0.16)	(0.18)
Malaria stability index	-0.55*	-0.45*	-0.64*
	(0.33)	(0.26)	(0.37)
WG control of corruption	7.07**	4.63**	3.45*
	(2.86)	(2.07)	(1.99)
Time to enforce contracts	-0.01**	-0.01**	-0.01**
	(0.00)	(0.00)	(0.01)
Number of observations	306	292	292
Number of countries	46	45	45
R-squared (between)	0.384	0.454	0.349

Notes: All regressions include year dummies and the constant term. ***, **, * imply significance at the 1%, 5% and 10% levels.

It is interesting to note from Table 4.10 that the coefficient of malaria stability index remained statistically significant after including the statistically significant current institutional variables. Furthermore, as robustness check similar to the one done earlier, South Africa was removed from the sample and the regressions from Table 4.7 to Table 4.10 were rerun. These robustness check results are presented in Appendix 7 to Appendix 10. The same qualitative results as shown in Table 4.7 to Table 4.10 were gotten. Moreover, examining Tables 4.7 to 4.10 reveals that many of the control variables, specifically inflation, WG political stability, landlocked, and democracy

index were not statistically significant in several estimations. As a robustness check, these four control variables were removed from the models and the regressions were rerun. These results are given in Appendix 11 to Appendix 14 and are qualitatively the same as those gotten in Table 4.7 to Table 4.10. Hence the results in Table 4.7 to Table 4.10 are robust to the exclusion of statistically insignificant control variables. Consequently, H7 and H10 were supported, while H5, H6, H11 and H12 were not supported in the data.

In the regressions above, the efficiency of the judicial system and legal property system were measured using three different variables for each of them. The procedures to enforce contracts, time to enforce contracts, and cost to enforce contracts were used as measures of the efficiency of the judicial system, while procedures to register property, time to register property, and cost to register property were used as measures of the efficiency of the legal property system. As a robustness check, regression analysis is done with a composite index of the efficiency of the judicial system created by combining the three different measures stated above; and with a composite index of the efficiency of the legal property system created by combining the three different measures stated above. Although the individual variables were not highly correlated as given in Table 4.2 they can still be combined into a composite index. In each case, the three different measures were first rescaled by standardising them to give them the same scale because they were originally measured in different scales and then the standardised measures were averaged together to get the composite indices.

It is important to remember that these efficiency measures, as previously discussed in section 3.3.3, are expected to be negatively associated with the financial system development variables because the higher their values the less efficient is the judicial or the legal property system. The results of this regression analysis are given in Appendix 15 and show that the

coefficient of the efficiency of the judicial system composite index was negative and statistically significant, supporting H10, while the coefficient of the efficiency of the legal property system composite index was positive and statistically insignificant. These foregoing results are qualitatively similar to those gotten in Tables 4.7 to 4.9 where the individual measures that make up the composite indices were used to test the effects of the efficiency of the judicial and legal property system on financial system development variables.

That the coefficient of the time to enforce contracts variable was the only statistically significant one out of the three variables used in measuring the efficiency of the judicial system in Tables 4.7 to 4.9 suggests that the time to enforce contracts variable is most likely the variable driving the statistical significance of the coefficient of the efficiency of the judicial system composite index as given in Appendix 15. From Tables 4.7 to 4.9 none of the variables used in measuring the efficiency of the legal property system were statistically significant; and the coefficient of the efficiency of the legal property system composite index was also not statistically significant as given in Appendix 15. Hence the results in Table 4.7 to Table 4.9 are still valid, lending support to H10, while H11 was not supported in the data.

4.4. Regression results: Interaction effects among some current institutional factors

The interaction effects hypothesised in H8 and H9 are examined next. The coefficients of interest for testing H8 are those of the strength of legal rights index and the interaction term between strength of legal rights index and depth of credit information index. The coefficients of interest for testing H9 are those of the strength of legal rights index and the interaction term between strength of legal rights index and the WG control of corruption. An increasing and statistically significant marginal effect of the strength of legal rights index at different levels of the depth of

credit information index gives support to H8. An increasing and statistically significant marginal effect of the strength of legal rights index at different levels of the WG control of corruption gives support to H9. The marginal effects and corresponding standard errors used to evaluate the interaction effects were calculated taking into account the recommendations of Brambor, Clark, and Golder (2006) that provide guidelines for correctly evaluating multiplicative interaction models. The regression results are presented in Table 4.11 while Table 4.12 gives the results of the marginal effect, standard errors, and statistical significance of the strength of legal rights index at different values of the corresponding interaction variables.

Table 4.11: Interaction effects among some current institutional variables on financial system development

	Dependent variable					
	DCP	DCP	DMB	DMB	DMBOFI	DMBOFI
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)
GDP per capita	10.33**	9.98**	7.62**	7.30**	10.01**	9.18**
	(4.14)	(4.44)	(3.24)	(3.44)	(3.90)	(4.40)
Inflation	-0.04*	-0.04	-0.04	-0.04	-0.03	-0.03
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)
WG political stability	0.18	0.33	0.52	0.58	0.42	0.52
	(0.91)	(0.84)	(0.65)	(0.64)	(0.66)	(0.63)
Landlocked	-7.34	-7.59	-5.62*	-5.84*	-6.27	-6.81
	(5.21)	(5.59)	(3.21)	(3.33)	(4.47)	(4.65)
Democracy index	0.00	-0.02	-0.08	-0.10	-0.10	-0.13
	(0.16)	(0.17)	(0.16)	(0.17)	(0.17)	(0.18)
Malaria stability index	-0.56*	-0.55*	-0.46*	-0.45*	-0.64*	-0.63*
	(0.31)	(0.32)	(0.26)	(0.26)	(0.34)	(0.34)
WG control of corruption	7.45***	0.45	4.92**	3.26	3.90*	2.11
	(2.82)	(6.34)	(2.13)	(3.27)	(2.13)	(3.31)
Time to enforce contracts	-0.01**	-0.01**	-0.01**	-0.01**	-0.01**	-0.01**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)
Strength of legal rights index	0.42	0.97	-0.16	0.09	0.27	0.63
	(1.44)	(2.08)	(0.83)	(0.99)	(1.28)	(1.41)
Depth of credit information index	-0.30		-0.80		-1.57	
	(2.78)		(2.28)		(2.84)	
Strength of legal rights index * depth of credit information index	0.01		0.08		0.17	
	(0.34)		(0.27)		(0.34)	
Strength of legal rights index * WG control of corruption		1.46		0.28		0.30
		(1.57)		(0.70)		(0.76)
Number of observations	306	306	292	292	292	292
Number of countries	46	46	45	45	45	45
R-squared (Between)	0.403	0.414	0.452	0.450	0.376	0.373

Notes: All regressions include year dummies and the constant term. ***, **, * imply significance at the 1%, 5% and 10% levels.

Table 4.12: Marginal effect and statistical significance of the strength of legal rights index at different levels of the interaction variables

Different values of interaction variable: Depth of credit information index	Marginal effect of strength of legal rights index at different values of depth of credit information index	Standard error of the marginal effect of the strength of legal rights index	Test statistic	Statistically significant (S) or statistically insignificant (NS)		Different values of interaction variable: WG control of corruption	Marginal effect of strength of legal rights index at different values of WG control of corruption	Standard error of the marginal effect of the strength of legal rights index	Test statistic	Statistically significant (S) or statistically insignificant (NS)
Dependent variable: DCP						Dependent variable: DCP				
0	0.42	1.44	0.29	NS		0	0.97	2.08	0.47	NS
1	0.43	1.40	0.31	NS		0.4	1.55	2.66	0.59	NS
2	0.44	1.43	0.31	NS		0.8	2.14	3.25	0.66	NS
3	0.45	1.54	0.29	NS		1.2	2.72	3.86	0.71	NS
4	0.46	1.71	0.27	NS		1.6	3.31	4.47	0.74	NS
5	0.47	1.92	0.24	NS		2	3.89	5.08	0.77	NS
6	0.48	2.17	0.22	NS		2.4	4.47	5.70	0.78	NS
Dependent variable: DMB						Dependent variable: DMB				
0	-0.16	0.83	-0.19	NS		0	0.09	0.99	0.09	NS
1	-0.08	0.78	-0.10	NS		0.4	0.20	1.16	0.17	NS
2	0.00	0.83	0.00	NS		0.8	0.31	1.37	0.23	NS
3	0.08	0.95	0.08	NS		1.2	0.43	1.60	0.27	NS
4	0.16	1.13	0.14	NS		1.6	0.54	1.84	0.29	NS
5	0.24	1.34	0.18	NS		2	0.65	2.09	0.31	NS
6	0.32	1.58	0.20	NS		2.4	0.76	2.35	0.32	NS
Dependent variable: DMBOFI						Dependent variable: DMBOFI				
0	0.27	1.28	0.21	NS		0	0.63	1.41	0.45	NS
1	0.44	1.27	0.35	NS		0.4	0.75	1.52	0.49	NS
2	0.61	1.36	0.45	NS		0.8	0.87	1.68	0.52	NS
3	0.78	1.51	0.52	NS		1.2	0.99	1.88	0.53	NS
4	0.95	1.72	0.55	NS		1.6	1.11	2.11	0.53	NS
5	1.12	1.97	0.57	NS		2	1.23	2.35	0.52	NS
6	1.29	2.24	0.57	NS		2.4	1.35	2.61	0.52	NS
Notes: The marginal effects and standard errors were evaluated following the recommendations of Brambor et al. (2006)										

From Table 4.11 we see that the coefficients of the interaction terms had positive signs that align with an increasing marginal effect for strength of legal rights index as hypothesised in H8 and H9. Examining Table 4.12 we see that the marginal effect of strength of legal rights index on DCP increased as the depth of credit information index increased. In addition, the marginal effect of strength of legal rights index on DCP increased as the WG control of corruption increased. The marginal effect of the strength of legal rights, however, was not statistically significant at the different levels of the depth of credit information index and the WG control of corruption. As a robustness check, DCP is replaced with DMB and DMBOFI and the same qualitative results were gotten for the marginal effects and statistical significance of the strength of legal rights index. Hence H8 and H9 were not supported in the data.

The regression analyses above have examined the effects of historical and current institutional factors on financial system development in African former European colonies. The next section will investigate the links between the historical and the current institutional factors. The analyses will also reveal whether the two statistically significant current institutional factors, specifically the institutional enforcement quality as measured by WG control of corruption and the efficiency of the judicial system as measured by the time to enforce contracts, may be possible channels through which the disease endowment as measured by the malaria stability index affect financial system development in African former European colonies.

4.5. Regression results: links between historical and current institutional factors

The regression analyses in this section test Hypotheses 13 to 16 by estimating Equation (3.1) using OLS estimation technique as discussed in section 3.4. Although many of the historical institutional variables were not statistically significantly associated with financial system

development as seen in section 4.2, the theories of historical institutional factors still point to the effects of historical institutional factors on current institutional factors. The empirical analyses below attempt to uncover these links between historical and current institutional factors.

First, the historical determinants of the quality of creditor rights institutions as measured by the strength of legal rights index are investigated. The results are given in Table 4.13.

Table 4.13: Historical determinants of the strength of legal rights index

	Dependent variable: strength of legal rights index						
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GDP per capita	0.36*	0.52**	0.62*	0.71*	0.63*	0.86**	0.53**
	(0.20)	(0.21)	(0.36)	(0.41)	(0.36)	(0.36)	(0.24)
Inflation	-0.01	-0.01	0.08*	0.09*	0.09**	0.08*	-0.02
	(0.03)	(0.03)	(0.05)	(0.05)	(0.04)	(0.04)	(0.03)
WG political stability	-0.20	-0.20	-0.10	-0.25	-0.01	-0.01	-0.34
	(0.37)	(0.35)	(0.55)	(0.62)	(0.48)	(0.49)	(0.39)
Landlocked	0.27	0.60	1.12*	1.03	1.29*	1.41**	0.45
	(0.38)	(0.45)	(0.64)	(0.63)	(0.67)	(0.61)	(0.44)
Democracy index	0.10**	0.08*	0.17**	0.13*	0.18**	0.17**	0.06*
	(0.04)	(0.04)	(0.07)	(0.07)	(0.08)	(0.07)	(0.04)
French colony	-3.65***						-1.34*
	(0.56)						(0.73)
Other colony	-3.23***						-1.06
	(0.67)						(0.70)
French legal family		-3.71***					-2.50***
		(0.54)					(0.79)
Malaria stability index			-0.02				
			(0.04)				
Catholicism				-2.28*			-0.83
				(1.15)			(0.65)
Islam				-1.76			-0.93
				(1.16)			(0.67)
Other religions				-0.60			-0.10
				(1.12)			(0.71)
Islamic law					0.49		
					(0.89)		
Ethnic fractionalisation index						2.31*	0.31
						(1.15)	(0.70)
Number of countries	46	46	46	45	46	46	45
R-squared	0.71	0.76	0.26	0.34	0.26	0.31	0.81

Notes: Robust standard errors are given in parentheses. All regressions include the constant term. The omitted colony is the British colony. The omitted legal family is the English legal family. The omitted religion is Protestantism. ***, **, * imply significance at the 1%, 5% and 10% levels.

Table 4.13 shows that the coefficients of French colony, French legal family, Catholicism and ethnic fractionalisation index were statistically significant. The other variables did not enter significantly. When the statistically significant variables were included in the same model as given in Column 7 in Table 4.13, the French colony (-1.34) and the French legal family (-2.50)

remained statistically significant and in the hypothesised directions. A joint significance test was carried out for Catholicism and ethnic fractionalisation index and showed that both variables were jointly insignificant, with F (2, 32) = 0.87 and a p-value = .4267.

Second, the historical determinants of the quality of credit information infrastructure as measured by the depth of credit information index are investigated. The results are given in Table 4.14 and show that only the coefficient of malaria stability index (-0.05) entered significantly in the regressions and in the hypothesised direction, while the coefficients of the other historical variables were insignificant.

Table 4.14: Historical determinants of the depth of credit information index

	Dependent variable: depth of credit information index					
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)
GDP per capita	0.95***	0.91***	0.80***	0.93***	0.91***	0.85***
	(0.27)	(0.27)	(0.25)	(0.28)	(0.27)	(0.29)
Inflation	-0.05	-0.01	-0.02	-0.02	-0.02	-0.01
	(0.03)	(0.03)	(0.02)	(0.03)	(0.02)	(0.02)
WG political stability	0.04	0.15	0.08	-0.00	0.12	0.13
	(0.24)	(0.27)	(0.25)	(0.28)	(0.26)	(0.27)
Landlocked	0.66*	0.59	0.56	0.45	0.49	0.48
	(0.35)	(0.38)	(0.39)	(0.35)	(0.39)	(0.36)
Democracy index	0.01	0.01	0.00	-0.02	0.00	0.00
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
French colony	-0.17					
	(0.47)					
Other colony	1.03*					
	(0.52)					
French legal family		0.31				
		(0.45)				
Malaria stability index			-0.05**			
			(0.02)			
Catholicism				-0.53		
				(0.76)		
Islam				-0.92		
				(0.67)		
Other religions				0.04		
				(0.76)		
Islamic law					-0.19	
					(0.43)	
Ethnic fractionalisation index						-0.57
						(0.88)
Number of countries	46	46	46	45	46	46
R-squared	0.52	0.43	0.49	0.47	0.42	0.43

Notes: Robust standard errors are given in parentheses. All regressions include the constant term. The omitted colony is the British colony. The omitted legal family is the English legal family. The omitted religion is Protestantism. ***, **, * imply significance at the 1%, 5% and 10% levels.

Third, the historical determinants of the quality of institutional enforcement as measured by the WG control of corruption were investigated. The results are presented in Table 4.15 and reveal that the coefficients of the malaria stability index, Islamic law, and the ethnic fractionalisation index were statistically significant, while the other variables did not enter significantly.

Table 4.15: Historical determinants of WG control of corruption

	Dependent variable: WG control of corruption						
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GDP per capita	0.06	0.06	0.03	0.12	0.05	0.02	0.02
	(0.11)	(0.10)	(0.10)	(0.09)	(0.10)	(0.11)	(0.10)
Inflation	-0.01	-0.01	-0.01	-0.01	-0.00	-0.00	-0.00
	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)
WG political stability	0.38***	0.39***	0.37***	0.36***	0.43***	0.37***	0.39***
	(0.07)	(0.07)	(0.07)	(0.06)	(0.07)	(0.06)	(0.08)
Landlocked	0.13	0.15	0.17	0.24	0.27*	0.10	0.21
	(0.14)	(0.13)	(0.13)	(0.14)	(0.14)	(0.14)	(0.16)
Democracy index	0.02	0.02	0.02*	0.03**	0.03**	0.02*	0.03**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
French colony	-0.15						
	(0.12)						
Other colony	-0.10						
	(0.19)						
French legal family		-0.09					
		(0.11)					
Malaria stability index			-0.02**				-0.01
			(0.01)				(0.01)
Catholicism				-0.12			
				(0.20)			
Islam				0.09			
				(0.17)			
Other religions				0.02			
				(0.17)			
Islamic law					0.31**		0.19
					(0.14)		(0.15)
Ethnic fractionalisation index						-0.50*	-0.16
						(0.27)	(0.35)
Number of countries	46	46	46	45	46	46	46
R-squared	0.56	0.56	0.62	0.62	0.60	0.59	0.64

Notes: Robust standard errors are given in parentheses. All regressions include the constant term. The omitted colony is the British colony. The omitted legal family is the English legal family. The omitted religion is Protestantism. ***, **, * imply significance at the 1%, 5% and 10% levels.

When the statistically significant variables were combined in one model as in Column 7 in Table 4.15, none of them remained individually significant. Since they were individually significant in separate models, but none was significant when combined together, a joint

significance test for the three of them was carried out and the results showed that they were jointly significant, with F (3, 37) = 2.74 and a p-value = .0571. Malaria stability index and ethnic fractionalisation had the hypothesised signs while Islamic law had the opposite sign to the hypothesised one. This joint significance implies that malaria stability index (-0.01), Islamic law (0.19), and ethnic fractionalisation index (-0.16) are statistically significant determinants of WG control of corruption.

