INSTITUTIONAL DETERMINANTS OF MORTGAGE FINANCE DEVELOPMENT.

ABSTRACT: Despite its relevance for economic growth and development, the level of mortgage market development varies widely across countries. Using panel data for the 2006 – 2013 period, we examine the institutional determinants of mortgage depth across 116 countries, with analysis conducted across groups of countries at similar levels of economic growth and development. The study shows that the coverage of information institutions widens and legal institutions strengthen with increasing economic growth and development. However, the information and legal characteristics of countries in terms of the efficiency of mortgage foreclosure, quality creditor legal property rights and the efficiency of credit information sharing via public credit registers matter more for mortgage deepening in low-income countries than in middle and high-income countries. As far as policy is concerned, our findings suggest that these formal institutions might be luxuries and develop as countries grow. This hints to the possibility of a pecking order in creditor protection mechanisms, running from credit information sharing through private credit bureaus to public credit registers and then to legal rights protections achieved through mortgage legal rules and foreclosure enforcement, with ramifications for mortgage deepening. Particularly, ex-post mechanisms through legal institutions provide a more effective protection for creditors than ex-ante mechanism such as information in low-income countries due to the limited scope of credit information systems.

KEYWORDS: Institutions, Legal Rights, Information sharing, Mortgage Finance Development, Developing Economies.

I. INTRODUCTION AND LITERATURE REVIEW

Housing investments are often capital intensive. This means that many potential homeowners cannot afford to finance them upfront and solely through equity. Mortgage finance development4 therefore contributes to economic development (Asabere, McGowan and Lee, 2016) by intermediating the mobilization and the channeling of surplus funds from ultimate savers (investors) and potential homebuyers. Despite its relevance, mortgage finance development varies widely not only between advanced economies and developing economies, but also countries at similar levels of economic development. For instance, in advanced economies, mortgage depth, measured as a proportion of mortgage credit to GDP is about 80 per cent in the United Kingdom and 30 per cent in Italy (Badev et al., 2014). Similarly, mortgage depth in emerging and developing economies varies from 3 per cent in Kenya to 12 per cent in Mauritius and 33 per cent in South Africa (Centre for Affordable Housing Finance, 2013).

As a specialized area in finance, the extant literature rarely studies mortgage finance development in terms of the relative systematic nature of its organization, structure and performance across countries (Renaud, 2008; Warnock and Warnock, 2008). The few comparative empirical finance studies (c.f. Warnock and Warnock, 2008; Butler et al., 2009, Badev et al., 2014; Kutlukaya and Erol, 2015) suggest that countries with stronger legal rights for borrowers and lenders (through collateral and bankruptcy laws), deeper credit information systems, more stable macroeconomic environment and higher levels of urbanization have deeper housing finance systems across countries. These studies in some respects corroborate established knowledge in the general finance literature that the quality of creditor protection mechanisms is the dominant indicator of financial development. The proponents of the Law and Finance theory argue that the quality of the legal institution of a country reflected in the strength of private property rights, which is driven by its legal origin 5 (LLSV, 1997; 1998) and culture 6 (Stulz and Williamson, 2003) is considered as the overall determinant of financial development across countries (Levine, 1997; Demirguc-Kunt and Maksimovic, 1998; Beck et al; 2003a; 2003b; Djankov et al., 2007; Haselmann et al., 2006). Contrary to this established knowledge, information has been found to be a leading indicator of financial development after controlling for the effects of law, particularly in developing economies (Luoto, McIntosh and Wydick, 2007; Djankov et al., 2007; Brown, Jappelli, and Pagano, 2009).