Table 4.16: Historical determinants of procedures to enforce contracts

	Dependent variable: procedures to enforce contracts					
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)
GDP per capita	0.26	0.29	0.29	-0.06	0.18	-0.01
	(0.74)	(0.78)	(0.89)	(0.95)	(0.86)	(0.96)
Inflation	0.16	0.07	0.03	0.08	0.04	0.03
	(0.15)	(0.13)	(0.13)	(0.12)	(0.14)	(0.13)
WG political stability	-3.03**	-3.32**	-3.34**	-2.68*	-3.24**	-3.46***
	(1.31)	(1.34)	(1.26)	(1.38)	(1.38)	(1.24)
Landlocked	-1.95	-1.90	-2.17	-2.36	-1.84	-2.49*
	(1.70)	(1.67)	(1.65)	(1.61)	(1.84)	(1.44)
Democracy index	0.00	0.02	-0.03	0.00	-0.01	-0.02
	(0.14)	(0.13)	(0.16)	(0.18)	(0.16)	(0.15)
French colony	2.69					
	(1.62)					
Other colony	-0.80					
	(2.11)					
French legal family		1.93				
		(1.62)				
Malaria stability index			0.03			
			(0.09)			
Catholicism				-1.08		
				(3.15)		
Islam				0.24		
				(2.63)		
Other religions				-3.37		
				(2.90)		
Islamic law					0.96	
					(1.85)	
Ethnic fractionalisation index						-2.60
						(2.64)
Number of countries	46	46	46	45	46	46
R-squared	0.38	0.34	0.32	0.39	0.32	0.33

Notes: Robust standard errors are given in parentheses. All regressions include the constant term. The omitted colony is the British colony. The omitted legal family is the English legal family. The omitted religion is Protestantism. ***, **, * imply significance at the 1%, 5% and 10% levels.

Fourth, the historical determinants of the efficiency of the judicial system as measured by the procedures to enforce contracts, time to enforce contracts, and cost to enforce contracts variables

were examined. The results of these regressions are shown in Table 4.16, Table 4.17 and Table 4.18. From Table 4.16 we see that none of the historical institutional variables entered significantly and hence the procedures to enforce contracts variable seems not to be correlated with any of the historical institutional variables. Table 4.17 shows that the coefficients of French legal family and Catholicism were statistically significant and in the hypothesised directions. Putting these two significant variables in one model as given in Column 7 of Table 4.17 we can see that only French legal family (140.10) remained statistically significant and had the hypothesised direction.

Table 4.17: Historical determinants of time to enforce contracts

	Dependent variable: time to enforce contracts						
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GDP per capita	47.46	46.08	40.76	34.70	45.26	50.59	39.88
	(41.77)	(39.48)	(42.78)	(40.74)	(40.50)	(40.79)	(39.84)
Inflation	-12.50	-6.87	-10.48	-12.28	-12.01	-10.67	-8.14
	(11.93)	(8.46)	(8.63)	(9.18)	(8.47)	(8.33)	(9.55)
WG political stability	-44.61	-31.61	-36.26	-52.40	-52.22	-32.95	-47.28
	(44.09)	(40.42)	(41.54)	(52.68)	(44.23)	(42.90)	(50.29)
Landlocked	-14.66	-10.19	-31.40	-23.78	-69.43	-17.27	-6.90
	(81.93)	(84.10)	(87.37)	(86.37)	(99.77)	(82.58)	(83.41)
Democracy index	5.33	8.06	4.24	1.06	2.62	4.00	3.78
	(8.04)	(7.25)	(7.47)	(7.77)	(6.87)	(7.52)	(7.37)
French colony	14.40						
	(94.25)						
Other colony	116.88						
	(144.46)						
French legal family		152.38**					140.10*
		(73.76)					(77.80)
Malaria stability index			0.12				
			(3.87)				
Catholicism				225.68*			156.14
				(127.43)			(126.43)
Islam				141.16			98.82
				(117.91)			(104.27)
Other religions				296.88**			256.41**
				(132.75)			(118.61)
Islamic law					-111.22		
					(114.62)		
Ethnic fractionalisation index						111.68	
						(164.99)	
Number of countries	46	46	46	45	46	46	45
R-squared	0.09	0.12	0.06	0.14	0.08	0.07	0.18

Notes: Robust standard errors are given in parentheses. All regressions include the constant term. The omitted colony is the British colony. The omitted legal family is the English legal family. The omitted religion is Protestantism. ***, **, * imply significance at the 1%, 5% and 10% levels.

Examining Table 4.18 reveals that only the coefficient of Islam (-41.71) was statistically significantly associated with cost to enforce contracts, but with opposite sign to the hypothesised sign while the other historical institutional variables did not enter significantly.

Table 4.18: Historical determinants of cost to enforce contracts

	Dependent variable: cost to enforce contracts					
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)
GDP per capita	-18.08***	-18.33***	-18.13***	-21.45***	-17.99***	-18.60***
	(6.41)	(6.25)	(6.51)	(6.02)	(5.88)	(6.64)
Inflation	0.73	0.92	0.76	0.84	0.53	0.73
	(1.12)	(1.08)	(1.14)	(1.17)	(1.07)	(1.10)
WG political stability	5.15	5.63	5.67	4.93	3.25	5.38
	(7.31)	(7.06)	(7.56)	(6.57)	(7.26)	(7.47)
Landlocked	5.82	5.49	4.31	-4.46	-0.74	4.41
	(11.66)	(11.08)	(11.09)	(10.31)	(12.37)	(11.29)
Democracy index	0.44	0.53	0.33	-0.63	0.11	0.33
	(0.95)	(0.91)	(0.87)	(0.79)	(0.80)	(0.88)
French colony	3.94					
	(10.40)					
Other colony	7.71					
	(15.96)					
French legal family		8.14				
		(11.14)				
Malaria stability index			0.23			
			(0.54)			
Catholicism				-26.07		
				(17.40)		
Islam				-41.71**		
				(15.45)		
Other religions				-23.52		
				(17.40)		
Islamic law					-14.91	
					(9.78)	
Ethnic fractionalisation index						0.39
						(17.46)
Number of countries	46	46	46	45	46	46
R-squared	0.30	0.31	0.30	0.43	0.32	0.30

Notes: Robust standard errors are given in parentheses. All regressions include the constant term. The omitted colony is the British colony. The omitted legal family is the English legal family. The omitted religion is Protestantism. ***, **, * imply significance at the 1%, 5% and 10% levels.

Fifth, the historical determinants of the efficiency of the legal property system as measured by the procedures to register property, time to register property and cost to register property variables are examined. The results are presented in Table 4.19, Table 4.20 and Table 4.21. We can see from Table 4.19 that only the coefficient of French colony variable (-2.00) was statistically significantly associated with procedures to register property but with the opposite

sign to the hypothesised sign while the other historical institutional variables did not enter significantly in the regressions.

Table 4.19: Historical determinants of procedures to register property

	Dependent variable: procedures to register property					
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)
GDP per capita	0.17	0.20	0.13	0.53	0.21	0.32
	(0.49)	(0.48)	(0.45)	(0.47)	(0.42)	(0.48)
Inflation	-0.03	0.03	0.05	0.02	0.07	0.06
	(0.05)	(0.06)	(0.05)	(0.05)	(0.05)	(0.05)
WG political stability	-1.06	-0.91	-0.95	-1.13*	-0.75	-0.85
	(0.66)	(0.67)	(0.62)	(0.62)	(0.58)	(0.65)
Landlocked	-0.43	-0.32	-0.13	0.11	0.15	-0.04
	(0.65)	(0.72)	(0.74)	(0.76)	(0.74)	(0.85)
Democracy index	-0.04	-0.04	-0.01	0.04	0.00	-0.01
	(0.07)	(0.08)	(0.07)	(0.07)	(0.08)	(0.08)
French colony	-2.00*					
	(1.03)					
Other colony	-0.37					
	(0.84)					
French legal family		-1.27				
		(0.90)				
Malaria stability index			-0.06			
			(0.04)			
Catholicism				0.35		
				(1.30)		
Islam				0.11		
				(1.23)		
Other religions				0.33		
				(1.13)		
Islamic law					0.86	
					(0.95)	
Ethnic fractionalisation index						0.82
						(1.51)
Number of countries	46	46	46	45	46	46
R-squared	0.26	0.19	0.17	0.15	0.16	0.14

Notes: Robust standard errors are given in parentheses. All regressions include the constant term. The omitted colony is the British colony. The omitted legal family is the English legal family. The omitted religion is Protestantism. ***, **, * imply significance at the 1%, 5% and 10% levels.

Table 4.20 shows that only the coefficient of Islamic law (-52.94) was statistically significant while the other historical institutional variables did not enter significantly. The coefficient of Islamic law had the opposite sign to the hypothesised sign.

Table 4.20: Historical determinants of time to register property

	Dependent variable: time to register property					
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)
GDP per capita	-19.57	-20.40*	-21.63*	-24.30*	-19.07	-20.81
	(13.31)	(12.05)	(12.02)	(12.72)	(11.51)	(13.44)
Inflation	-0.75	0.65	0.02	-0.76	-0.68	0.03
	(2.28)	(2.58)	(2.36)	(2.16)	(2.16)	(2.39)
WG political stability	9.35	12.98	11.99	5.63	4.64	12.35
	(12.93)	(11.83)	(12.30)	(11.58)	(10.66)	(12.31)
Landlocked	-20.04	-20.48	-24.01	-32.74	-42.15*	-23.30
	(21.50)	(21.20)	(20.93)	(20.31)	(23.57)	(20.12)
Democracy index	-1.56	-1.15	-1.80	-3.16	-2.57	-1.81
	(2.11)	(2.04)	(2.16)	(2.41)	(2.09)	(2.15)
French colony	-1.26					
	(19.06)					
Other colony	32.30					
	(31.34)					
French legal family		25.62				
		(19.33)				
Malaria stability index			-0.14			
			(1.17)			
Catholicism				32.61		
				(24.11)		
Islam				-19.74		
				(16.80)		
Other religions				40.94*		
				(20.86)		
Islamic law					-52.94**	
					(22.28)	
Ethnic fractionalisation index						5.84
						(40.10)
Number of countries	46	46	46	45	46	46
R-squared	0.13	0.11	0.09	0.25	0.18	0.09

Notes: Robust standard errors are given in parentheses. All regressions include the constant term. The omitted colony is the British colony. The omitted legal family is the English legal family. The omitted religion is Protestantism. ***, **, * imply significance at the 1%, 5% and 10% levels.

From Table 4.21 we see that the coefficients of French colony, French legal family, malaria stability index, Islamic law, and ethnic fractionalisation index were statistically significant, while the rest of the variables were not significant. When the five of them were put in one model as given in Column 7 of Table 4.21, we see that only malaria stability index (0.26) remained statistically significant and in the hypothesised direction. The joint significance of French colony, French legal family, Islamic law, and ethnic fractionalisation was tested and the results showed that they were also not jointly significant, with F (4, 34) = 1.53 and a p-value = .2166.

Table 4.21: Historical determinants of cost to register property

	Dependent variable: cost to register property						
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GDP per capita	-0.16	-0.28	0.30	-0.44	-0.23	0.15	0.62
	(0.83)	(0.70)	(0.70)	(0.84)	(0.70)	(0.88)	(0.81)
Inflation	-0.09	-0.22*	-0.28	-0.34**	-0.39***	-0.33**	-0.17
	(0.15)	(0.13)	(0.18)	(0.16)	(0.13)	(0.13)	(0.18)
WG political stability	-0.86	-1.20	-0.89	-1.32	-2.02	-1.14	-0.89
	(1.38)	(1.37)	(1.31)	(1.47)	(1.28)	(1.32)	(1.15)
Landlocked	-0.13	-0.45	-1.12	-1.07	-2.68	-0.22	-0.55
	(1.40)	(1.48)	(1.22)	(1.77)	(1.63)	(1.81)	(1.57)
Democracy index	0.20	0.22	0.11	0.13	0.04	0.10	0.19
	(0.14)	(0.14)	(0.13)	(0.18)	(0.17)	(0.16)	(0.14)
French colony	5.88***						2.08
	(2.00)						(2.18)
Other colony	1.75						0.73
	(1.94)						(1.70)
French legal family		4.24**					2.82
		(1.84)					(1.96)
Malaria stability index			0.35***				0.26**
			(0.09)				(0.12)
Catholicism				0.91			
				(3.32)			
Islam				0.31			
				(3.19)			
Other religions				0.04			
				(2.83)			
Islamic law					-4.79**		-1.49
					(2.11)		(2.19)
Ethnic fractionalisation index						6.51*	2.59
						(3.72)	(4.13)
Number of countries	46	46	46	45	46	46	46
R-squared	0.31	0.24	0.39	0.13	0.25	0.20	0.53

Notes: Robust standard errors are given in parentheses. All regressions include the constant term. The omitted colony is the British colony. The omitted legal family is the English legal family. The omitted religion is Protestantism. ***, **, * imply significance at the 1%, 5% and 10% levels.

Sixth, the historical determinants of the efficiency of the insolvency system were examined. The results are given in Table 4.22 and shows that the coefficients of French colony and French legal family were statistically significant and in the hypothesised directions, while the other variables did not enter significantly in the regressions. The combination of these two significant variables in one model as shown in Column 7 of Table 4.22 reveals that only French legal family (-10.03) remained statistically significant and in the hypothesised direction.

Table 4.22: Historical determinants of recovery rate of creditors

	Dependent variable: recovery rate for creditors						
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GDP per capita	7.83***	8.53***	8.56***	8.98***	8.08***	7.68***	8.27***
	(2.55)	(2.32)	(2.71)	(2.15)	(2.39)	(2.81)	(2.53)
Inflation	-0.51	-0.62*	-0.40	-0.24	-0.26	-0.40	-0.50
	(0.37)	(0.34)	(0.39)	(0.30)	(0.36)	(0.34)	(0.35)
WG political stability	-0.31	-0.61	-0.19	-0.42	1.16	-0.46	-0.41
	(2.04)	(2.06)	(2.48)	(2.45)	(2.60)	(2.38)	(2.10)
Landlocked	0.27	1.31	2.20	4.18	4.55	0.13	1.14
	(3.79)	(3.70)	(4.40)	(4.63)	(4.37)	(5.63)	(3.94)
Democracy index	0.32	0.22	0.56	0.42	0.63*	0.64	0.22
	(0.32)	(0.31)	(0.38)	(0.34)	(0.35)	(0.38)	(0.31)
French colony	-9.60**						-1.03
	(3.94)						(5.96)
Other colony	-12.45***						-5.12
	(4.17)						(4.73)
French legal family		-11.86***					-10.03**
		(2.94)					(4.59)
Malaria stability index			-0.12				
			(0.21)				
Catholicism				-1.19			
				(8.84)			
Islam				5.54			
				(7.97)			
Other religions				7.07			
				(7.29)			
Islamic law					7.66		
					(5.18)		
Ethnic fractionalisation index						-12.41	
						(11.88)	
Number of countries	41	41	41	41	41	41	41
R-squared	0.52	0.54	0.41	0.45	0.44	0.43	0.55

Notes: Robust standard errors are given in parentheses. All regressions include the constant term. The omitted colony is the British colony. The omitted legal family is the English legal family. The omitted religion is Protestantism. ***, **, * imply significance at the 1%, 5% and 10% levels.

The results presented above from Table 4.13 to Table 4.22 show that many control variables, specifically inflation, WG political stability, landlocked, and democracy index, were not statistically significant and hence may be confounding the effects of the key explanatory variables. These control variables were removed and the regressions from Table 4.13 to Table 4.22 rerun with GDP per capita as the only control variable. The results of these regressions are given in Appendix 16 to Appendix 25 and reveal some differences to those given in Table 4.13 to Table 4.22, confirming that the statistically insignificant control variables were having confounding effects. The results in Appendix 16 to Appendix 25 are summarised in Table 4.23.

Table 4.23: Historical institutional variables as determinants of current institutional variables

	French colony	French legal family	Malaria stability index	Catholicism	Islam	Islamic law	Ethnic fractionalisation index
Strength of legal rights index	**Significant and in hypothesised direction**	**Significant and in hypothesised direction**	Not significant	**Significant and in hypothesised direction**	**Significant and in hypothesised direction**	Not significant	Not significant
Depth of credit information index	Not significant	Not significant	**Significant and in hypothesised direction**	Not significant	Not significant	Not significant	Not significant
WG control of corruption	**Jointly significant and in hypothesised direction**	Not significant	**Jointly significant and in hypothesised direction**	Not significant	Not significant	Not significant	**Jointly significant and in hypothesised direction**
Procedures to enforce contracts	**Significant and in hypothesised direction**	Not significant	Not significant	Not significant	Not significant	**Significant and in hypothesised direction**	Not significant
Time to enforce contracts	Not significant	**Significant and in hypothesised direction**	Not significant	Not significant	Not significant	Not significant	Not significant
Cost to enforce contracts	Not significant	Not significant	Not significant	Not significant	**Significant and opposite to hypothesised direction**		Not significant
Procedures to register property	Not significant	Not significant	Not significant	Not significant	Not significant	Not significant	Not significant
Time to register property	Not significant	Not significant	Not significant	Not significant	Not significant	Not significant	Not significant
Cost to register property	Not significant	Not significant	**Significant and in hypothesised direction**	Not significant	Not significant	Not significant	Not significant
Recovery rate for creditors	Not significant	**Significant and in hypothesised direction**	Not significant	Not significant	Not significant	Not significant	Not significant
Notes: This summary was based on the econometric results from the regression analyses given in Appendix 16 to Appendix 25							

The results in Table 4.23 that come from regressions of current institutional factors on historical institutional factors while controlling for only GDP per capita replace those from Table 4.13 to Table 4.22 as the results from the foregoing regressions. We can see from Table 4.23 that H13 to H16 received some form of empirical support in the data. H13a, H13b, and H14 received the highest empirical support because three out of the ten current institutional variables were statistically significantly associated with the French colony, French legal family, and malaria stability index variables. H15b received the second highest empirical support because two out of the ten current institutional variables were statistically significantly associated with Islam. H15a, H15c, and H16 received the least empirical support as only one current institutional variable was associated with Catholicism, Islamic law, and ethnic fractionalisation index.

The results from section 4.2 showed that among the historical institutional variables only the malaria stability index, a measure of disease endowment, was statistically significantly associated with financial system development. Furthermore, the results from section 4.3 revealed that among the current institutional variables only the WG control of corruption and time to enforce contracts variables were statistically significantly associated with financial system development. From Table 4.23 we see that the malaria stability index explained the variation in the WG control of corruption variable, but did not explain the variation in the time to enforce contracts variable. The foregoing results suggest that WG control of corruption is a possible channel through which disease endowment, as measured by the malaria stability index, affects financial system development in African former European colonies.

All the results above were based on a classification of legal families that was provided by La Porta et al. (1999) and La Porta et al. (2008a) with a modification for Swaziland. Klerman et al. (2011) provide an alternative classification of legal families based on their claim that some

countries categorised as part of English legal families are actually better categorised as part of a different legal family called the mixed legal families. As a robustness check of the results above, the legal family taxonomy suggested by Klerman et al. (2011) was used and all the regressions above that had the French legal family variable as part of the key explanatory variables were rerun. The re-categorisations produced 32 countries as part of the French legal family, 10 countries as part of the English legal family, and 6 countries as part of the mixed legal family. The mixed legal family countries are Botswana, Lesotho, Mauritius, Namibia, Seychelles, and South Africa. The other countries maintained their previous categorisations as given in Table 3.1.

The results of these regressions based on the legal family taxonomy proposed by Klerman et al. (2011) are presented in Appendix 26 to Appendix 38. We can see from Appendix 26 to Appendix 28 that the same qualitative results were gotten as given in Table 4.3 to Table 4.5. The foregoing result suggests that the re-categorisation of legal families according to the taxonomy recommended by Klerman et al. (2011) do not change qualitatively the results about the historical institutional factors that act as determinants of financial system development in African former European colonies. In essence, the results still show that only disease endowment variables were found to be statistically significantly associated with financial system development and in the hypothesised directions.