Djankov et al (2007) identifies the legal and the information institutions of a country as the two main creditor protection mechanisms. Creditor protection mechanisms are institutions that govern lending activities and thus determine the extent to which creditors and investors are protected, their willingness to lend and how much is lent. In a perfect world with perfect information, no transaction costs and zero income effect, law via property rights is irrelevant in the allocation of resources (Coarse, 1960). However, in the real world with imperfect information, positive and varying transaction costs and income effect, law is relevant and thus serves as a complement or substitute to information in the theory of creditor protection (Djankov et al., 2007). Creditor protection is thus a mixture and a continuum of information and law. The contention is however around the optimum levels of legal and information institutional development for financial development. Ball (2006) for instance opines that institutions in some form or another may matter far more in some countries than others in offering valuable insights into understanding what sorts of institutional and market reforms may be needed. This is basically due to the relative differences in agency problems faced by countries (Pistor, 2008).

Like most of the empirical work on the Legal origins theory, the few empirical studies on mortgage finance development (Warnock and Warnock, 2008; Butler et al., 2009; Badev et al.,

[4] We defined as the existence of policies and institutions that promote effective intermediation and markets that facilitate access, deepens and improves the efficiency and stability of mortgage markets

[5] Legal origin

[6] Culture

2014; Kutlukaya and Erol, 2015) have treated these institutions as static. Notwithstanding the characteristic stability of legal institutions in the short run for instance (Milhaupt and Pistor, 2008), they are in practice variable and evolve incrementally, connecting the past with the present and the future irrespective of a countries legal origin (North, 1991). Making reference to evidence on the behaviour of law in times of corporate crisis from an earlier study (Milhaupt and Pistor, 2008), Pistor (2009) asserts that there is a dynamic directional process of rolling relations between economic events and legal change — changes in the economy influence legal change and vice versa. Indeed, an established body of literature notes that the level of economic growth and development influences institutional outcomes (Deakin and Pistor, 2012; Chang, 2011, Glaeser et al., 2004; Alvarez, et al., 2000; Barro, 1999; Lipset, 1960).

For policy reform purposes, knowing the effect of the relative importance of the laws on the books on the one hand and their enforcement on the other is important. The evidence in this regard is mixed. Some studies indicating that both are relevant (Djankov et al., 2008; La Porta et al., 2006). Djankov et al. (2006) however claim that only law enforcement matters for creditor protection. According to Butler et al (2009) legal rules are however not necessarily effective without enforcement, and for that matter foreclosure enforcement makes mortgage laws effective. For this reason, efficient court systems and the introduction of specialized tribunals promote credit expansion (Safavian and Sharma, 2007; Visaria, 2006; Jappelli et al., 2005; Levine, 1997).s

Apart from the earlier works on mortgage finance development ignoring the enforcement of the laws in their models, they do not show how these institutional dynamics affect mortgage finance development across countries at similar levels of development. Scholars have shown that the level of economic development affects resource availability, which is vital for developing the dynamic dimensions of institutions. For example, it takes resources to define and enforce contracts (Chang, 2011; North, 1991) and mortgage markets develop when these institutions are efficient and only at relatively high levels of GDP per capita (Badev et al., 2014).

This paper therefore has three objectives. First, focusing on emerging economies and developing countries, we investigate the determinants of mortgage finance development across countries at different and similar levels of economic development over time. Second, we show the institutions that matter and where they matter most. Third, we examine the relative importance of the laws on the books and their enforcement; and the law and information in the development of mortgage finance. In summary, our results show that legal and information institutions are relatively important to mortgage deepening over time, making varying contributions based on the classification and the level of economic development of countries.

Unlike previous studies, we find that improvements in both ex ante and ex poste creditor protection mechanisms through credit information sharing (particularly via public credit registers), and creditor legal property rights and their enforcement respectively, matter more in the low-income countries than in middle and high-income countries. The relative importance of mortgage legal property rights and credit information sharing drops as economic growth increases, perhaps, because those countries already have relatively stronger and established legal institutions and extensive credit information systems. We argue that in low-income countries, ex poste mechanisms provides the most effective protection for creditors than information due to the limited scope of credit information systems. As economies grow and financial inclusion increases, more tradable credit information would be produced and ex ante creditor protection via credit information institutions would emerge as an alternative or complement to ex poste creditor protection mechanisms. These conclusions are robust with respect to alternative measures of the strength of creditor property rights protection.