There, however, seems to be slight qualitative differences when examining the links between the historical institutional factors and the current institutional factors based on the re-categorisation of legal families according to the taxonomy proposed by Klerman et al. (2011). The summary of the results from Appendix 29 to Appendix 38 are presented in Table 4.24.

Table 4.24: Historical institutional variables as determinants of current institutional variables based on an alternative legal family categorization

	French colony	French legal family	Malaria stability index	Catholicism	Islam	Islamic law	Ethnic fractionalisation index
Strength of legal rights index	Not significant	**Significant and in hypothesised direction**	Not significant	**Significant and in hypothesised direction**	**Significant and in hypothesised direction**	Not significant	Not significant
Depth of credit information index	Not significant	**Significant and opposite of hypothesised direction**	**Significant and in hypothesised direction**	Not significant	Not significant	Not significant	Not significant
WG control of corruption	**Jointly significant and in hypothesised direction**	Not significant	**Jointly significant and in hypothesised direction**	Not significant	Not significant	Not significant	**Jointly significant and in hypothesised direction**
Procedures to enforce contracts	**Significant and in hypothesised direction**	Not significant	Not significant	Not significant	Not significant	**Significant and in hypothesised direction**	Not significant
Time to enforce contracts	Not significant	**Significant and in hypothesised direction**	Not significant	Not significant	Not significant	Not significant	Not significant
Cost to enforce contracts	Not significant	Not significant	Not significant	Not significant	**Significant and opposite of hypothesised direction**	Not significant	Not significant
Procedures to register property	Not significant	Not significant	Not significant	Not significant	Not significant	Not significant	Not significant
Time to register property	Not significant	Not significant	Not significant	Not significant	Not significant	Not significant	Not significant
Cost to register property	Not significant	**Significant and in hypothesised direction**	**Significant and in hypothesised direction**	Not significant	Not significant	Not significant	Not significant
Recovery rate for creditors	Not significant	Not significant	Not significant	Not significant	Not significant	Not significant	Not significant
Notes: This summary was based on the econometric results from the regression analyses given in Appendix 29 to Appendix 38							

Table 4.25: Robust results of historical institutional variables as determinants of current institutional variables across different legal family categorisations

	French colony	French legal family	Malaria stability index	Catholicism	Islam	Islamic law	Ethnic fractionalisation index
Strength of legal rights index	Not significant	**Significant and in hypothesised direction**	Not significant	**Significant and in hypothesised direction**	**Significant and in hypothesised direction**	Not significant	Not significant
Depth of credit information index	Not significant	Not significant	**Significant and in hypothesised direction**	Not significant	Not significant	Not significant	Not significant
WG control of corruption	**Jointly significant and in hypothesised direction**	Not significant	**Jointly significant and in hypothesised direction**	Not significant	Not significant	Not significant	**Jointly significant and in hypothesised direction**
Procedures to enforce contracts	**Significant and in hypothesised direction**	Not significant	Not significant	Not significant	Not significant	**Significant and in hypothesised direction**	Not significant
Time to enforce contracts	Not significant	**Significant and in hypothesised direction**	Not significant	Not significant	Not significant	Not significant	Not significant
Cost to enforce contracts	Not significant	Not significant	Not significant	Not significant	**Significant and opposite of hypothesised direction**	Not significant	Not significant
Procedures to register property	Not significant	Not significant	Not significant	Not significant	Not significant	Not significant	Not significant
Time to register property	Not significant	Not significant	Not significant	Not significant	Not significant	Not significant	Not significant
Cost to register property	Not significant	Not significant	**Significant and in hypothesised direction**	Not significant	Not significant	Not significant	Not significant
Recovery rate for creditors	Not significant	Not significant	Not significant	Not significant	Not significant	Not significant	Not significant
Notes: This summary was based on the robust econometric results from the regression analyses given in Appendix 16 to Appendix 25 and in Appendix 29 to Appendix 38							

Comparing Table 4.23 and Table 4.24 reveals the qualitative differences due to the re-categorisation of legal families: French colony was no longer statistically significantly associated with strength of legal rights index; French legal family was now statistically significantly associated with the depth of credit information index, but with the opposite sign to the hypothesised sign; French legal family was now statistically significantly correlated with cost to register property; and French legal family was no longer statistically significantly associated with recovery rate for creditors. These qualitative differences point to the sensitivity of the results of the links between historical institutional factors and current institutional factors to the categorisation of legal families used in this study. The results that remain the same across the two types of legal family categorisations, specifically the legal family taxonomies of La Porta et al. (1999) and Klerman et al. (2011), are considered the robust results from the empirical analysis of the links between historical institutional factors and current institutional factors because these results are not affected by the different types of categorisations of legal families. The robust results across the two types of legal family categorisations are presented in Table 4.25, and these robust results represent the key results from the empirical analysis of the links between historical institutional factors and current institutional factors.

The robust results in Table 4.25 suggest that H14 received the highest empirical support because three out of the ten current institutional variables were statistically significantly associated with the malaria stability index variable. H13a, H13b, and H15b received the second highest empirical support because two out of the ten current institutional variables were statistically significantly associated with French colony, French legal family, and Islam; although the coefficient of Islam was opposite to the hypothesised direction with regard to the cost to enforce contracts variable. H15a, H15c, and H16 received the least empirical support as only one

current institutional variable was associated with Catholicism, Islamic law, and ethnic fractionalisation index.

Furthermore, the robust results from Table 4.25 show that the malaria stability index explained the variation in the WG control of corruption variable, and did not explain the variation in the time to enforce contracts variable. Therefore, the foregoing results suggest that WG control of corruption is a possible channel through which disease endowment, as measured by the malaria stability index, affects financial system development in the African context.

4.6. Conclusions

In this chapter the empirical results that enabled the testing of Hypotheses 1 to 16 were presented. First, pairwise correlations among the variables used in the empirical analyses showed that many explanatory variables were associated with the dependent variables and in the hypothesised directions. Second, regression analyses revealed that among the historical institutional factors only the measures of disease endowment, specifically the malaria stability index, latitude, and KGtropics variables, were statistically significantly associated with financial system development and in the hypothesised directions, lending support to H2. The other hypotheses H1a, H1b, H3a, H3b, H3c, and H4 were not supported.

Third, regression analyses showed that among the current institutional factors only the measure of institutional enforcement quality, specifically WG control of corruption, and the measure of the efficiency of the judicial system, specifically time to enforce contracts, were statistically significantly associated with financial system development and in the hypothesised directions, lending support to H7 and H10. The other hypotheses H5, H6, H11, and H12 were not supported. Moreover, the interaction effects among the quality of creditor rights institutions, the

quality of the credit information infrastructure, and the institutional enforcement quality did not receive empirical support and hence H8 and H9 were not supported.

Finally, the links among the historical and current institutional variables were examined and it was shown that the malaria stability index variable was statistically significantly associated with the highest number of current institutional variables; followed by French colony, French legal family, and Islam with the second highest number of current institutional variables; and then Catholicism, Islamic law, and ethnic fractionalisation index variable that was associated with the least number of current institutional variables. In essence, H13 to H16 received some form of empirical support in the data. The foregoing results also revealed that the WG control of corruption variable, and not the time to enforce contracts variable, seems to be the channel through which the malaria stability index affects financial system development in the African context.

With Hypotheses 1 to 16 tested and the results presented above, Chapter 5, the next chapter, interprets these results in the light of the existing literature and shows how these results achieve the research objectives set out earlier in Chapter 1 of this dissertation and hence help to answer the research question of this study as presented in section 1.2.

5. Discussion of results and concluding remarks

The discussion and interpretation of the results presented in Chapter 4 are given in this chapter. In discussing and comparing the results gotten in the empirical analyses of this dissertation with existing literature, the contributions of this dissertation are also unearthed. First, all the results from testing Hypotheses 1 to 16 developed in Chapter 2 are discussed and interpreted. Second, the theoretical implications of the findings from the research in this dissertation are presented. Third, the policy implications are delineated. Fourth, the directions for future research are discussed. Fifth, the limitations of the research carried out in this dissertation are noted. Finally, some concluding remarks bring the dissertation to a close.

5.1. Discussion of results

Hypotheses 1 to 4 were developed to achieve the first objective of this study: *To determine the historical institutional factors that act as determinants of financial system development in Africa*. As discussed in section 2.4, four theories argue that different historical institutional factors affect financial system development and from these four theories the hypotheses H1 to H4 were developed. From the empirical analyses in section 4.2, only the measures of disease endowment were statistically significantly associated with financial system development and in the hypothesised directions, lending support to H2 and to the disease endowment theory.

As noted earlier in section 3.1 when discussing the interesting features of the African continent that make it suited to test these theories of historical institutional factors, if there is any region of the world where disease endowment, specifically malaria, should have affected significantly the colonisation strategy of the colonisers, that area should be Africa. From the

malaria stability index, the countries with the highest values are from Africa, revealing the conduciveness of Africa to the prevalence and transmission of malaria. Moreover, among the tropical areas of the world, African countries stand out because of the types and resilience of vector mosquitoes (Kiszewski et al., 2004). Kiszewski et al. (2004, p. 489) report that "both the region-based and cell-based versions of our stability index demonstrate that malaria is transmitted far more robustly in sub-Saharan Africa than it is elsewhere in the world… Transmission is somewhat less stable in Papua New Guinea, Irian Jaya, and the Solomon Islands … Malaria is less stable elsewhere in the tropics and least stable in the more temperate parts of the world. Tropical regions in general appear to face larger obstacles in intervening against malaria, which these indices suggest may be due more to the intrinsic properties of their vectors and the effects of climate than to differences in health systems or anti-malaria interventions". Hence the disease endowment theory should receive empirical support in Africa if it has any explanatory power in it and this study has shown that the disease endowment theory has some explanatory power as it received empirical support.

The coefficients of the historical institutional variables of the other three theories had the hypothesised signs in general, but were not statistically significant. The exception to the hypothesised signs was the coefficient of Islamic law that had a positive sign instead of a negative sign as hypothesised in H3c, although the coefficient was not statistically significant. Thus H1a, H1b, H3a, H3b, H3c, and H4 were not supported in the data. The foregoing results suggest that some predictions of the legal origins theory in its two forms as the coloniser identity theory and the legal family theory, the religion-based theory, and the ethnic fractionalisation theory did not receive empirical support within the African context. In essence, one of the predictions of the coloniser identity theory is that countries colonised by England have higher

financial system development than countries colonised by France. The results in this study, however, do not support this prediction. The legal family theory argues that countries categorized as part of the English legal family have a higher financial system development than countries categorized as part of the French civil law family. But the results of this study do not support this prediction.

Therefore the legal origins theory variables do not have any statistically significant association with financial system development whether legal origins theory is interpreted as either the coloniser identity theory or the legal family theory. The lack of significance of the legal origins variables may be because of the way the legal origin variables were coded. It is important to note that the legal origin variables used in this dissertation are the same as those used in previously published studies and are specifically based on the coding by La Porta et al. (2008a) and Klerman et al. (2011). I, however, tried a different coding for the legal families, as discussed in section 4.5, in which I introduced a mixed legal family category as suggested by Klerman et al. (2011). With this new coding the legal family variables of interest were still not statistically significantly associated with financial system development. The lack of empirical support for the aforementioned predictions of the coloniser identity theory and the legal family theory suggests that on average the fact that an African country was colonised by France or categorised as part of the French civil law legal family does not necessarily imply that the African country will have a worse performing financial system compared to an African country colonised by England or categorised as part of English legal family.

Whether this lack of a statistically significant link among legal origin variables and financial system development is peculiar to Africa or can be generalised to other low-income regions of the world is difficult to say precisely and is definitely an empirical question. As will

be noted later in the section on topics for future research, similar investigations can be carried out in other low-income and developing regions of the world to see whether equivalent results as those found here will be identified. If similar results are identified, then it is possible that the legal origins theory predictions do not hold in low-income and developing countries and more studies may be required to figure out why the theory predictions do not hold. If the legal origins theory predictions are supported in other low-income and developing regions, then the results for the African region suggest that some unique features in African countries, such as the relatively shorter duration of their colonisation, the shocks of war and political instability that disastrously affected African countries since independence until recently, the large informal economy, may have attenuated the long term effects of the legal origins on financial system development within the African continent. Further studies are definitely needed to understand better the lack of statistically significant link among the legal origins theory variables and financial system development.

Furthermore, the religion-based theory predicts that countries with Catholicism as dominant religion have lower financial system development than countries with Protestantism as dominant religion. But the results in this study do not support this prediction. As mentioned earlier in section 3.1 when delineating the features of the African continent that may offer theoretical insights, the recent introduction of the two forms of Christianity into African countries during the colonisation of the 19th century may not have given enough time for the differences between Catholicism and Protestantism that may have implications for financial system development to manifest. In addition, because many African countries were not settlement colonies due to their disease environment, relatively large numbers of Protestant and Catholic Europeans have not settled in Africa and this may account for the absence of effects of

the differences between Catholicism and Protestantism on financial system development. Hence it seems that a long duration of colonisation and long existence of Catholicism and Protestantism in the colonies are necessary to be able to observe the differential effects of Catholicism and Protestantism on financial system development. The theoretically argued effects of Catholicism and Protestantism for financial system development may be more evident in other low income countries such as those in Latin America and the Caribbean that were European colonies for many centuries.

The religion-based theory also predicts that countries with Islam as dominant religion have lower financial system development than countries with Protestantism as dominant religion. But the results in this study do not support this prediction. Besides, the religion-based theory predicts that countries with Islamic law as part of their legal system have lower financial system development than countries without Islamic law in their legal system. But the results in this study do not support this prediction. On the contrary, the evidence here shows that, on average, countries with Islamic law as part of their legal system have levels of financial system development that are not statistically significantly different from those of countries without Islamic law in their legal system. This foregoing contrary result suggests that on average the fact that an African country has Islamic law as part of its legal system may not necessarily imply that financial contracting will be negatively affected and hence Islamic law in the legal system of African countries may not be a hindrance to financial system development. It is possible that the adoption by African countries of legal systems from European countries during colonisation and subsequent institutional reforms to adopt more modern European-style institutions have reduced any possible negative effects of Islamic law on financial system development. Hence any possible negative effects of Islamic law on modern economic activities in the African context as

argued in the literature (e.g., see Kuran, 2005) seem not to be evident in the economic outcome of financial system development and therefore may have shifted to other economic and institutional outcomes that are not the focus in this study.

The ethnic fractionalisation theory predicts that more ethnically diverse countries have lower financial system development than less ethnically diverse countries. The results in this study, however, do not support this prediction. The finding that ethnic fractionalisation is not associated with financial system development is particularly surprising and hence interesting. This is because, as noted earlier in section 3.1 when discussing the unique features of the African continent that can offer theoretical insights, the economic effects of ethnic fractionalisation should be strongest in Africa because African countries are highly ethnically fractionalised as seen in the data compiled by Alesina et al. (2003). If ethnic fractionalisation did not explain variation in financial system development in a highly ethnically fractionalised continent such as Africa, it seems difficult to argue that it would explain variation in other low income regions such as Latin America and the Caribbean. But this is an empirical question and as suggested later in areas for future work it would be interesting to compare the results gotten from this dissertation to those carried out in other low income regions in the world to evaluate how generalisable are the results.

Consequently, cross-country differences in financial system development among African former European colonies are not explained by the coloniser identity, the type of legal family, the dominant religions, the existence of Islamic law in the legal systems, and the ethnic diversity of African former European colonies. The finding that H1a, H1b, H3a, H3b, H3c, and H4 were not empirically supported in the data suggests that the legal origins theory, the religion-based theory, and the ethnic fractionalisation theory that have been proposed in the literature to explain

cross-country differences in financial system development may not necessarily hold within the African context. At best, these three theories can be seen as giving weak explanations especially because the coefficients of the historical institutional variables of these three theories, although not statistically significant, in general had the hypothesised directions. To my knowledge, this is one of the first studies to discover these results about the empirical relationship between historical institutional factors and financial system development within the African context using recent financial system development data from 2004 to 2011. Hence carrying out the first research objective has produced a contribution to the literature by showing that only the prediction of the disease endowment theory for financial system development was supported within the African context.

The foregoing results of the links between historical institutional factors and financial system development are mostly in agreement with the results of Beck et al. (2003). Beck et al. (2003) find in a global sample that legal origin does not have a robust statistically significant association with financial system development; that disease endowment has a robust statistically significant association with financial system development; that religion does not have a robust statistically significant association with financial system development; and that ethnic fractionalisation does not have a robust statistically significant association with financial system development. Because ethnic fractionalisation does not have a robust statistically significant association with financial system development in a global sample and does not have a statistically significant association with financial system development within Africa that is highly ethnically fractionalised, ethnic fractionalisation may not be a key determinant of financial system development even in other low income regions of the world. The results of this dissertation are slightly different from those of Beck et al. (2003) in that this dissertation finds

that legal origin, religion, and ethnic fractionalisation were not statistically significantly associated with financial system development while Beck et al. (2003) find some statistical significance for legal origin in some of their specifications. These foregoing results also align with the main results of Fowowe (2013) who finds that legal origins do not explain cross-country variation in financial system development while absolute latitude explains cross-country variation in financial system development in his sample of African countries with financial system development data for the years 1996 to 2005.

Moreover, the results of this dissertation use different measures of disease endowment from those used by Beck et al. (2003) and Fowowe (2013), specifically the malaria stability index and KGtropics that are new in financial system development studies, and confirm the results of Beck et al. (2003) and Fowowe (2013) by showing that disease endowment was statistically significantly associated with financial system development within the African context. In addition, another contribution of this dissertation that also differs from the work of Beck et al. (2003) and Fowowe (2013) is the use of the variable called Islamic law that captures the presence of Islamic law in the legal system of some African countries to evaluate the effect of religion, specifically Islam, on financial system development within the African context.

Hypotheses 5 to 12 were developed to accomplish the second and third research objectives: *To determine the current institutional factors that are associated with financial system development in Africa, and concurrently the effects of the reforms in current institutional factors on financial system development in Africa; and to investigate the interaction effects among some current institutional factors*. H5 to H12 were developed in section 2.5 while examining the literature on the effects of current institutional factors on financial system development. The results in section 4.3 showed that out of the ten current institutional variables

tested only WG control of corruption, a measure of institutional enforcement quality, and time to enforce contracts, a measure of the efficiency of the judicial system, were statistically significantly associated with financial system development within the African context and in the hypothesised directions, lending support to H7 and H10. The other hypotheses, specifically H5, H6, H11, and H12, were not supported in the data.

Moreover, as reported in section 4.4, there was no empirical support for the interaction effects among some current institutional factors (interaction effect between the quality of creditor rights institutions and quality of credit information infrastructure, and interaction effect between quality of creditor rights institutions and institutional enforcement quality), implying that H8 and H9 were not supported in the data. The foregoing results about the effects of current institutional factors on financial system development support some claims of the law and finance theory by suggesting that higher quality institutional enforcement and higher efficiency in the judicial system may create incentives to engage in more credit transactions that consequently improve financial system development within the African context.

The results also show that the quality of creditor rights institutions, as measured by the strength of legal rights index, does not have any statistically significant effect on financial system development in Africa - a finding that may seem contrary to results in the literature. It is worth noting here that Djankov et al. (2007) argue that the quality of creditor rights institutions, as measured by their creditor rights index, may not matter much for private credit in poor countries and they find evidence for their argument. Because Africa contains many poor countries, the finding of this dissertation that the quality of creditor rights institutions is not statistically significantly associated with financial system development within the African context corroborates the findings of Djankov et al. (2007) and those of a recent paper, Fowowe

(2013), that show that the quality of creditor rights institutions is not statistically significantly associated with financial system development within the African context.

Moreover, the empirical evidence presented in this dissertation comes from more recent data dating from 2004 to 2011; the evidence is based on a more comprehensive measure of the quality of creditor rights institutions than those used by Djankov et al. (2007) and Fowowe (2013); and the evidence is focused only on the African context just like the work of Fowowe (2013). In essence, the finding in this dissertation that the quality of creditor rights institutions does not have any effect on financial system development seems to align with the nature of the African context as a low income region, as also evidenced from the results of Fowowe (2013), and not a finding contradictory to other studies. Although there have been changes and reforms to the strength of legal rights index over the period of this study, these reforms seem not to have made the quality of creditor rights institutions important for financial system development in Africa.

That the quality of creditor rights institutions seems not to matter as evidenced from the results of this dissertation suggests that laws on the books may not be what counts for financial system development in Africa, but rather the institutional enforcement quality and the efficiency of the judicial system that are the two variables found to be statistically significantly associated with financial system development within the African context. Because Djankov et al. (2007) find that the quality of creditor rights institutions may not matter in poor countries and this dissertation found that they do not matter within the African context, it is also possible that they will not matter in other low income regions of the world where laws on the books are less important for financial activities due to a history of non-enforcement of laws on the books due to weak institutional structures as found also in Africa.

This dissertation finds that there is no statistical significant association between the quality of credit information infrastructure and financial system development within the African context. This result may seem contrary to that of Djankov et al. (2007), Brown et al. (2009) and others who find that the quality of credit information infrastructure is positively associated with credit market development. On closer look there may not be any contradiction in results when differences in the studies are considered. Djankov et al. (2007) study a different time period, and do not examine African countries only, and therefore it is possible that the results in this dissertation may not be comparable to theirs because difference in findings may result from use of different time periods, and use of different samples. Djankov et al. (2007) study a global sample, while Brown et al. (2009) examine only transition countries in Eastern Europe and former Soviet Union.

Although McDonald and Schumacher (2007) use the depth of credit information index and examine only African countries, they assume that the depth of credit information index is time-invariant, while this dissertation specifically takes into account the between and within country variation in the depth of credit information index variable. Furthermore, McDonald and Schumacher (2007) end their data period at 2004 while the data period of this dissertation goes from 2004 to 2011. Singh et al. (2009), although focused on Africa, also use a different measure of the quality of credit information infrastructure (they use a binary variable for the existence or absence of public and private credit registries while this dissertation uses a composite index); Singh et al. (2009) end their data period in 2006 while the data period of this dissertation ends at 2011. Thus the results in this dissertation may not be comparable to those of McDonald and Schumacher (2007) and Singh et al. (2009). Consequently, the result about the effect of the quality of credit information infrastructure of this dissertation, although different from that of

others in the literature, may not be contradictory to theirs, and seems to be pointing to new findings based on newer and more comprehensive data on legal rules and regulations in Africa.

In essence, the statistically insignificant association between the quality of credit information infrastructure and financial system development found in this dissertation may be pointing to a peculiar result for Africa that requires further investigation. This result suggests that on average improving the quality of the credit information infrastructure may not necessarily have a positive effect on financial system development in Africa. Even though there have been changes and reforms to the depth of credit information index over the period of this study, these reforms seem not to have made the quality of credit information infrastructure important for financial system development in Africa. That the quality of credit information infrastructure was not statistically significantly associated with financial system development in Africa suggests that creditors may not be taking into account the credit information availability, as measured comprehensively by the depth of credit information index of the Doing Business Project, in their credit decisions. Hence this dissertation shows that the quality of credit information infrastructure may not matter for financial system development in Africa.

Of the three measures of the efficiency of the judicial system, only one measure, specifically the time to enforce contracts, was statistically significantly associated with financial system development within the African context. These results suggest that the number of procedures to enforce contracts and the cost to enforce contracts may not have any effect on financial system development and hence should not be seen as aspects of the efficiency of the judicial system that act as binding constraints on financial system development in Africa. It appears that what creditors in Africa care about is the time it takes to enforce contracts, and not necessarily the number of procedures or the cost of enforcing contracts. The statistically

significant effect of the institutional enforcement quality and the time to enforce contracts on financial system development suggest that what creditors in Africa are worried about is that contracts are enforced and that contracts are enforced quickly for credit to flow more easily and effectively from the financial system to the private sector. To my knowledge, this is the first study to show that out of the three measures of the efficiency of the judicial system only the time to enforce contracts matters for financial system development within the African context.

This dissertation shows that the three measures of the efficiency of the legal property system were not statistically significantly associated with financial system development in Africa. This result suggests that creditors appear not to consider the efficiency of the legal property system in making credit decisions. The measures of the efficiency of the legal property system measure how efficiently legally registered property is transferred from one economic agent to another and not whether a given property is legally registered or not. Hence it is possible that what creditors care about is that a property is legally registered and not how efficiently a legally registered property can be transferred from one economic agent to another.

In this dissertation, the results show that the efficiency of the legal property system seems not to have any effect on financial system development in Africa. Although there have been changes and reforms to the component measures of the efficiency of the legal property system over the period of this study, these reforms seem not to have made the efficiency of the legal property system important for financial system development in Africa. Again to my knowledge, this is the first study to show that the efficiency of the legal property system, at least as measured by the efficiency measures from the Doing Business Project, does not matter for financial system development within the African context.

The efficiency of the insolvency system was found to be statistically insignificantly associated with financial system development in Africa. This finding suggests that the efficiency of the insolvency system may not matter much to the credit decisions of creditors in Africa. In other words, that the efficiency of the insolvency system does not matter for financial system development suggests that creditors may not consider the amount of debt they can recoup from a bankruptcy process in their credit decisions. While there have been changes and reforms to the efficiency of the insolvency system over the period of this study, these reforms seem not to have made the efficiency of the insolvency system important for financial system development in Africa. To my knowledge, this is the first study to show that the efficiency of the insolvency system, at least as measured by the efficiency measure from the Doing Business Project, does not matter for financial system development within the African context.

The second and third objective of this study were about determining the current institutional factors that are associated with financial system development in Africa and about investigating the interaction effects among some current institutional factors respectively. Hence, in carrying out the second and third objective of this study, more contributions to knowledge have been made. Out of the ten current institutional factors investigated in this dissertation, only the institutional enforcement quality as measured by the WG control of corruption variable and the efficiency of the judicial system as measured by the time to enforce contracts variable had statistically significant effects on financial system development within the African context. Although there have been reforms to many of these current institutional factors (Doing Business Project, 2013), many of these current institutional factors had no statistically significant effect on financial system development within the African context. Fowowe (2013) also finds that institutional enforcement quality, and not quality of creditor rights institutions, is statistically

significantly associated with financial system development within the African context with financial system development data of 1996 to 2005.

The quality of creditor rights institutions and the quality of credit information infrastructure, although argued to be key determinants of financial system development, were found to have no statistically significant effects of financial system development in Africa. Furthermore, there was no empirical support for the interaction effect between the quality of creditor rights institutions and the quality of credit information infrastructure, and the interaction effect between the quality of creditor rights institutions and institutional enforcement quality. The efficiency of the legal property system and the efficiency of the insolvency system did not have any statistically significant effects on financial system development. To my knowledge this is the first study to examine this group of current institutional factors within the African context over the period 2004 to 2011. More specifically, this is the first study to discover that the efficiency of the legal property system and the efficiency of the insolvency system, at least as measured by the corresponding efficiency measures from the Doing Business Project, do not have any statistically significant effects on financial system development within the African context.

Hypotheses 13 to 16 were developed in order to carry out the fourth research objective of this study: *To verify the links among historical institutional factors and current institutional factors, and consequently to discover the current institutional factors that may act as channels through which the historical institutional factors affect financial system development in Africa*. The results revealed that many of the historical institutional factors were statistically significantly associated with at least one of the current institutional factors.

The results in Table 4.25 showed that out of the ten current institutional variables the malaria stability index was statistically significantly associated with three of the current institutional variables; French legal family, French colony, and Islam were associated with two of the current institutional variables; and Catholicism, Islamic law, and ethnic fractionalisation index were associated with one of the current institutional variables. Hence, the predictions of the disease endowment theory received the highest empirical support when analysing the effects of historical institutional factors on current institutional factors, while the predictions of the ethnic fractionalisation theory received the least empirical support. These foregoing results of the empirical links between historical institutional factors and current institutional factors were generally in the hypothesised directions, except for Islam that was negatively associated with the cost to enforce contracts variable instead of being positively associated as hypothesised in H15b.

More specifically, the malaria stability index was negatively statistically significantly associated with the depth of credit information index, was negatively statistically significantly associated with the WG control of corruption variable, and was positively statistically significantly associated with the cost to register property. The French legal family variable was negatively statistically significantly associated with the strength of legal rights index and was positively statistically significantly associated with the time to enforce contracts variable. The French colony was negatively statistically significantly associated with the WG control of corruption variable and was positively statistically significantly associated with the procedures to enforce contracts variable; Islam was negatively statistically significantly associated with the strength of legal rights index and cost to enforce contracts variable; Catholicism was negatively statistically significantly associated with the strength of legal rights index; Islamic law was positively statistically significantly associated with the procedures to enforce contracts; and

ethnic fractionalisation index was negatively statistically significantly associated with WG control of corruption variable. In essence, H13 to H16 received some form of empirical support in the data although the predictions of the disease endowment theory received the strongest empirical support.

The results of the effects of historical institutional factors on current institutional factors lend support to the legal origins theory, whether in the form of the legal family theory or in the form of the coloniser identity theory. The foregoing results suggest that the legal family to which a country belongs to or the identity of a coloniser of a country affect the quality of current institutional factors in that country. The results, however, also show that there are limits to the impact of the legal family or coloniser identity on current institutional factors because there are current institutional factors such as the cost to enforce contracts, a measure of the efficiency of the judicial system, that were not associated with the legal family or coloniser identity of a country. Notwithstanding, the two current institutional factors that were associated with financial system development, specifically WG control of corruption and time to enforce contracts, were also associated with French colony and French legal family respectively. Although French colony and French legal family were not statistically significantly associated with financial system development in Africa as discussed earlier above, they may affect financial system development indirectly through their effects on current institutional factors such as WG control of corruption and time to enforce contracts that were found to be statistically significantly associated with financial system development in Africa.

It is worthwhile to note that out of the historical institutional factors only the French legal family variable was statistically significantly associated with the time to enforce contracts variable that was also statistically significantly associated with financial system development;

this preceding result suggests that African former European colonies categorised as part of the French civil law legal family have a less efficient judicial system as measured by the longer time taken to enforce contracts, with possible negative consequences for financial system development. Spamann (2009, p. 1852, emphasis in original) states that "the *existence* of substantive diffusion and some role of the legal families is hard to deny. But the quantitative importance of such diffusion can hardly be ascertained theoretically. It is an empirical question". That the French legal family variable may have an indirect relationship with financial system development in Africa through the statistically significant association of the French legal family variable with the time to enforce contracts variable points to a possible quantitative importance of the substantive diffusion of legal institutions along legal family lines. Hence the legal origins variables seem to have only an indirect relationship with financial system development in Africa.

The predictions of the disease endowment theory received the highest empirical support when analysing the effects of historical institutional factors on current institutional factors. The results also point to the limits of the disease endowment theory by showing that some current institutional factors such as the quality of the creditor rights institutions are not affected by whether the colonists established lower quality institutions or higher quality institutions during the time of colonisation. It is worth noting, however, that the malaria stability index was the only historical institutional variable that had a statistically significant association with the financial system development in Africa. Table 4.25 revealed that the WG control of corruption variable, and not the time to enforce contracts variable, seems to be the channel through which disease endowment affects financial system development; this is because the malaria stability index was statistically significantly associated with WG control of corruption and not with time to enforce contracts variable.

As given in Table 4.10, even after controlling for WG control of corruption and time to enforce contracts that were the two current institutional variables found to be statistically significantly associated with financial system development, malaria stability index remained statistically significantly associated with financial system development, although with a reduced coefficient size due to the possible mediating role of WG control of corruption (coefficient size of malaria stability index is 0.78 in Column 3 of Table 4.3 and 0.55 in Column 1 of Table 4.10). Moreover, the fact that malaria stability index was statistically significantly associated with financial system development after controlling for WG control of corruption and time to enforce contracts variables suggests that there may be other channels through which malaria stability index affects financial system development in Africa. Hence disease endowment seems to have a direct and indirect relationship with financial system development within the African context.

Religion had a statistically significant association with three current institutional factors: the quality of creditor rights institutions as measured by the strength of legal rights index, the efficiency of judicial system as measured by the procedures to enforce contracts variable, and the efficiency of the judicial system as measured by the costs to enforce contracts variable. The empirical analyses showed that countries where Catholicism is the dominant religion have lower quality creditor rights institutions than those where Protestantism is the dominant religion. The preceding result is similar to that of Stulz and Williamson (2003) who also find that countries where Catholicism is the dominant religion have lower creditor rights protection than those where Protestantism is the dominant religion. As discussed earlier, it is important to note here that Catholicism and the strength of legal rights index did not have any statistically significant association with financial system development in Africa. Because there are not much statistically significant differences in legal institutions and financial system development among countries

dominated by Catholicism and Protestantism suggest that Christians in Africa may be sharing very similar Christian values and attitudes as regards institutional design, legal institutions, and financial contracting, and therefore differences in Catholicism and Protestantism in European countries that may have led to differences in legal institutions and economic outcomes in European countries do not seem to exist in Africa.

It is possible that the way African countries were colonised and the not so long duration of the colonisation, coupled with the lack of significant immigration of Europeans to African countries during and after colonisation because many African countries were not hospitable due to their disease endowment, has led to these lack of significant differences in legal institutions and financial system development among countries dominated by Catholicism and those dominated by Protestantism in Africa. More qualitative work that tries to capture and compare the Christian values and beliefs of Africans may be required to explain these statistically insignificant differences between countries dominated by Catholicism and those dominated by Protestantism.

The empirical analyses showed that countries where Islam is the dominant religion have lower quality creditor rights institutions than those where Protestantism is the dominant religion. The empirical results, however, also showed that countries where Islam is the dominant religion have more efficient judicial systems than those where Protestantism is the dominant religion. This is evidenced from the lower cost to enforce contracts in countries where Islam is the dominant religion as compared to countries where Protestantism is the dominant religion. This unexpected result that went against the hypothesised sign shows that the effect of Islam on current institutional factors seems more complicated than the religion-based theory predicts.

To complicate the effects of Islam a bit further, the empirical results showed that countries with Islamic law in their legal system have less efficient judicial systems than those where Islamic law is not in their legal system, which is as expected and predicted by the religion-based theory. This is evidenced from the greater number of procedures to enforce contracts in countries where Islamic law is part of the legal system as compared to countries where Islamic law is not part of the legal system. These foregoing mixed results for the effect of Islam suggest that Islam may not always have the assumed negative effects on current institutional factors as argued in the literature. In essence, African countries where Islam affects values, attitudes, and institutional design may have adopted more effective legal institutions from their colonisers and during modern institutional reforms without any hindrance from Islam and Sharia law.

Ethnic fractionalisation appears to have a modest impact on the current institutional factors because it is jointly statistically significantly associated with only one current institutional factor: the institutional enforcement quality as measured by WG control of corruption variable. This foregoing result suggests that more ethnically diverse countries have worse institutional enforcement quality than less ethnically diverse countries. As stated previously, ethnic fractionalisation did not to have any statistically significant association with financial system development in Africa. Because WG control of corruption variable is statistically significantly associated with financial system development and ethnic fractionalisation is jointly significantly associated with WG control of corruption variable, ethnic fractionalisation may have an indirect relationship with financial system development through its effect on WG control of corruption. Hence ethnic fractionalisation appears to have an indirect relationship with financial system development within the African context.

Therefore the analyses carried out to achieve the fourth objective of this dissertation have also unearthed more contributions to knowledge. The historical institutional variables identified by the legal origins theory explain the cross-country differences in four out of the ten current institutional factors; the historical institutional variables identified by the disease endowment theory and religion-based theory explain the cross-country differences in three out of the ten current institutional factors studied in this dissertation; and the historical institutional variable identified by the ethnic fractionalisation theory explains the cross-country differences in one of the ten current institutional factors. Although French colony variable and French legal family variable are not statistically significantly associated with financial system development in Africa as discussed earlier, they may affect financial system development indirectly through their effects on the two current institutional factors that were associated with financial system development, specifically WG control of corruption and time to enforce contracts. This is because WG control of corruption and time to enforce contracts variables were statistically significantly associated with French colony and French legal family respectively.

The WG control of corruption variable, and not the time to enforce contracts variable, seems to be the channel through which disease endowment affects financial system development; this is because the malaria stability index was statistically significantly associated with WG control of corruption and not with time to enforce contracts variable. Hence this dissertation also found that disease endowment seems to have a direct and an indirect relationship with financial system development in Africa.

Differences in religion seem not to explain cross-country differences in financial system development within the African context, and Islam does not appear to prevent the adoption of high quality current legal institutions as seen from the more efficient judicial system of countries

dominated by Islam compared to countries dominated by Protestantism. Moreover, none of the religion-based theory variables were correlated with WG control of corruption variable and time to enforce contracts variable that were correlated with financial system development. Hence, Religion seems not to have any direct or indirect relationship with financial system development within the African context. Even though ethnic fractionalisation appears not to have any direct relationship with financial system development in Africa, ethnic fractionalisation may indirectly affect financial system development through its effect on WG control of corruption; this is because WG control of corruption variable is associated with financial system development and ethnic fractionalisation is associated with WG control of corruption variable. Thus ethnic fractionalisation appears to have an indirect relationship with financial system development within the African context. To my knowledge, this is the first study to reveal these links among historical institutional factors and current institutional factors within the African context.

5.2. Theoretical implications

The results discussed above have theoretical implications, and these implications are detailed below.