The rest of the paper is structured as follows. Section II reviews the theoretical framework and develops the research hypothesis. Section III presents the research method, data used and the empirical framework. Section IV presents the empirical results and discussion, while section V summarizes and concludes.

II. THEORETICAL FRAMEWORK AND RESEARCH HYPOTHESIS

In the real world, creditors face two main dilemmas. The first is the problem they face at the point of loan origination: who is worthy to receive and use credit in the most efficient way? The second dilemma is what would happen to their investments in the event of a default? These two problems result fundamentally from information asymmetry. In response to these dilemmas, economic theory suggests two exclusive channels through which these risks may be mitigated, as reviewed below.

INFORMATION THEORY AND EVIDENCE

According to the information theory, what matters for lending is information. Therefore, when lenders know more about borrowers, their credit history, or other lenders to the individual, they are not as concerned about the lemons problem of financing nonviable projects and therefore extend more credit. On the contrary, when potential borrowers have private information or lenders have imperfect information, credit markets may be characterized by credit rationing as a result of lenders' inability to distinguish between good and bad credit risk. Since lenders lack full knowledge about the distribution of returns on specific projects, borrowers in effect, tend to have an incentive to undertake risky investments that increase their expected payoff under limited liability, but simultaneously reduce the expected payoff to the lender. Lenders therefore face adverse selection7 and moral hazards8 problems in selecting projects (Stiglitz and Weiss, 1981; Jaffee and Russell, 1976). Consequently, lenders tend to mitigate defaults by rationing credit to observationally indistinguishable borrowers from those who receive loans. To this end, when creditors have access to borrowers' past credit information, particularly 'blacklists' of defaulting borrowers, which serves as an effective discipline device, they are not only able to protect themselves ex ante (mitigate adverse selection) by allocating credit efficiently, they also mitigate moral hazards and reduce interest rates (Cremer, 1995; Diamond, 1991; Padilla and Pagano, 1997; Padilla and Pagano, 2000; Vercammen, 1995; Diamond; 1989).

A host of empirical works confirm these theoretical claims. For instance, in their seminal paper on information sharing in credit markets, Capella and Pagano (1993) shows that while adverse selection may price out safe borrowers, information sharing increases the volume of lending, thus creating a potential bidirectional causation: an increase in the size of the credit market engendering information sharing, which consequently leads to an increase in lending. The sharing of information through credit information systems like private credit bureaus and public credit registers have been found to be a leading indicator of financial development in developing countries (Luoto, McIntosh and Wydick, 2007; Djankov et al., 2007) through higher bank financing and a lower perception of financing constraints (Love and Mylenko, 2003). Besides, information sharing is associated with better prediction of individual loan defaults at a lower cost (Luoto et al., 2007; Powell et al., 2004; Barron and Staten, 2003; Kallberg and Udell, 2003), enhanced loan repayment (Brown and Zehnder, 2007; Jappelli and Pagano, 2002), and expansion of credit access and availability in economies with weak legal systems over time (Brown, Jappelli, and Pagano, 2009). This suggests that information sharing may be an alternative creditor protection mechanism (ex ante) to weak ex poste creditor protection devices, i.e. property rights.

POWER THEORIES AND EVIDENCE

Proponents of the power theories of credit however argue that when lenders have more power to protect themselves ex poste by easily forcing repayment or grabbing collateral upon an event of credit default through strong property rights, they are more willing to extend credit (Townsend, 1979; Aghion and Bolton, 1992;

[7] Adverse selection occurs when borrowers have private information about the distribution of returns from their investment. Adverse selection has pronounced distributional effects and may also result in an inefficient level of aggregate investment (e.g. Stiglitz and Weiss 1981; DeMeza and Webb 1987, 1988; Innes 1991).

[8] Moral hazard arises because lenders of capital cannot directly monitor the actions of borrowers and thus are not able to condition the financing agreement on such actions. Because of moral hazard, borrowers have an incentive to choose excessively risky projects (e.g. Myers 1977, Stiglitz and Weiss 1981) or to supply too little effort to their investment (e.g. Brander and Spencer 1989, Innes 1990, 1993).