First, the results suggest that within the African context the theories of historical institutional factors have greater explanatory power in explaining cross-country differences in current institutional factors than in explaining cross-country differences in financial system development. The evidence in this dissertation shows that only the historical institutional factors identified by the disease endowment theory explain cross-country differences in financial system development in Africa, while the historical institutional factors identified by the legal origins theory, religion-based theory, and the ethnic fractionalisation theory do not explain cross-country

differences in financial system development within the African context. These historical theories, however, explain cross-country differences in current institutional factors in varying degrees. In essence, it should not be taken for granted that these historical theories are all relevant in explaining cross-country differences in financial system development in Africa. The results of this dissertation also highlights that historical institutional factors may not have direct effects on financial system development, but may have indirect effects through their links with current institutional factors that affect financial system development in Africa. The presence of indirect effects and lack of direct effects of some historical institutional factors may be pointing to a reduced overall effect of many of the historical institutional factors on current financial system development within the African context.

Second, it may be theoretically beneficial to treat the legal origins theory as two theories just as discussed in this dissertation. These two theories are the coloniser identity theory and the legal family theory. The apparent lumping of these two theories as one theory seems to align with the historical development of the legal origins theory as emerging empirical evidence modified the boundaries of the legal origins theory. Because the coloniser identity theory and the legal family theory are closely linked and the historical institutional factor identified by the legal family theory can be considered as a subset of the historical institutional factors identified by the coloniser identity theory, the literature may benefit from the fine-tuning of these two theories and the categorisation of different empirical findings with the most appropriate theory.

The theoretical separation of the coloniser identity theory from the legal family theory can clearly help policy reforms because empirical evidence of historical effects that clearly point to the legal family effects can be tackled differently from those that point to other coloniser identity effects such as public administration policies, educational policies, and health policies of

colonisers. Hence breaking down the legal origins theory into two theories that capture its arguments more clearly may increase our understanding of the effects of historical institutional factors identified by the coloniser identity theory and the legal family theory. The evidence from this dissertation points to differences between coloniser identity effects and legal family effects on current institutional factors, although the differences may not be strong enough to enable a robust demarcation in this dissertation between the coloniser identity theory and the legal family theory. The research by Klerman et al. (2011) is already a step in this direction of developing a more fine-grained legal origins theory and more studies are needed in an effort to more properly identify the key historical institutional factors that act as determinants of current institutional factors in particular and economic outcomes in general.

Third, the unexpected and mixed findings on the effects of Islam on financial system development and current institutional factors within the African context shows that the religion-based theory as applied to the effects of Islam may require some modifications. It is possible that there are some conditions (for example, moderating factors such as the adoption of European-style legal systems, legal institutions, and enforcement systems) that attenuate any expected negative effects of Islam on financial system development and current institutional factors as argued by some in the literature (e.g., see Kuran, 2005). In essence, that a country has Islamic law in its legal system may not necessarily imply that its financial system development will be restricted. There is definitely room for more theorising and more fine-grained empirical tests on the effects of Islam on financial system development and current institutional factors within the African context in particular and other regions of the world in general.

Finally, the law and finance theory has some empirical support, but many of the predictions from the theory were not supported in the data as seen from the many statistically

insignificant relationships between current institutional factors and financial system development within the African context. The empirical investigation in this dissertation helps throw more light on the boundaries of institutional theories in general and the law and finance theory in particular by showing that many current institutional factors related to the delineation and protection of contracting and property rights may not always matter for financial system development, especially within the African context, as usually assumed in the literature. Of particular significance is the finding that the quality of creditor rights institutions and the quality of credit information infrastructure seem not to matter for financial system development, suggesting that laws on the books may not be affecting the lending decisions of creditors within the African context. More research and empirical tests with different research designs and in different contexts are needed in order to verify and confirm the current institutional factors that always act as binding constraints on financial system development within the African context in particular and in other regions of the world in general.

5.3. Policy implications

The empirical results of this dissertation discussed above have policy implications. The statistically insignificant effects of coloniser identity, legal family, religion, and ethnic fractionalisation on financial system development within the African context over our duration of study suggest that African countries may not be suffering from severe institutional hysteresis that may arise from these historical institutional factors. Consequently these statistically insignificant results suggest that institutional reforms that may positively affect financial system development in African countries can be enacted without extensive resistance from the possible negative long term effects of coloniser identity, legal family, religion, and ethnic fractionalisation.

The statistically insignificant association between Islamic law and financial system development within the African context is a very encouraging empirical result because this result suggests that there is a possibility that Islam may not necessarily hamper financial system development in Africa even when Islamic law is part of the legal system of an African country. In essence, African countries may not be doomed to major detrimental lock-in effects and institutional hysteresis that may arise from the long term effects of historical institutional factors such as coloniser identity, legal family, religion, or ethnic fractionalisation. Consequently, African countries may have to deal with less disadvantageous historical baggage that may inhibit the necessary reforms needed to improve financial system development.

In discussing their policy prescriptions, Beck et al. (2011) note the following caveat as regards policy reforms for different African countries:

> There is an important distinction between common law [English legal family] and civil code [e.g., French legal family] countries. Common law countries typically have a more flexible legal and regulatory framework that offers more room for innovation, while civil code countries rely more steadily on written codes and often take longer to adjust the legislative and regulatory framework to new developments. (p. 7)

Moreover, Honohan and Beck (2007, p. 79) also state that "a particular difficulty for countries with a Civil Code tradition [e.g., French legal family] is their inability to take advantage of many new financial instruments, because they have not been able to introduce the Common Law concept of a trust upon which such instruments are based". These policy caveats seem to have been made with the assumption that legal family explains statistically significant cross-country differences in financial system development among African countries and that legal family is a binding constraint for financial system development for some African countries. The results in

this dissertation, however, show that on average there are no statistically significant differences in financial system development between the two legal family groups, specifically English and French legal families, within the African context. Hence these policy caveats may not be strongly justified by the evidence from Africa because the possible effects of legal family for financial system development in Africa seem not to be supported in the data used in this dissertation.

Nevertheless, the statistically significant effect of disease endowment on financial system development suggests to policymakers in African countries that current poor financial system development may have links to detrimental institutional structures inherited from the colonial times and from any of the colonisers, whether England or France. The good news is that this dissertation found that the WG control of corruption variable seems to be one of the channels through which disease endowment affects financial system development in Africa. So only one out of ten current institutional factors is a possible channel through which the historical institutional factor, specifically the disease endowment, continues to exert its long term detrimental effects on financial system development in Africa.

Hence this dissertation suggests that policy reforms should be directed at the detrimental institutional structures such as those that permit widespread corruption, those that reduce the institutional enforcement quality, and those that delay the time to enforce contracts. These reforms should improve the protection of contracting and private property rights, with positive consequences for financial system development. It is important to note that this dissertation also found that ethnic fractionalisation was statistically significantly associated with WG control of corruption variable while French legal family was statistically significantly associated with the time to enforce contracts variable; therefore both French legal family and ethnic fractionalisation may have some indirect effects on financial system development in Africa. Nevertheless, and on

a more positive note, French legal family and ethnic fractionalisation were not statistically significantly associated with financial system development and which suggests that their effects on reforms may be mild. Thus, policymakers need to be aware that the indirect effects of legal origins and ethnic fractionalisation may need to be taken into account if institutional reforms are to proceed more smoothly.

The World Bank Doing Business Project has been encouraging reforms in many current institutional factors that were studied in this dissertation with the suggestion that all the current institutional factors studied in this dissertation and measured by the Doing Business Project have effects on financial system development. This dissertation has shown that only one current institutional factor that is measured by the Doing Business Project, specifically the time to enforce contracts variable that is a measure of the efficiency of the judicial system, had a statistically significant effect on financial system development within the African context. The results from this dissertation suggest that reforms across all the indicators of the Doing Business Project that were examined in this dissertation may not have any effects on financial system development in Africa. Hence reforms to the Doing Business Project indicators examined in this dissertation should not be justified by arguing that these indicators and their reforms have effects on financial system development in Africa. The only indicator that is justified to have effects on financial system development within the African context is the time to enforce contracts indicator.

Nevertheless, the Doing Business Project indicators may have effects on other areas of private sector economic activities and hence reforms to these indicators can be justified based on their effects on these other areas of private sector economic activities. This dissertation only argues that many of the Doing Business Project indicators studied in this dissertation do not have

the assumed effects on financial system development within the African context as usually presumed in the World Bank Doing Business Project reports.

5.4. Limitations of study

This dissertation is not without limitations. This dissertation is focused on the African context and hence the results here may not be easily generalised beyond the African sample used in this dissertation.

Moreover, the results of this dissertation are based on observed relationships that are partial correlations, consequently limiting strong causal interpretations from the study. Nevertheless, efforts were made to control for the relevant explanatory variables that have been proposed in the literature and which should reduce endogeneity problems in the empirical analyses carried out above.

In addition, many of the measures used for the regression analyses were not statistically significantly associated with financial system development. These statistically insignificant results may be pointing to real findings among variables of interest in this dissertation or may be due to the deficiencies in the measures used. It is important to note that many of the measures used in this dissertation have been used in previously published studies and many of them were sourced from reputable organisations such as the World Bank. But there is still the possibility that the measures have limitations and need to be improved upon to capture better the variables of interest. It would have been desirable to have had several alternative data sources of different relevant measures to verify the results of the measures used in this dissertation. In essence, one of the limitations of this dissertation is data limitation that made it impossible to carry out several robustness checks of the results gotten in this dissertation. The availability of different data

sources, apart from the Doing Business Project, on legal rules and regulations for a broad cross-section of African countries would have enabled a more rigorous investigation of the different hypotheses developed in this dissertation.

It is possible that the statistically insignificant results among the Doing Business measures and financial system development may be because the Doing Business indicators are not capturing well the key institutional features that matter for financial system development. For example, the strength of legal rights index of the Doing Business Project that was used in measuring the quality of creditor rights institutions contains 10 items relating to laws governing credit transactions. It is possible that these 10 items being coded may not be enough to capture adequately the features of the laws governing credit transactions that may matter for financial system development. Indices that code many more features of the law have been developed to overcome some of these limitations. For example, the creditor protection index developed by Armour et al. (2009) codes 44 items that is more than the 10 items coded in the strength of legal rights index.

In essence the creditor protection index developed by Armour et al. (2009) seems more comprehensive than the strength of legal rights index of the Doing Business Project and may be a better measure of the quality of creditor rights institutions than the strength of legal rights index of the Doing Business Project. Consequently the creditor protection index developed by Armour et al. (2009) could have served as an alternative index to the strength of legal rights index, could have served as a robustness check on the results related to the strength of legal right index and may have given different results from those obtained in this dissertation. This creditor protection index, however and as discussed in section 3.3.3 of this dissertation, is not available for many African countries and this data limitation prevented its use in this dissertation. It is hoped that

this index will be available for a broad cross-section of African countries in the near future to act as a robustness check of the results of the strength of legal rights index and possibly to serve as a better measure of the quality of creditor rights institutions.

5.5. Future directions of study

This study has opened up many avenues for further studies that can throw more light on the effects of institutions on financial system development in Africa in particular and in other regions of the world in general. Some of these avenues are discussed below.

First, future research can verify the results from this study for other continents; for example studies can be carried out for Latin America and the Caribbean, and for the Central, East, and South East Asia. The results from different regions can then be compared to see the differences and similarities across different regions and hence deduce possible generalisable results. Many of the countries in these regions are low-income and developing countries, with poor institutional structures and hence share some similarities with African countries, even though they are different from African countries in their colonial history and the duration of their colonisation, in their disease endowment, in their religious composition and dominant religious beliefs (e.g., Buddhism and Hinduism may be prominent in Asia, but not in Africa and Catholicism has had a longer history in Latin America and the Caribbean than in African countries), their lack of shocks such as wars, famine, and political instability in recent decades, and so on. Because this dissertation focused on studying the African context, future studies can examine these other low-income regions to see whether they will show similar results as those found in this dissertation for Africa. In this way, the results peculiar and unique to Africa can be better identified and studied more deeply, possibly employing qualitative methods, to understand

which particular features of African countries explain these peculiar and unique results and which policy formulations are best suited for African countries.

Second, future studies can also use firm-level data and individual level data to examine the effects of institutions on financial system development. The on-going firm-level surveys carried out by the World Bank Investment Climate Surveys should help generate a lot of datasets on firm-level data and individual level data that can be combined with sub-national and national level data in multi-level studies to get a more fine-grained understanding of the links among institutions and financial contracting in different regions of the world.

Third, future research can benefit from using research designs such as case studies and historical narratives that may help increase the causal interpretation of the links between the financial system development variables and institutional variables used in this dissertation. Moreover, the use of qualitative methods such as interviews and ethnography may help identify the reasons behind the non-significance of the institutional factors studied in this dissertation. By observing closely the financial contracting process and discussing with credit officers and entrepreneurs through in-depth interviews it may be possible to explain why some current institutional factors such as the quality of the credit information infrastructure may not matter for financial system development in the African context.

Fourth, future studies can work on discovering other historical institutional factors that are worth investigating as these may offer more robust explanations for the cross-country variation in financial system development in the African context. Moreover, future studies can try to discover other institutional channels through which disease endowment as measured by the malaria stability index affects financial system development. This is because malaria stability

index was statistically significantly associated with financial system development in Africa even after controlling for WG control of corruption variable that is a possible channel through which malaria stability index affects financial system development.

Fifth, as already discussed in the limitations section above, future research can benefit from using alternative, more comprehensive and more robust measures of legal rules and regulations for a broad cross-section of African countries when they become available. The availability of more comprehensive measures can provide opportunity to verify the results gotten in this dissertation and reduce the possibility that the statistically insignificant results gotten in many of the regressions in this dissertation are due to poor data quality. It is hoped that the Doing Business Project will enlarge the number of items coded in their indicators and that more comprehensive indices such as those compiled by Armour et al. (2009) will be available for a broad cross-section of African countries in the near future.

Finally, while investigating the effects of current institutional factors, this study focused on the effects of current legal institutions without downplaying the importance and impact of current nonlegal institutions. Future investigation can focus on studying the impact of current nonlegal institutions such as social norms of trust and reciprocity on financial system development once data for a broad cross-section of African countries becomes available.

5.6. Concluding remarks

This is a good point to look at the overall research question of this dissertation and to see whether it has been answered based on the results and contributions to knowledge discussed above. The research question posed in section 1.2 was the following: *To what extent are*

institutional factors determinants of financial system development in Africa? Looking at the results from the dissertation, it can be seen that historical institutional factors seem not to be determinants of financial system development in Africa to a large extent. Moreover, many current institutional factors such as the quality of creditor rights institutions and the quality of credit information infrastructure do not appear to have effects on financial system development in Africa, even after some reforms to these current institutional factors over the years 2004 to 2011. In essence, this dissertation found that institutional factors appear to matter for financial system development in Africa, but not as much as might have been expected judging from many calls for institutional reforms by the World Bank Doing Business Project reports (World Bank, 2012a) and other studies (e.g., Beck et al., 2011; Honohan and Beck, 2007)

In conclusion, the findings in this dissertation point to the need for more fine-grained theories that can provide clear cut and robust historical institutional and current institutional explanations for the cross-country variation in financial system development, especially within the African context. Some of the theories provided so far in the literature have some predictions with empirical support, but seem to require more refinement and more empirical testing to ensure that they provide consistent and robust explanations across time and space. Moreover, more fine-grained empirical research at sub-national and national levels are needed in order to verify the findings from cross-country studies such as those provided in this dissertation; these fine-grained results should enable the design of more specific and relevant institutional reforms that should promote financial system development in Africa in particular and in other regions of the world in general.

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Appendices

Appendix 1: Effects of historical institutional variables on DCP in sample without South Africa

	Dependent variable: DCP							
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
GDP per capita	5.74	5.73	4.72	4.00	1.90	7.21*	5.05	3.67
	(3.49)	(3.52)	(3.35)	(3.08)	(1.81)	(3.73)	(3.44)	(3.65)
Inflation	-1.24**	-0.89**	-1.00**	-0.71**	-0.57**	-0.92**	-0.76**	-0.88**
	(0.46)	(0.38)	(0.39)	(0.28)	(0.26)	(0.36)	(0.31)	(0.34)
WG political stability	2.10	3.01	2.14	1.53	0.59	2.37	4.68*	2.47
	(2.04)	(2.07)	(2.25)	(2.64)	(2.49)	(2.45)	(2.32)	(2.16)
Landlocked	-7.49**	-6.83**	-6.92**	-8.29**	-9.88**	-5.39	-3.04	-9.48**
	(3.46)	(3.18)	(3.16)	(3.80)	(3.76)	(3.75)	(3.49)	(3.89)
Democracy index	0.45	0.52	0.53	0.52	-0.11	0.73	0.63	0.49
	(0.52)	(0.59)	(0.54)	(0.54)	(0.33)	(0.60)	(0.55)	(0.56)
French colony	-5.97							
	(4.93)							
Other colony	1.96							
	(6.02)							
French legal family		1.33						
		(3.94)						
Malaria stability index			-0.55**					
			(0.25)					
Latitude				68.41**				
				(25.82)				
KGtropics					-16.33***			
					(4.78)			
Catholicism						-8.25		
						(6.00)		
Islam						-1.62		
						(5.04)		
Other religions						-4.83		
						(5.15)		
Islamic law							11.54*	
							(5.75)	
Ethnic fractionalisation index								-19.85
								(12.45)
Number of countries	45	45	45	45	42	44	45	45
R-squared	0.40	0.37	0.43	0.49	0.46	0.42	0.43	0.43
Adjusted R-squared	0.284	0.266	0.343	0.415	0.372	0.292	0.344	0.345

Notes: Robust standard errors are given in parentheses. All regressions include the constant term. The omitted colony is the British colony. The omitted legal family is the English legal family. The omitted religion is Protestantism. ***, **, * imply significance at the 1%, 5% and 10% levels.

Appendix 2: Effects of historical institutional variables on DMB on sample without South Africa

	Dependent variable: DMB							
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
GDP per capita	6.81**	6.98**	5.85*	4.95	1.78	7.09**	5.92	5.00
	(3.32)	(3.32)	(3.35)	(3.16)	(1.93)	(3.46)	(3.66)	(3.60)
Inflation	-1.32***	-1.07***	-1.12***	-0.84***	-0.59**	-0.94**	-0.90**	-1.03***
	(0.46)	(0.38)	(0.40)	(0.29)	(0.26)	(0.36)	(0.33)	(0.35)
WG political stability	1.42	2.00	1.49	0.93	0.83	2.45	3.82	1.72
	(1.95)	(1.87)	(2.20)	(2.65)	(2.55)	(2.39)	(2.43)	(2.06)
Landlocked	-6.29*	-5.59*	-5.83*	-7.22*	-9.96**	-5.14	-2.73	-7.99**
	(3.28)	(3.11)	(3.14)	(3.70)	(4.01)	(3.55)	(3.32)	(3.79)
Democracy index	0.63	0.72	0.68	0.65	-0.16	0.67	0.73	0.66
	(0.53)	(0.58)	(0.55)	(0.56)	(0.42)	(0.58)	(0.59)	(0.57)
French colony	-5.01							
	(4.46)							
Other colony	1.03							
	(5.81)							
French legal family		0.70						
		(3.46)						
Malaria stability index			-0.47*					
			(0.26)					
Latitude				64.79**				
				(26.81)				
KGtropics					-16.43***			
					(5.52)			
Catholicism						-8.14		
						(6.14)		
Islam						-1.31		
						(5.21)		
Other religions						-4.22		
						(5.22)		
Islamic law							9.76	
							(6.31)	
Ethnic fractionalisation index								-17.17
								(12.09)
Number of countries	44	44	44	44	41	44	44	44
R-squared	0.43	0.41	0.46	0.53	0.47	0.44	0.46	0.46
Adjusted R-squared	0.318	0.313	0.371	0.449	0.378	0.306	0.367	0.374

Notes: Robust standard errors are given in parentheses. All regressions include the constant term. The omitted colony is the British colony. The omitted legal family is the English legal family. The omitted religion is Protestantism. ***, **, * imply significance at the 1%, 5% and 10% levels.

Appendix 3: Effects of historical institutional variables on DMBOFI in sample without South Africa

	Dependent variable: DMBOFI							
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
GDP per capita	6.94**	7.10**	5.90*	4.99	1.85	7.20**	5.96	4.92
	(3.38)	(3.36)	(3.38)	(3.18)	(1.97)	(3.50)	(3.69)	(3.63)
Inflation	-1.33***	-1.07***	-1.13***	-0.84***	-0.58**	-0.93**	-0.89**	-1.03***
	(0.46)	(0.38)	(0.41)	(0.29)	(0.26)	(0.36)	(0.33)	(0.35)
WG political stability	1.31	1.91	1.36	0.80	0.72	2.43	3.87	1.60
	(2.02)	(1.92)	(2.25)	(2.73)	(2.63)	(2.47)	(2.52)	(2.11)
Landlocked	-6.21*	-5.54*	-5.81*	-7.25*	-10.05**	-5.09	-2.47	-8.20**
	(3.35)	(3.19)	(3.21)	(3.82)	(4.19)	(3.64)	(3.39)	(3.89)
Democracy index	0.63	0.72	0.68	0.65	-0.17	0.67	0.73	0.66
	(0.53)	(0.58)	(0.56)	(0.56)	(0.43)	(0.58)	(0.60)	(0.57)
French colony	-4.96							
	(4.52)							
Other colony	1.39							
	(5.99)							
French legal family		0.84						
		(3.51)						
Malaria stability index			-0.50*					
			(0.27)					
Latitude				67.42**				
				(27.53)				
KGtropics					-16.94***			
					(5.75)			
Catholicism						-8.45		
						(6.13)		
Islam						-1.26		
						(5.17)		
Other religions						-4.58		
						(5.08)		
Islamic law							10.51	
							(6.47)	
Ethnic fractionalisation index								-18.96
								(12.56)
Number of countries	44	44	44	44	41	44	44	44
R-squared	0.42	0.40	0.45	0.52	0.46	0.43	0.45	0.46
Adjusted R-squared	0.308	0.302	0.366	0.445	0.367	0.297	0.363	0.374

Notes: Robust standard errors are given in parentheses. All regressions include the constant term. The omitted colony is the British colony. The omitted legal family is the English legal family. The omitted religion is Protestantism. ***, **, * imply significance at the 1%, 5% and 10% levels.

Appendix 4: Effects of historical institutional variables on DCP without some control variables

	Dependent variable: DCP							
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
GDP per capita	11.51**	11.95**	10.05**	8.75**	9.05	13.46**	11.82**	11.79*
	(5.14)	(5.25)	(4.86)	(4.13)	(5.84)	(5.45)	(5.39)	(6.25)
Inflation	-1.40***	-1.10**	-1.07**	-0.63*	-0.69*	-1.06**	-0.95**	-0.99**
	(0.47)	(0.46)	(0.42)	(0.33)	(0.37)	(0.39)	(0.37)	(0.41)
Democracy index	1.23	1.30*	1.37*	1.27*	1.00	1.58**	1.62*	1.43
	(0.75)	(0.74)	(0.81)	(0.75)	(1.09)	(0.77)	(0.82)	(0.87)
French colony	-10.26							
	(6.99)							
Other colony	-1.29							
	(7.82)							
French legal family		-4.54						
		(7.22)						
Malaria stability index			-0.77**					
			(0.33)					
Latitude				93.72**				
				(37.90)				
KGtropics					-16.22**			
					(6.04)			
Catholicism						-7.09		
						(5.36)		
Islam						0.53		
						(4.12)		
Other religions						2.78		
						(6.33)		
Islamic law							8.50	
							(6.49)	
Ethnic fractionalisation index								-3.48
								(15.35)
Number of countries	46	46	46	46	43	45	46	46
R-squared	0.36	0.34	0.39	0.45	0.32	0.40	0.35	0.34
Adjusted R-squared	0.284	0.276	0.333	0.392	0.250	0.306	0.292	0.271

Notes: Robust standard errors are given in parentheses. All regressions include the constant term. The omitted colony is the British colony. The omitted legal family is the English legal family. The omitted religion is Protestantism. ***, **, * imply significance at the 1%, 5% and 10% levels.

Appendix 5: Effects of historical institutional variables on DMB without some control variables

	Dependent variable: DMB							
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
GDP per capita	9.54***	9.90***	8.37**	7.27**	6.11*	10.10***	9.49***	9.05**
	(3.21)	(3.24)	(3.11)	(2.82)	(3.03)	(3.18)	(3.20)	(3.44)
Inflation	-1.37***	-1.17***	-1.17***	-0.85***	-0.72**	-1.02***	-1.08***	-1.12***
	(0.43)	(0.39)	(0.39)	(0.30)	(0.30)	(0.36)	(0.34)	(0.36)
Democracy index	0.97**	1.08**	1.01**	0.92*	0.41	1.03**	1.22**	1.09**
	(0.47)	(0.51)	(0.50)	(0.48)	(0.58)	(0.49)	(0.50)	(0.52)
French colony	-5.26							
	(4.25)							
Other colony	0.71							
	(5.64)							
French legal family		-0.73						
		(3.95)						
Malaria stability index			-0.51*					
			(0.26)					
Latitude				67.06**				
				(27.01)				
KGtropics					-12.78**			
					(5.03)			
Catholicism						-7.20		
						(6.36)		
Islam						0.22		
						(5.58)		
Other religions						-0.64		
						(5.39)		
Islamic law							7.69	
							(5.61)	
Ethnic fractionalisation index								-9.52
								(10.34)
Number of countries	45	45	45	45	42	45	45	45
R-squared	0.46	0.44	0.49	0.55	0.42	0.46	0.47	0.45
Adjusted R-squared	0.386	0.382	0.436	0.502	0.353	0.379	0.415	0.398

Notes: Robust standard errors are given in parentheses. All regressions include the constant term. The omitted colony is the British colony. The omitted legal family is the English legal family. The omitted religion is Protestantism. ***, **, * imply significance at the 1%, 5% and 10% levels.

Appendix 6: Effects of historical institutional variables on DMBOFI without some control variables

	Dependent variable: DMBOFI							
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
GDP per capita	12.37**	12.82**	10.98**	9.53**	9.95	13.06**	12.58**	12.64**
	(4.95)	(5.00)	(4.72)	(4.03)	(6.13)	(5.07)	(5.27)	(5.97)
Inflation	-1.50***	-1.33***	-1.24***	-0.83**	-0.90**	-1.07***	-1.16***	-1.21***
	(0.48)	(0.47)	(0.42)	(0.31)	(0.42)	(0.39)	(0.37)	(0.41)
Democracy index	1.43*	1.50**	1.51*	1.39*	1.17	1.46*	1.72**	1.61*
	(0.75)	(0.71)	(0.79)	(0.73)	(1.18)	(0.73)	(0.81)	(0.85)
French colony	-8.54							
	(6.37)							
Other colony	-2.77							
	(7.83)							
French legal family		-4.75						
		(6.76)						
Malaria stability index			-0.65**					
			(0.31)					
Latitude				86.31**				
				(35.53)				
KGtropics					-13.56**			
					(5.95)			
Catholicism						-7.38		
						(5.40)		
Islam						0.67		
						(4.30)		
Other religions						2.47		
						(5.97)		
Islamic law							6.29	
							(6.68)	
Ethnic fractionalisation index								-3.28
								(14.95)
Number of countries	45	45	45	45	42	45	45	45
R-squared	0.41	0.39	0.43	0.49	0.35	0.41	0.40	0.39
Adjusted R-squared	0.331	0.334	0.374	0.435	0.282	0.318	0.339	0.327

Notes: Robust standard errors are given in parentheses. All regressions include the constant term. The omitted colony is the British colony. The omitted legal family is the English legal family. The omitted religion is Protestantism. ***, **, * imply significance at the 1%, 5% and 10% levels.

Appendix 7: Effects of current institutional variables on DCP in Sample without South Africa

	Dependent variable: DCP									
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
GDP per capita	8.43**	8.46**	6.71**	8.12**	8.43**	8.08*	8.54**	8.55**	8.29**	7.72**
	(4.08)	(3.83)	(3.36)	(4.02)	(3.99)	(4.23)	(4.10)	(3.95)	(3.96)	(3.72)
Inflation	-0.04	-0.04	-0.05*	-0.04	-0.03	-0.04	-0.04	-0.04	-0.04	-0.06
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)
WG political stability	0.93	0.92	0.26	0.83	1.05	0.93	0.92	0.99	0.91	1.15
	(0.78)	(0.79)	(0.83)	(0.79)	(0.73)	(0.78)	(0.79)	(0.83)	(0.84)	(0.87)
Landlocked	-3.42	-3.70	-5.67*	-5.43	-4.20	-3.69	-3.53	-3.61	-3.82	-4.89
	(3.28)	(3.26)	(3.33)	(3.91)	(3.04)	(3.29)	(3.31)	(3.26)	(3.28)	(3.30)
Democracy index	-0.04	-0.05	-0.05	-0.08	-0.03	-0.05	-0.05	-0.07	-0.05	-0.13
	(0.17)	(0.16)	(0.15)	(0.16)	(0.16)	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)
Malaria stability index	-0.47*	-0.47*	-0.35	-0.43*	-0.46*	-0.46*	-0.43*	-0.45*	-0.46*	-0.35
	(0.25)	(0.25)	(0.23)	(0.25)	(0.24)	(0.25)	(0.25)	(0.25)	(0.26)	(0.22)
Strength of legal rights index	-0.39									
	(0.67)									
Depth of credit information index		-0.16								
		(0.89)								
WG control of corruption			7.40***							
			(2.78)							
Procedures to enforce contracts				-0.61						
				(0.39)						
Time to enforce contracts					-0.01**					
					(0.01)					
Cost to enforce contracts						-0.02				
						(0.04)				
Procedures to register property							0.61			
							(0.73)			
Time to register property								0.01		
								(0.01)		
Cost to register property									-0.01	
									(0.16)	
Recovery rate for creditors										0.07
										(0.06)
Number of observations	299	299	307	299	299	299	299	299	299	267
Number of countries	45	45	45	45	45	45	45	45	45	40
R-squared (Between)	0.270	0.275	0.434	0.303	0.316	0.283	0.259	0.277	0.278	0.381

Notes: Robust standard errors in parentheses. All regressions include year dummies and the constant term. ***, **, * imply significance at the 1%, 5% and 10% levels.

Appendix 8: Effects of current institutional variables on DMB in sample without South Africa

	Dependent variable: DMB									
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
GDP per capita	7.69**	8.16**	6.38**	7.46**	7.67**	7.02*	7.77**	7.85**	7.62**	9.10**
	(3.65)	(3.38)	(3.18)	(3.63)	(3.59)	(3.83)	(3.66)	(3.53)	(3.58)	(3.63)
Inflation	-0.04	-0.04	-0.05	-0.04	-0.03	-0.04	-0.04	-0.04	-0.04	-0.06
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)
WG political stability	0.57	0.53	0.17	0.52	0.71	0.59	0.55	0.62	0.63	0.80
	(0.69)	(0.71)	(0.65)	(0.72)	(0.64)	(0.70)	(0.70)	(0.75)	(0.74)	(0.69)
Landlocked	-3.33	-3.21	-5.14*	-4.94	-4.07	-3.36	-3.41	-3.39	-3.54	-3.79
	(3.15)	(3.08)	(3.10)	(3.84)	(2.95)	(3.15)	(3.19)	(3.12)	(3.14)	(3.30)
Democracy index	-0.11	-0.11	-0.11	-0.14	-0.11	-0.12	-0.12	-0.13	-0.12	-0.18
	(0.18)	(0.17)	(0.15)	(0.17)	(0.17)	(0.17)	(0.18)	(0.18)	(0.18)	(0.16)
Malaria stability index	-0.44*	-0.44*	-0.36	-0.42	-0.45*	-0.43	-0.41	-0.43	-0.45*	-0.28
	(0.26)	(0.27)	(0.25)	(0.26)	(0.26)	(0.26)	(0.26)	(0.26)	(0.27)	(0.23)
Strength of legal rights index	-0.27									
	(0.76)									
Depth of credit information index		-0.39								
		(0.74)								
WG control of corruption			5.51**							
			(2.36)							
Procedures to enforce contracts				-0.50						
				(0.41)						
Time to enforce contracts					-0.01**					
					(0.01)					
Cost to enforce contracts						-0.04				
						(0.04)				
Procedures to register property							0.62			
							(0.82)			
Time to register property								0.01		
								(0.01)		
Cost to register property									0.05	
									(0.15)	
Recovery rate for creditors										0.04
										(0.06)
Number of observations	285	285	293	285	285	285	285	285	285	260
Number of countries	44	44	44	44	44	44	44	44	44	40
R-squared (Between)	0.265	0.260	0.405	0.300	0.307	0.280	0.248	0.271	0.270	0.359

Notes: Robust standard errors in parentheses. All regressions include year dummies and the constant term. ***, **, * imply significance at the 1%, 5% and 10% levels.

Appendix 9: Effects of current institutional variables on DMBOFI in sample without South Africa

	Dependent variable: DMBOFI									
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
GDP per capita	7.05*	7.78**	5.85*	6.80*	7.07*	6.47*	7.10*	7.25**	6.99*	8.44**
	(3.69)	(3.37)	(3.20)	(3.67)	(3.63)	(3.90)	(3.69)	(3.56)	(3.62)	(3.76)
Inflation	-0.04	-0.04	-0.05	-0.04	-0.03	-0.04	-0.04	-0.04	-0.04	-0.06
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)
WG political stability	0.63	0.57	0.19	0.56	0.77	0.65	0.62	0.70	0.71	0.83
	(0.68)	(0.71)	(0.65)	(0.71)	(0.63)	(0.69)	(0.69)	(0.76)	(0.73)	(0.68)
Landlocked	-3.76	-3.39	-5.46*	-5.34	-4.40	-3.73	-3.78	-3.69	-3.86	-4.12
	(3.26)	(3.14)	(3.19)	(3.92)	(3.05)	(3.20)	(3.25)	(3.18)	(3.20)	(3.36)
Democracy index	-0.13	-0.11	-0.12	-0.15	-0.12	-0.13	-0.13	-0.14	-0.13	-0.20
	(0.20)	(0.18)	(0.17)	(0.19)	(0.19)	(0.19)	(0.19)	(0.20)	(0.20)	(0.18)
Malaria stability index	-0.49*	-0.50*	-0.40	-0.47*	-0.50*	-0.48*	-0.46*	-0.47*	-0.51*	-0.32
	(0.27)	(0.28)	(0.25)	(0.26)	(0.26)	(0.27)	(0.27)	(0.27)	(0.28)	(0.24)
Strength of legal rights index	-0.16									
	(0.74)									
Depth of credit information index		-0.57								
		(0.90)								
WG control of corruption			5.73**							
			(2.39)							
Procedures to enforce contracts				-0.51						
				(0.40)						
Time to enforce contracts					-0.01**					
					(0.01)					
Cost to enforce contracts						-0.03				
						(0.03)				
Procedures to register property							0.55			
							(0.83)			
Time to register property								0.01		
								(0.01)		
Cost to register property									0.07	
									(0.17)	
Recovery rate for creditors										0.05
										(0.07)
Number of observations	285	285	293	285	285	285	285	285	285	260
Number of countries	44	44	44	44	44	44	44	44	44	40
R-squared (Between)	0.274	0.261	0.415	0.306	0.314	0.286	0.258	0.278	0.276	0.365

Notes: Robust standard errors in parentheses. All regressions include year dummies and the constant term. ***, **, * imply significance at the 1%, 5% and 10% levels.

Appendix 10: Effects of current institutional variables on financial system development in sample without South Africa

	Dependent variable		
	DCP	DMB	DMBOFI
Explanatory variables	(1)	(2)	(3)
GDP per capita	6.82**	6.39**	5.88*
	(3.45)	(3.22)	(3.24)
Inflation	-0.04*	-0.04	-0.04
	(0.03)	(0.03)	(0.03)
WG political stability	0.63	0.47	0.51
	(0.78)	(0.64)	(0.63)
Landlocked	-5.93*	-5.52*	-5.83*
	(3.11)	(2.93)	(3.03)
Democracy index	-0.05	-0.13	-0.14
	(0.16)	(0.17)	(0.18)
Malaria stability index	-0.38*	-0.38	-0.42*
	(0.22)	(0.24)	(0.25)
WG control of corruption	6.18***	4.83**	5.02**
	(2.36)	(2.23)	(2.25)
Time to enforce contracts	-0.01**	-0.01**	-0.01**
	(0.00)	(0.00)	(0.00)
Number of observations	299	285	285
Number of countries	45	44	44
R-squared (between)	0.445	0.421	0.429

Notes: Robust standard errors in parentheses. All regressions include year dummies and the constant term. ***, **, * imply significance at the 1%, 5% and 10% levels

Appendix 11: Effects of current institutional variables on DCP without some control variables

	Dependent variable: DCP									
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
GDP per capita	13.78***	14.19***	12.02***	13.47***	14.18***	14.09***	14.18***	14.23***	14.07***	13.30***
	(4.90)	(4.82)	(4.38)	(4.88)	(4.99)	(5.23)	(5.07)	(4.91)	(4.96)	(4.69)
Malaria stability index	-0.64*	-0.66*	-0.53	-0.61*	-0.65*	-0.64*	-0.61	-0.63*	-0.63	-0.53
	(0.36)	(0.38)	(0.33)	(0.35)	(0.38)	(0.38)	(0.39)	(0.38)	(0.39)	(0.35)
Strength of legal rights index	0.26									
	(1.20)									
Depth of credit information index		-0.35								
		(0.89)								
WG control of corruption			7.51***							
			(2.89)							
Procedures to enforce contracts				-0.76						
				(0.51)						
Time to enforce contracts					-0.01**					
					(0.01)					
Cost to enforce contracts						-0.00				
						(0.06)				
Procedures to register property							0.65			
							(0.77)			
Time to register property								0.00		
								(0.01)		
Cost to register property									-0.02	
									(0.15)	
Recovery rate for creditors										0.09
										(0.07)
Number of observations	313	313	321	313	313	313	313	313	313	281
Number of countries	47	47	47	47	47	47	47	47	47	42
R-squared (Between)	0.264	0.247	0.345	0.302	0.273	0.254	0.243	0.253	0.254	0.323

Notes: Robust standard errors in parentheses. All regressions include year dummies and the constant term. ***, **, * imply significance at the 1%, 5% and 10% levels.