Hart and Moore, 1994; 1998). Two strands of literature are relevant in this regard. With reference to collateral theory, adverse selection models (Bester, 1985; Chan and Kanatas, 1985; Besanko and Thakor, 1987a;b) predict that safer borrowers within an observationally identical risk pool pledge more collateral. Likewise, moral hazard models (Chan and Thakor, 1987; Boot and Thakor, 1994) are based on the premise that posting collateral improves borrowers' incentives to work hard, thus, reducing their likelihood of default. However, Boot, Thakor, and Udell (1991) combine observable borrower quality with moral hazard and find that observably riskier borrowers may pledge more collateral and thus collateralized loans may be riskier ex post.

However, since mortgages by design require collateral, its provision per se is neither the best indicator of borrower quality nor guarantee ex poste enforcement of collateral upon borrower default. Reasonably, it would be expected that the ownership, tenure and security of the collateral as embodied in a good title and the ability of creditors to foreclose the collateral within reasonable time and cost in the event of borrower default; as provided by the laws of a country is what signals the quality of a borrower and therefore incentivises a creditor to lend. In this regard, the law and finance literature pioneered by LLSV (1997) focuses on the relationship between the legal institutional framework (property rights) of a country and its financial development (see also LLSV, 1998; Rajan and Zingales, 1998; Demirguc-Kunt and Maksimovic, 1998). The dominant discourse in this literature is that financial sector development is higher in countries with better legal systems and stronger creditor (property) rights since such environments increase the ability of lenders to collateralize their loans.

Empirically, LLSV (1998; 1997) show that countries with poor investor protection measured by both the character of legal rules and the quality of law enforcement have smaller and narrower capital markets. In credit markets, Djankov et al (2007) and Haselmann et al (2006) show a positive correlation between improvements in creditor rights protection and the volume of credit (see also Musacchio, 2008; Gamboa-Cavazos and Schneider, 2007). Legal rules are however not necessarily effective without enforcement. Butler et al (2009) for instance notes that foreclosure enforcement makes mortgage laws effective. Rather than legal rules, law enforcement is what matters for creditor protection (Djankov et al., 2006). In this regard, efficient court systems and the introduction of specialized tribunals promote credit expansion (Safavian and Sharma, 2007; Visaria, 2006; Jappelli et al., 2005; Levine, 1997). However, Djankov et al (2008) and La Porta et al (2006) find that both legal rules and the quality of contract enforcement matter.

RESEARCH HYPOTHESIS

Despite the relevance of legal and information institutions to credit market development, the empirical works often treat each exclusively, and thus ignore the possible conditioning of the relevance of property rights in resource allocation on information, income effect and transaction costs. That is, in a perfect world with perfect information and contracting, zero transaction cost and no income effect, resource allocation is independent of the allocation of property rights (Coarse, 1960). In the real world with differences in information, transaction cost, and income effect across countries, property rights should matter but at different levels across countries, contrary to the dominant discourse (see LLSV, 1997; 1998). Besides the relative differences in agency problems faced by countries (Pistor, 2008), differences in income effect due to differences in the level of economic growth and development of countries possibly influence the quality of their institutions. North (1991) for instance, notes that while it take resources to define and enforce contracts, institutions and the effectiveness of enforcement (together with the technology employed) determine the cost of transacting, which is a critical determinant of economic performance. Similarly, Chang (2011) argue that institutions are expensive to establish and run, and the higher their quality, the more expensive they are likely to become. Therefore, if we consider investment in formal (luxury) and quality institutions on one hand and investment in composite goods of necessity on the other hand, countries at different levels of economic growth and development would invest differently. Compared with rich countries, poor countries would tend to allocate their limited resources efficiently by investing more in the necessities than the luxury institutions. This would result in comparatively weaker institutions in the poor countries than the rich countries. Increasing economic growth may create a higher demand for new agents of change, not just new institutions9 but institutions of a certain quality, transparency and accountability to sustain progress (ibid.). So, Badev et al (2014) shows that mortgage markets develop when these institutions

are efficient and only at relatively high levels of GDP per capita. Greater economic growth therefore makes better institutions more affordable and thus may alter the quality of these institutions – legal and information – and how they affect mortgage finance development. Thus, we test the hypothesis that: III.