Appendix 12: Effects of current institutional variables on DMB without some control variables

	Dependent variable: DMB									
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
GDP per capita	10.28***	10.77***	8.83***	9.99***	10.42***	9.79**	10.34***	10.50***	10.37***	12.10***
	(3.63)	(3.44)	(3.29)	(3.57)	(3.60)	(3.83)	(3.63)	(3.51)	(3.57)	(3.51)
Malaria stability index	-0.48*	-0.49*	-0.42	-0.45*	-0.49*	-0.47*	-0.45	-0.46*	-0.49*	-0.30
	(0.28)	(0.28)	(0.26)	(0.27)	(0.27)	(0.28)	(0.28)	(0.28)	(0.28)	(0.25)
Strength of legal rights index	-0.08									
	(0.78)									
Depth of credit information index		-0.44								
		(0.75)								
WG control of corruption			4.53**							
			(2.04)							
Procedures to enforce contracts				-0.43						
				(0.40)						
Time to enforce contracts					-0.01*					
					(0.01)					
Cost to enforce contracts						-0.03				
						(0.05)				
Procedures to register property							0.62			
							(0.81)			
Time to register property								0.01		
								(0.01)		
Cost to register property									0.04	
									(0.15)	
Recovery rate for creditors										0.03
										(0.06)
Number of observations	299	299	307	299	299	299	299	299	299	274
Number of countries	46	46	46	46	46	46	46	46	46	42
R-squared (Between)	0.295	0.285	0.394	0.330	0.321	0.302	0.278	0.297	0.296	0.384

Notes: Robust standard errors in parentheses. All regressions include year dummies and the constant term. ***, **, * imply significance at the 1%, 5% and 10% levels.

Appendix 13: Effects of current institutional variables on DMBOFI without some control variables

	Dependent variable: DMBOFI									
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
GDP per capita	11.86***	12.87***	10.96**	11.66***	12.12***	11.77**	12.08***	12.32***	12.14***	14.20***
	(4.36)	(4.05)	(4.32)	(4.38)	(4.39)	(4.70)	(4.45)	(4.30)	(4.35)	(4.65)
Malaria stability index	-0.65*	-0.67*	-0.61*	-0.63*	-0.67*	-0.65*	-0.63*	-0.64*	-0.67*	-0.48
	(0.36)	(0.38)	(0.36)	(0.35)	(0.37)	(0.38)	(0.38)	(0.38)	(0.38)	(0.35)
Strength of legal rights index	0.30									
	(1.11)									
Depth of credit information index		-0.66								
		(0.92)								
WG control of corruption			3.64*							
			(2.02)							
Procedures to enforce contracts				-0.57						
				(0.52)						
Time to enforce contracts					-0.01*					
					(0.01)					
Cost to enforce contracts						-0.02				
						(0.05)				
Procedures to register property							0.63			
							(0.84)			
Time to register property								0.01		
								(0.01)		
Cost to register property									0.06	
									(0.16)	
Recovery rate for creditors										0.03
										(0.06)
Number of observations	299	299	307	299	299	299	299	299	299	274
Number of countries	46	46	46	46	46	46	46	46	46	42
R-squared (Between)	0.280	0.251	0.322	0.313	0.289	0.269	0.255	0.266	0.269	0.330

Notes: Robust standard errors in parentheses. All regressions include year dummies and the constant term. ***, **, * imply significance at the 1%, 5% and 10% levels.

Appendix 14: Effects of current institutional variables on financial system development without some control variables

	Dependent variable		
	DCP	DMB	DMBOFI
Explanatory variables	(1)	(2)	(3)
GDP per capita	12.20***	9.02***	11.11***
	(4.43)	(3.34)	(4.31)
Malaria stability index	-0.56*	-0.44*	-0.63*
	(0.33)	(0.25)	(0.36)
WG control of corruption	6.54**	3.94**	3.03*
	(2.67)	(1.91)	(1.84)
Time to enforce contracts	-0.01**	-0.01**	-0.01**
	(0.01)	(0.00)	(0.01)
Number of observations	313	299	299
Number of countries	47	46	46
R-squared (between)	0.351	0.403	0.331

Notes: Robust standard errors in parentheses. All regressions include year dummies and the constant term. ***, **, * imply significance at the 1%, 5% and 10% levels

Appendix 15: Effects of current institutional variables on financial system development

	Dependent variable					
	DCP	DCP	DMB	DMB	DMBOFI	DMBOFI
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)
GDP per capita	12.76**	14.30***	8.97**	10.54***	10.81**	12.38***
	(5.00)	(4.94)	(3.58)	(3.53)	(4.44)	(4.30)
Malaria stability index	-0.60*	-0.64*	-0.46*	-0.48*	-0.63*	-0.66*
	(0.36)	(0.39)	(0.26)	(0.28)	(0.36)	(0.38)
Efficiency of judicial system composite index	-7.88**		-6.94**		-7.15**	
	(3.77)		(3.19)		(3.50)	
Efficiency of legal property system composite index		0.96		1.26		1.60
		(1.92)		(1.84)		(2.07)
Number of observations	313	313	299	299	299	299
Number of countries	47	47	46	46	46	46
R-squared (between)	0.306	0.251	0.361	0.291	0.323	0.262

Notes: Robust standard errors in parentheses. All regressions include year dummies and the constant term. ***, **, * imply significance at the 1%, 5% and 10% levels

Appendix 16: Historical determinants of strength of legal rights index without some control variables

	Dependent variable: strength of legal rights index						
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GDP per capita	0.04	0.33**	0.29	0.34	0.31	0.46	0.25*
	(0.21)	(0.14)	(0.32)	(0.23)	(0.29)	(0.31)	(0.13)
French colony	-3.72***						-1.13**
	(0.48)						(0.54)
Other colony	-3.46***						-1.03**
	(0.66)						(0.49)
French legal family		-4.01***					-2.80***
		(0.49)					(0.63)
Malaria stability index			-0.02				
			(0.04)				
Catholicism				-2.62**			-1.04**
				(1.17)			(0.49)
Islam				-2.41**			-1.09*
				(1.19)			(0.60)
Other religion				-0.73			-0.16
				(1.27)			(0.58)
Islamic law					-0.47		
					(0.87)		
Ethnic fractionalisation index						1.86	
						(1.27)	
Number of countries	48	48	47	47	48	47	47
R-squared	0.62	0.72	0.03	0.20	0.03	0.06	0.78

Note: Robust standard errors are given in parentheses. All regressions include the constant term. The omitted colony is the British colony. The omitted legal family is the English legal family. The omitted religion is Protestantism. ***, **, * imply significance at the 1%, 5% and 10% levels.

Appendix 17: Historical determinants of depth of credit information index without some control variables

	Dependent variable: depth of credit information index						
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GDP per capita	0.75***	0.73***	0.77***	0.75***	0.73***	0.67***	0.69***
	(0.23)	(0.23)	(0.20)	(0.22)	(0.24)	(0.24)	(0.22)
French colony	0.05						
	(0.41)						
Other colony	0.81						
	(0.55)						
French legal family		0.05					0.58*
		(0.43)					(0.34)
Malaria stability index			-0.05**				-0.04**
			(0.02)				(0.02)
Catholicism				-0.98			
				(0.73)			
Islam				-1.03			
				(0.68)			
Other religion				-0.12			
				(0.73)			
Islamic law					-0.23		
					(0.42)		
Ethnic fractionalisation index						-0.57	
						(0.96)	
Number of countries	48	48	47	47	48	47	47
R-squared	0.32	0.27	0.44	0.35	0.27	0.28	0.47

Note: Robust standard errors are given in parentheses. All regressions include the constant term. The omitted colony is the British colony. The omitted legal family is the English legal family. The omitted religion is Protestantism. ***, **, * imply significance at the 1%, 5% and 10% levels.

Appendix 18: Historical determinants of WG control of corruption without some control variables

	Dependent variable: WG control of corruption						
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GDP per capita	0.16	0.18*	0.11	0.21**	0.19	0.11	0.06
	(0.10)	(0.10)	(0.12)	(0.10)	(0.11)	(0.11)	(0.11)
French colony	-0.28*						-0.21
	(0.15)						(0.16)
Other colony	-0.21						-0.34
	(0.26)						(0.26)
French legal family		-0.21					
		(0.17)					
Malaria stability index			-0.02**				-0.02
			(0.01)				(0.01)
Catholicism				-0.37			
				(0.28)			
Islam				-0.32			
				(0.23)			
Other religion				-0.03			
				(0.24)			
Islamic law					-0.12		
					(0.15)		
Ethnic fractionalisation index						-0.72**	-0.54
						(0.30)	(0.36)
Number of countries	48	48	47	47	48	47	46
R-squared	0.17	0.15	0.18	0.20	0.13	0.20	0.27

Note: Robust standard errors are given in parentheses. All regressions include the constant term. The omitted colony is the British colony. The omitted legal family is the English legal family. The omitted religion is Protestantism. ***, **, * imply significance at the 1%, 5% and 10% levels.

French colony, Malaria stability index, and ethnic fractionalisation index are jointly significant, F (3, 40) = 3.92, p-value = .0152

Appendix 19: Historical determinants of procedure to enforce contracts without some control variables

	Dependent variable: procedures to enforce contracts						
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GDP per capita	-0.59	-0.74	-0.52	-0.81	-0.83	-0.70	-0.69
	(0.61)	(0.60)	(0.80)	(0.64)	(0.64)	(0.85)	(0.62)
French colony	2.96*						2.78*
	(1.58)						(1.57)
Other colony	0.36						0.57
	(2.26)						(2.18)
French legal family		2.53					
		(1.77)					
Malaria stability index			0.06				
			(0.10)				
Catholicism				0.97			
				(2.98)			
Islam				2.81			
				(2.69)			
Other religion				-2.55			
				(2.56)			
Islamic law					3.24*		2.97*
					(1.71)		(1.70)
Ethnic fractionalisation index						0.06	
						(3.34)	
Number of countries	48	48	47	47	48	47	48
R-squared	0.09	0.07	0.02	0.20	0.09	0.02	0.15

Note: Robust standard errors are given in parentheses. All regressions include the constant term. The omitted colony is the British colony. The omitted legal family is the English legal family. The omitted religion is Protestantism. ***, **, * imply significance at the 1%, 5% and 10% levels.

Appendix 20: Historical determinants of time to enforce contracts without some control variables

	Dependent variable: time to enforce contracts						
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GDP per capita	37.19	29.44	31.54	17.98	33.41	44.08	18.15
	(36.16)	(32.88)	(39.07)	(31.23)	(32.08)	(33.74)	(31.76)
French colony	59.08						
	(65.62)						
Other colony	139.36						
	(133.09)						
French legal family		164.05**					171.87**
		(68.59)					(76.48)
Malaria stability index			0.25				
			(3.85)				
Catholicism				251.71*			163.47
				(131.69)			(108.83)
Islam				174.40			102.73
				(123.45)			(92.89)
Other religion				286.45**			240.56**
				(139.69)			(100.67)
Islamic law					-69.88		
					(86.16)		
Ethnic fractionalisation index						111.59	
						(151.95)	
Number of countries	48	48	47	47	48	47	47
R-squared	0.05	0.09	0.01	0.08	0.03	0.03	0.16

Note: Robust standard errors are given in parentheses. All regressions include the constant term. The omitted colony is the British colony. The omitted legal family is the English legal family. The omitted religion is Protestantism. ***, **, * imply significance at the 1%, 5% and 10% levels.

Appendix 21: Historical determinants of cost to enforce contracts without some control variables

	Dependent variable: cost to enforce contracts						
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GDP per capita	-17.48***	-17.51***	-17.47***	-18.54***	-16.89***	-17.79***	-18.84***
	(4.56)	(4.44)	(5.34)	(4.40)	(4.09)	(4.76)	(4.66)
French colony	-2.83						
	(10.29)						
Other colony	4.62						
	(14.00)						
French legal family		2.38					
		(10.73)					
Malaria stability index			0.15				
			(0.47)				
Catholicism				-22.78			-22.60
				(17.76)			(17.93)
Islam				-40.50**			-43.00**
				(15.76)			(16.53)
Other religion				-21.04			-21.22
				(18.27)			(18.41)
Islamic law					-17.09**		4.17
					(7.11)		(9.28)
Ethnic fractionalisation index						-3.03	
						(14.87)	
Number of countries	48	48	47	47	48	47	47
R-squared	0.29	0.28	0.27	0.42	0.33	0.28	0.43

Note: Robust standard errors are given in parentheses. All regressions include the constant term. The omitted colony is the British colony. The omitted legal family is the English legal family. The omitted religion is Protestantism. ***, **, * imply significance at the 1%, 5% and 10% levels.

Appendix 22: Historical determinants of procedures to register property without some control variables

	Dependent variable: procedures to register property					
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)
GDP per capita	-0.21	-0.15	-0.17	-0.06	-0.20	-0.02
	(0.32)	(0.30)	(0.31)	(0.30)	(0.27)	(0.28)
French colony	-1.34					
	(0.85)					
Other colony	0.00					
	(0.80)					
French legal family		-1.03				
		(0.78)				
Malaria stability index			-0.05			
			(0.04)			
Catholicism				0.60		
				(0.86)		
Islam				0.62		
				(0.89)		
Other religion				0.33		
				(0.67)		
Islamic law					1.21	
					(0.97)	
Ethnic fractionalisation index						1.44
						(1.43)
Number of countries	48	48	47	47	48	47
R-squared	0.10	0.05	0.03	0.01	0.06	0.03

Note: Robust standard errors are given in parentheses. All regressions include the constant term. The omitted colony is the British colony. The omitted legal family is the English legal family. The omitted religion is Protestantism. ***, **, * imply significance at the 1%, 5% and 10% levels.

Appendix 23: Historical determinants of time to register property without some control variables

	Dependent variable: time to register property						
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GDP per capita	-12.68	-14.25*	-13.40	-16.08*	-12.98	-12.78	-16.09*
	(8.37)	(7.90)	(8.45)	(8.59)	(8.11)	(9.89)	(9.01)
French colony	8.62						
	(16.44)						
Other colony	35.60						
	(27.32)						
French legal family		25.53					
		(15.55)					
Malaria stability index			-0.18				
			(1.18)				
Catholicism				38.16*			38.16
				(22.43)			(22.76)
Islam				0.49			0.47
				(10.90)			(16.96)
Other religion				49.42**			49.42**
				(19.76)			(20.06)
Islamic law					-29.44*		0.04
					(15.11)		(21.16)
Ethnic fractionalisation index						13.79	
						(39.47)	
Number of countries	48	48	47	47	48	47	47
R-squared	0.10	0.08	0.04	0.17	0.09	0.05	0.17

Note: Robust standard errors are given in parentheses. All regressions include the constant term. The omitted colony is the British colony. The omitted legal family is the English legal family. The omitted religion is Protestantism. ***, **, * imply significance at the 1%, 5% and 10% levels.

Appendix 24: Historical determinants of cost to register property without some control variables

	Dependent variable: cost to register property						
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GDP per capita	-0.51	-0.82	0.19	-0.85	-0.70	-0.15	0.32
	(0.57)	(0.50)	(0.46)	(0.56)	(0.51)	(0.64)	(0.58)
French colony	5.81***						2.44
	(1.77)						(2.44)
Other colony	1.45						0.64
	(1.69)						(2.12)
French legal family		4.29**					2.79
		(1.68)					(2.48)
Malaria stability index			0.36***				0.26**
			(0.09)				(0.11)
Catholicism				0.22			
				(3.86)			
Islam				1.03			
				(3.93)			
Other religion				-0.02			
				(3.75)			
Islamic law					-2.48		
					(1.84)		
Ethnic fractionalisation index						6.45*	3.31
						(3.59)	(3.73)
Number of countries	48	48	47	47	48	47	46
R-squared	0.27	0.17	0.31	0.04	0.07	0.10	0.47

Note: Robust standard errors are given in parentheses. All regressions include the constant term. The omitted colony is the British colony. The omitted legal family is the English legal family. The omitted religion is Protestantism. ***, **, * imply significance at the 1%, 5% and 10% levels.

The French colony and ethnic fractionalisation are jointly insignificant and have an F (3, 39) = 2.12 and a p-value = .11

Appendix 25: Historical determinants of recovery rate of creditors without some control variables

	Dependent variable: recovery rate for creditors						
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GDP per capita	7.32***	8.53***	8.31***	8.42***	8.06***	7.23***	8.11***
	(2.00)	(1.72)	(2.51)	(1.74)	(2.00)	(2.20)	(2.06)
French colony	-8.22**						0.52
	(3.56)						(5.27)
Other colony	-14.93***						-7.30
	(4.55)						(5.15)
French legal family		-11.40***					-10.49**
		(2.99)					(4.52)
Malaria stability index			-0.08				
			(0.21)				
Catholicism				-4.90			
				(7.43)			
Islam				2.34			
				(6.43)			
Other religion				5.40			
				(6.18)			
Islamic law					3.98		
					(4.13)		
Ethnic fractionalisation index						-10.50	
						(9.48)	
Number of countries	43	43	42	43	43	42	43
R-squared	0.51	0.51	0.34	0.44	0.37	0.39	0.55

Note: Robust standard errors are given in parentheses. All regressions include the constant term. The omitted colony is the British colony. The omitted legal family is the English legal family. The omitted religion is Protestantism. ***, **, * imply significance at the 1%, 5% and 10% levels.