RH: Creditor protection (ex ante and ex post) via mortgage legal rules relating to credit information sharing and property rights respectively is the major determinant of mortgage depth over time irrespective of differences in economic growth and development of countries (which possible influences information efficiency and the level of transaction costs).

DATA DESCRIPTION

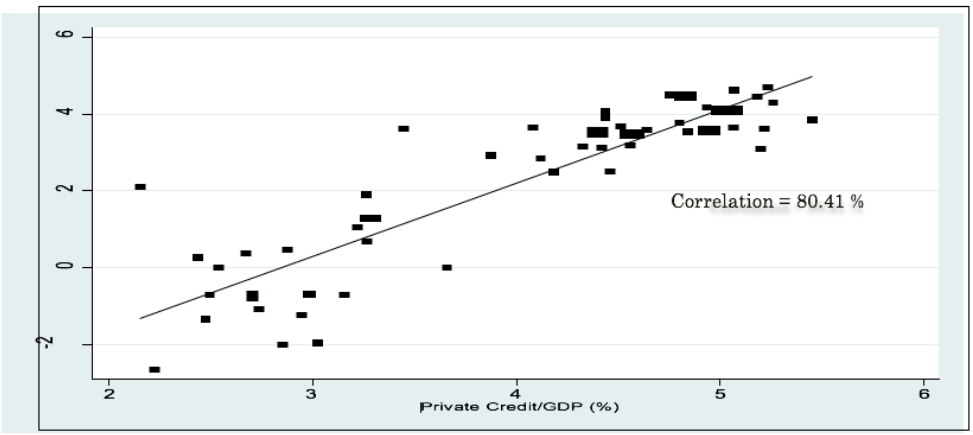
We gathered balanced longitudinal data (2006 - 2013) on 116 emerging economies and developing countries with a population over 1.5 million, except countries such as Tonga, Vanuatu, Surinam, St Vincent and Grenadines, St Lucia, Solomon Island, Sao Tome and Principe, Samoa, Mauritius, Guyana, Grenada, Fiji, Djibouti, Dominica, Cape Verde, and Belize. Since the level of economic development affects the quality of institutions (Chang, 2011; Glaeser et al., 2004), it is important to group them. Besley and Ghatak (2010) note that 'looking for an average effect across a group of producers with heterogeneous wealth could well underestimate the impact that we would expect to find only in the middle wealth group'. Therefore, utilizing the World Bank's country classification system based on GDP per capita, we classify countries into three groups: 22 low-income countries; 73 middle-income countries, and 21 high-income countries as shown in Appendix C. The analysis of variance (ANOVA) test shows that the three groups are statistical different as expected at 1 per cent significance level (p-value of 0.000).

MEASURING MORTGAGE FINANCE DEVELOPMENT

Financial development has at least four main dimensions: depth (size), access, efficiency and stability (World Economic Forum, 2012). This study focuses on the depth of mortgage markets. Private (domestic) credit data, the most popular measure of financial market depth, is used as a proxy for mortgage depth (dependent variable). This is due to the general lack of mortgage longitudinal data covering a considerable number of emerging economies and developing countries. Previous studies including Oyalolo (2012) and Badev et al (2014) use the same indicator to gauge mortgage depth in West Africa and across a larger set of countries respectively. Empirical evidence reported by Badev et al (2014) show a strong positive association with R- squared of about 74 per cent between private credit/GDP and mortgage credit/GDP. To show the appropriateness of this proxy, we also report a strong and positive correlation (80 percent) between private credit and mortgage credit at 1 per cent significant level using cross section data for 62 countries as shown in Figure 1. This result shows that countries with deeper private credit markets are more likely to develop deeper mortgage finance markets.