Appendix 26: Effects of historical institutional variables on DCP when using mixed legal family categorisation

	Dependent variable: DCP							
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
GDP per capita	10.53*	5.69	9.45	7.99	7.93	13.66*	10.84	10.42
	(5.86)	(4.30)	(5.73)	(4.89)	(6.01)	(6.99)	(6.57)	(7.34)
Inflation	-1.57**	-1.09**	-1.17**	-0.74**	-0.84**	-1.19**	-0.98**	-1.05**
	(0.58)	(0.43)	(0.47)	(0.33)	(0.39)	(0.48)	(0.45)	(0.45)
WG political stability	-1.07	-1.28	-1.01	-1.75	-2.57	-2.33	0.94	-0.25
	(4.07)	(3.81)	(4.10)	(4.55)	(4.38)	(5.18)	(4.44)	(3.69)
Landlocked	-9.91*	-12.87**	-7.75*	-9.69*	-13.42**	-5.24	-5.64	-8.91*
	(5.26)	(6.13)	(4.59)	(5.43)	(6.10)	(5.68)	(5.36)	(4.96)
Democracy index	1.24	0.44	1.43	1.36	1.16	1.68	1.53	1.45
	(0.90)	(0.61)	(0.97)	(0.89)	(1.19)	(0.99)	(0.99)	(1.02)
French colony	-12.87							
	(8.22)							
Other colony	-3.61							
	(8.30)							
French legal family		-0.91						
		(3.72)						
Mixed legal family		35.03						
		(22.54)						
Malaria stability index			-0.78**					
			(0.37)					
Latitude				100.20**				
				(40.49)				
KGtropics					-21.26***			
					(7.58)			
Catholicism						-8.55		
						(5.64)		
Islam						-2.72		
						(4.90)		
Other religions						1.16		
						(7.22)		
Islamic law							6.69	
							(8.16)	
Ethnic fractionalisation index								-7.75
								(16.88)
Number of countries	46	46	46	46	43	45	46	46
R-squared	0.39	0.46	0.41	0.48	0.38	0.41	0.36	0.36
Adjusted R-squared	0.281	0.360	0.321	0.396	0.282	0.282	0.265	0.259

Notes: Robust standard errors are given in parentheses. All regressions include the constant term. The omitted colony is the British colony. The omitted legal family is the English legal family. The omitted religion is Protestantism. ***, **, * imply significance at the 1%, 5% and 10% levels.

Appendix 27: Effects of historical institutional variables on DMB when using mixed legal family categorisation

	Dependent variable: DMB							
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
GDP per capita	8.38**	5.78	7.36**	6.06*	4.30	9.00**	8.12**	7.48*
	(3.38)	(3.46)	(3.37)	(3.04)	(2.99)	(3.51)	(3.72)	(3.88)
Inflation	-1.43***	-1.13***	-1.19***	-0.87***	-0.74**	-1.02***	-1.02***	-1.12***
	(0.46)	(0.38)	(0.41)	(0.29)	(0.29)	(0.36)	(0.34)	(0.37)
WG political stability	0.37	0.65	0.48	0.05	-0.44	1.07	2.26	0.60
	(2.23)	(2.11)	(2.40)	(2.78)	(2.85)	(2.60)	(2.57)	(2.30)
Landlocked	-6.74*	-8.47**	-5.87*	-7.40*	-10.65**	-5.10	-3.41	-7.46*
	(3.61)	(3.82)	(3.45)	(4.00)	(4.26)	(3.97)	(3.75)	(4.05)
Democracy index	0.90*	0.46	0.97*	0.88*	0.36	0.95*	1.07*	1.03*
	(0.53)	(0.54)	(0.54)	(0.52)	(0.59)	(0.56)	(0.58)	(0.58)
French colony	-6.83							
	(4.62)							
Other colony	-0.75							
	(5.92)							
French legal family		-1.16						
		(3.05)						
Mixed legal family		16.13						
		(10.96)						
Malaria stability index			-0.52*					
			(0.27)					
Latitude				71.65**				
				(26.91)				
KGtropics					-17.21***			
					(5.88)			
Catholicism						-8.23		
						(5.72)		
Islam						-1.64		
						(4.79)		
Other religions						-2.46		
						(4.79)		
Islamic law							7.61	
							(6.41)	
Ethnic fractionalisation index								-13.02
								(12.54)
Number of countries	45	45	45	45	42	45	45	45
R-squared	0.48	0.50	0.51	0.58	0.50	0.48	0.48	0.48
Adjusted R-squared	0.382	0.407	0.429	0.511	0.411	0.362	0.398	0.400

Notes: Robust standard errors are given in parentheses. All regressions include the constant term. The omitted colony is the British colony. The omitted legal family is the English legal family. The omitted religion is Protestantism. ***, **, * imply significance at the 1%, 5% and 10% levels.

Appendix 28: Effects of historical institutional variables on DMBOFI when using mixed legal family categorisation

	Dependent variable: DMBOFI							
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
GDP per capita	12.02**	7.49	10.90*	9.20*	8.72	13.13*	12.36*	12.03
	(5.79)	(4.45)	(5.76)	(4.94)	(6.65)	(6.48)	(6.76)	(7.31)
Inflation	-1.69***	-1.25***	-1.35***	-0.93***	-0.98**	-1.18**	-1.23**	-1.29***
	(0.58)	(0.43)	(0.49)	(0.31)	(0.47)	(0.46)	(0.47)	(0.46)
WG political stability	-2.12	-1.87	-1.98	-2.56	-2.73	-1.89	-0.67	-1.60
	(4.09)	(3.70)	(4.12)	(4.53)	(4.46)	(4.85)	(4.73)	(3.81)
Landlocked	-7.69	-10.55*	-5.94	-7.93	-11.92**	-4.95	-4.44	-6.68
	(4.92)	(5.61)	(4.53)	(5.23)	(5.70)	(5.30)	(5.19)	(5.11)
Democracy index	1.49	0.71	1.62	1.51*	1.24	1.54	1.72	1.69
	(0.91)	(0.64)	(0.98)	(0.89)	(1.30)	(0.93)	(1.02)	(1.04)
French colony	-10.89							
	(7.31)							
Other colony	-4.38							
	(8.17)							
French legal family		-1.47						
		(3.35)						
Mixed legal family		28.51						
		(20.15)						
Malaria stability index			-0.67*					
			(0.35)					
Latitude				93.29**				
				(37.15)				
KGtropics					-19.06**			
					(7.27)			
Catholicism						-8.72		
						(5.59)		
Islam						-2.28		
						(4.79)		
Other religions						0.92		
						(6.69)		
Islamic law							4.26	
							(8.82)	
Ethnic fractionalisation index								-7.05
								(16.70)
Number of countries	45	45	45	45	42	45	45	45
R-squared	0.43	0.47	0.45	0.51	0.41	0.42	0.40	0.40
Adjusted R-squared	0.322	0.375	0.359	0.437	0.305	0.293	0.311	0.311

Notes: Robust standard errors are given in parentheses. All regressions include the constant term. The omitted colony is the British colony. The omitted legal family is the English legal family. The omitted religion is Protestantism. ***, **, * imply significance at the 1%, 5% and 10% levels.

Appendix 29: Historical determinants of strength of legal rights index when using mixed legal family categorisation

	Dependent variable: strength of legal rights index						
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GDP per capita	0.04	0.07	0.29	0.34	0.31	0.46	0.12
	(0.21)	(0.14)	(0.32)	(0.23)	(0.29)	(0.31)	(0.10)
French colony	-3.72***						-0.92
	(0.48)						(1.12)
Other colony	-3.46***						-0.71
	(0.66)						(1.09)
French legal family		-3.93***					-2.87**
		(0.62)					(1.29)
Mixed legal family		-0.35					-0.46
		(0.99)					(0.95)
Malaria stability index			-0.02				
			(0.04)				
Catholicism				-2.62**			-1.27*
				(1.17)			(0.67)
Islam				-2.41**			-1.16*
				(1.19)			(0.67)
Other religions				-0.73			-0.29
				(1.27)			(0.70)
Islamic law					-0.47		
					(0.87)		
Ethnic fractionalisation index						1.86	
						(1.27)	
Number of countries	48	48	47	47	48	47	47
R-squared	0.62	0.69	0.03	0.20	0.03	0.06	0.73

Notes: Robust standard errors are given in parentheses. All regressions include the constant term. The omitted colony is the British colony. The omitted legal family is the English legal family. The omitted religion is Protestantism. ***, **, * imply significance at the 1%, 5% and 10% levels.

Appendix 30: Historical determinants of depth of credit information index when using mixed legal family categorisation

	Dependent variable: depth of credit information index						
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GDP per capita	0.75***	0.66***	0.77***	0.75***	0.73***	0.67***	0.69***
	(0.23)	(0.22)	(0.20)	(0.22)	(0.24)	(0.24)	(0.22)
French colony	0.05						
	(0.41)						
Other colony	0.81						
	(0.55)						
French legal family		0.67*					0.58*
		(0.37)					(0.34)
Mixed legal family		0.70					0.90
		(0.94)					(0.91)
Malaria stability index			-0.05**				-0.04**
			(0.02)				(0.02)
Catholicism				-0.98			
				(0.73)			
Islam				-1.03			
				(0.68)			
Other religions				-0.12			
				(0.73)			
Islamic law					-0.23		
					(0.42)		
Ethnic fractionalisation index						-0.57	
						(0.96)	
Number of countries	48	48	47	47	48	47	47
R-squared	0.32	0.30	0.44	0.35	0.27	0.28	0.47

Notes: Robust standard errors are given in parentheses. All regressions include the constant term. The omitted colony is the British colony. The omitted legal family is the English legal family. The omitted religion is Protestantism. ***, **, * imply significance at the 1%, 5% and 10% levels.

Appendix 31: Historical determinants of WG control of corruption when using mixed legal family categorisation

	Dependent variable: WG control of corruption						
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GDP per capita	0.16	0.02	0.11	0.21**	0.19	0.11	0.06
	(0.10)	(0.09)	(0.12)	(0.10)	(0.11)	(0.11)	(0.11)
French colony	-0.28*						-0.21
	(0.15)						(0.16)
Other colony	-0.21						-0.34
	(0.26)						(0.26)
French legal family		0.05					
		(0.14)					
Mixed legal family		1.07***					
		(0.24)					
Malaria stability index			-0.02**				-0.02
			(0.01)				(0.01)
Catholicism				-0.37			
				(0.28)			
Islam				-0.32			
				(0.23)			
Other religions				-0.03			
				(0.24)			
Islamic law					-0.12		
					(0.15)		
Ethnic fractionalisation index						-0.72**	-0.54
						(0.30)	(0.36)
Number of countries	48	48	47	47	48	47	46
R-squared	0.17	0.41	0.18	0.20	0.13	0.20	0.27

Notes: Robust standard errors are given in parentheses. All regressions include the constant term. The omitted colony is the British colony. The omitted legal family is the English legal family. The omitted religion is Protestantism. ***, **, * imply significance at the 1%, 5% and 10% levels.

French colony, Malaria stability index, and ethnic fractionalisation index are jointly significant, F (3, 40) = 3.92, p-value = .0152

Appendix 32: Historical determinants of procedure to enforce contracts when using mixed legal family categorisation

	Dependent variable: procedures to enforce contracts						
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GDP per capita	-0.59	0.22	-0.52	-0.81	-0.83	-0.70	-0.69
	(0.61)	(0.70)	(0.80)	(0.64)	(0.64)	(0.85)	(0.62)
French colony	2.96*						2.78*
	(1.58)						(1.57)
Other colony	0.36						0.57
	(2.26)						(2.18)
French legal family		0.79					
		(2.03)					
Mixed legal family		-5.66*					
		(3.16)					
Malaria stability index			0.06				
			(0.10)				
Catholicism				0.97			
				(2.98)			
Islam				2.81			
				(2.69)			
Other religions				-2.55			
				(2.56)			
Islamic law					3.24*		2.97*
					(1.71)		(1.70)
Ethnic fractionalisation index						0.06	
						(3.34)	
Number of countries	48	48	47	47	48	47	48
R-squared	0.09	0.15	0.02	0.20	0.09	0.02	0.15

Notes: Robust standard errors are given in parentheses. All regressions include the constant term. The omitted colony is the British colony. The omitted legal family is the English legal family. The omitted religion is Protestantism. ***, **, * imply significance at the 1%, 5% and 10% levels.

Appendix 33: Historical determinants of time to enforce contracts when using mixed legal family categorisation

	Dependent variable: time to enforce contracts						
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GDP per capita	37.19	27.44	31.54	17.98	33.41	44.08	16.16
	(36.16)	(42.51)	(39.07)	(31.23)	(32.08)	(33.74)	(43.01)
French colony	59.08						
	(65.62)						
Other colony	139.36						
	(133.09)						
French legal family		192.81***					203.94**
		(66.35)					(79.55)
Mixed legal family		108.76					110.41
		(130.66)					(127.40)
Malaria stability index			0.25				
			(3.85)				
Catholicism				251.71*			183.75
				(131.69)			(120.83)
Islam				174.40			126.85
				(123.45)			(119.30)
Other religions				286.45**			260.99**
				(139.69)			(120.38)
Islamic law					-69.88		
					(86.16)		
Ethnic fractionalisation index						111.59	
						(151.95)	
Number of countries	48	48	47	47	48	47	47
R-squared	0.05	0.10	0.01	0.08	0.03	0.03	0.17

Notes: Robust standard errors are given in parentheses. All regressions include the constant term. The omitted colony is the British colony. The omitted legal family is the English legal family. The omitted religion is Protestantism. ***, **, * imply significance at the 1%, 5% and 10% levels.

Appendix 34: Historical determinants of cost to enforce contracts when using mixed legal family categorisation

	Dependent variable: cost to enforce contracts						
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GDP per capita	-17.48***	-18.10***	-17.47***	-18.54***	-16.89***	-17.79***	-18.84***
	(4.56)	(5.29)	(5.34)	(4.40)	(4.09)	(4.76)	(4.66)
French colony	-2.83						
	(10.29)						
Other colony	4.62						
	(14.00)						
French legal family		3.59					
		(14.36)					
Mixed legal family		5.49					
		(16.14)					
Malaria stability index			0.15				
			(0.47)				
Catholicism				-22.78			-22.60
				(17.76)			(17.93)
Islam				-40.50**			-43.00**
				(15.76)			(16.53)
Other religions				-21.04			-21.22
				(18.27)			(18.41)
Islamic law					-17.09**		4.17
					(7.11)		(9.28)
Ethnic fractionalisation index						-3.03	
						(14.87)	
Number of countries	48	48	47	47	48	47	47
R-squared	0.29	0.28	0.27	0.42	0.33	0.28	0.43

Notes: Robust standard errors are given in parentheses. All regressions include the constant term. The omitted colony is the British colony. The omitted legal family is the English legal family. The omitted religion is Protestantism. ***, **, * imply significance at the 1%, 5% and 10% levels.

Appendix 35: Historical determinants of procedures to register property when using mixed legal family categorisation

	Dependent variable: procedures to register property					
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)
GDP per capita	-0.21	0.16	-0.17	-0.06	-0.20	-0.02
	(0.32)	(0.35)	(0.31)	(0.30)	(0.27)	(0.28)
French colony	-1.34					
	(0.85)					
Other colony	0.00					
	(0.80)					
French legal family		-1.56				
		(1.00)				
Mixed legal family		-2.75**				
		(1.25)				
Malaria stability index			-0.05			
			(0.04)			
Catholicism				0.60		
				(0.86)		
Islam				0.62		
				(0.89)		
Other religions				0.33		
				(0.67)		
Islamic law					1.21	
					(0.97)	
Ethnic fractionalisation index						1.44
						(1.43)
Number of countries	48	48	47	47	48	47
R-squared	0.10	0.12	0.03	0.01	0.06	0.03

Notes: Robust standard errors are given in parentheses. All regressions include the constant term. The omitted colony is the British colony. The omitted legal family is the English legal family. The omitted religion is Protestantism. ***, **, * imply significance at the 1%, 5% and 10% levels.

Appendix 36: Historical determinants of time to register property when using mixed legal family categorisation

	Dependent variable: time to register property						
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GDP per capita	-12.68	-13.20	-13.40	-16.08*	-12.98	-12.78	-16.09*
	(8.37)	(9.38)	(8.45)	(8.59)	(8.11)	(9.89)	(9.01)
French colony	8.62						
	(16.44)						
Other colony	35.60						
	(27.32)						
French legal family		20.01					
		(18.61)					
Mixed legal family		3.74					
		(26.51)					
Malaria stability index			-0.18				
			(1.18)				
Catholicism				38.16*			38.16
				(22.43)			(22.76)
Islam				0.49			0.47
				(10.90)			(16.96)
Other religions				49.42**			49.42**
				(19.76)			(20.06)
Islamic law					-29.44*		0.04
					(15.11)		(21.16)
Ethnic fractionalisation index						13.79	
						(39.47)	
Number of countries	48	48	47	47	48	47	47
R-squared	0.10	0.07	0.04	0.17	0.09	0.05	0.17

Notes: Robust standard errors are given in parentheses. All regressions include the constant term. The omitted colony is the British colony. The omitted legal family is the English legal family. The omitted religion is Protestantism. ***, **, * imply significance at the 1%, 5% and 10% levels.

Appendix 37: Historical determinants of cost to register property when using mixed legal family categorisation

	Dependent variable: cost to register property						
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GDP per capita	-0.51	-0.94	0.19	-0.85	-0.70	-0.15	-0.14
	(0.57)	(0.65)	(0.46)	(0.56)	(0.51)	(0.64)	(0.62)
French colony	5.81***						1.71
	(1.77)						(2.12)
Other colony	1.45						-0.13
	(1.69)						(1.45)
French legal family		4.92**					4.80*
		(2.24)					(2.80)
Mixed legal family		3.22					5.87**
		(2.69)					(2.41)
Malaria stability index			0.36***				0.30***
			(0.09)				(0.11)
Catholicism				0.22			
				(3.86)			
Islam				1.03			
				(3.93)			
Other religions				-0.02			
				(3.75)			
Islamic law					-2.48		
					(1.84)		
Ethnic fractionalisation index						6.45*	3.80
						(3.59)	(3.81)
Number of countries	48	48	47	47	48	47	46
R-squared	0.27	0.17	0.31	0.04	0.07	0.10	0.52

Notes: Robust standard errors are given in parentheses. All regressions include the constant term. The omitted colony is the British colony. The omitted legal family is the English legal family. The omitted religion is Protestantism. ***, **, * imply significance at the 1%, 5% and 10% levels.

The French colony and ethnic fractionalisation are jointly insignificant and have an F (2, 38) = 2.30 and a

p-value = .1141

Appendix 38: Historical determinants of recovery rate of creditors when using mixed legal family categorisation

	Dependent variable: recovery rate for creditors						
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GDP per capita	7.32***	7.07***	8.31***	8.42***	8.06***	7.23***	6.20**
	(2.00)	(2.42)	(2.51)	(1.74)	(2.00)	(2.20)	(2.40)
French colony	-8.22**						-0.38
	(3.56)						(8.34)
Other colony	-14.93***						-8.91
	(4.55)						(7.98)
French legal family		-9.68***					-6.85
		(3.06)					(8.18)
Mixed legal family		2.57					5.59
		(5.91)					(6.43)
Malaria stability index			-0.08				
			(0.21)				
Catholicism				-4.90			
				(7.43)			
Islam				2.34			
				(6.43)			
Other religions				5.40			
				(6.18)			
Islamic law					3.98		
					(4.13)		
Ethnic fractionalisation index						-10.50	
						(9.48)	
Number of countries	43	43	42	43	43	42	43
R-squared	0.51	0.49	0.34	0.44	0.37	0.39	0.54

Notes: Robust standard errors are given in parentheses. All regressions include the constant term. The omitted colony is the British colony. The omitted legal family is the English legal family. The omitted religion is Protestantism. ***, **, * imply significance at the 1%, 5% and 10% levels.

The French colony and French legal family variables are jointly insignificant and have an F (2, 37) = 2.33

and a p-value = .1117