Figure 1: Correlation of Private Credit/GDP (%) and Mortgage Credit/GDP (%)

[9] Contrary to opposition from landlords, the rising industrial capitalists supported the development of banking in the 18th century. However, the welfare state and protective labour laws against the capitalists came into being due to the growing power of the working class in the late 19th and the early 20th centuries. Chang (2002a: chapter 3) argue that today's rich countries acquired most of the institutions that today's dominant view considers to be prerequisites of economic development after, not before, their economic development – democracy, modern bureaucracy, IPRs, limited liability, bankruptcy law, banking, the central bank, securities regulation, beside others. Particularly, Chang (2005) opines that the Anglo-American countries, whose institutions are today considered to be Global Standard Institutions (GSIs), themselves did not have most of those institutions during their earlier stages of development but acquired most of them only after they became rich.



MEAS

As indicated above, there are two creditor protection mechanisms – legal institution (ex poste) and information sharing institution (ex ante). We measure the quality of legal institutions using two variables. We measure the quality of the formal mortgage rules on the books in relation to property rights protection and information disclosure using the World Bank Doing Business getting credit variable (see also Badev et al., 2014). This is a composite index that measures the interaction between the strength of the Legal Rights Index and the Depth of Credit Information Systems. The Legal Rights Index examines whether an economy has an integrated or unified legal framework for secured transactions that extends to the creation, publicity and enforcement of 4 functional equivalents to security interests in movable assets: (1) fiduciary transfer of title; (2) financial leases; (3) assignment or transfer of receivables; and (4) sales with retention of title. It is measured over 100 percent, comprising the sum of the strength of legal rights index (0 – 12) and the depth of credit information index (0 – 8). Higher scores indicate that collateral and bankruptcy laws and credit information systems are better designed to expand access to credit. Creditor protection is strongest in Malawi and Tanzania (43.75 per cent), Malaysia (96 per cent) and Poland (86.72 percent) and weakest in Madagascar (12.5 per cent), Djibouti (6.25 per cent) and Equatorial Guinea and Venezuela (23.44 per cent) among the low-income, middle-income and high-income countries, respectively.

Law enforcement often relating to the efficiency of mortgage foreclosure is the dynamic aspect of the mortgage legal rules, which has been shown by many studies to promote lending (Bianco et al., 2005; Freixas, 1991; Clauretie and Herzog, 1990; Clauretie and Herzog, 1990; Laeven and Majnoni, 2003; Qian and Strahan, 2005). The number of procedures involved in enforcing contracts sourced from the World Bank Doing Business Database is used to measure the efficiency of mortgage foreclosure proceedings. Lengthy bureaucratic procedures are usually time-consuming and likely to be associated with high transaction costs. They are inefficient and expected to impact negatively on mortgage finance development, as shown by the correlation matrices in Appendix D. From our samples, Guinea and Mozambique have the highest and lowest numbers of procedures involved in contract enforcement; 49 and 51 accordingly in the low-income sample. In the middle and high-income groups, Sudan and Oman record the highest number of procedures, 53 and 28 respectively, in contrast to Botswana and Venezuela, which has the lowest

- 30 and 31 correspondingly, as shown in Tables I, II and III.

Contrary to the efficient Market hypothesis (Fama, 1970), markets are not fully efficient, and thus operate at different levels of efficiency (Stiglitz, 1981). Therefore, information asymmetry and the high cost of information hinder the emergence of credit markets in developing economies where cost may be higher (Davis and

North, 1970). We measure information sharing in two ways. First, we use a dummy variable (1, 0) to examine the effect of the mere availability of a credit information system (either public credit registers or and private credit bureaus) mortgage depth in a country. Beyond that, we use the actual coverage of both public credit registers10 and private credit bureaus11 to gauge the efficiency of information sharing. If no credit bureau operates, the coverage value is 0.0%.

(See Table 1)

Tables I – III provides a summary of the coverage of public credit registers and private credit bureaus in countries according to their levels of economic development. Table I shows that public credit registers exist in low-income countries except Burundi, Central African Republic, Chad, Eritrea, Guinea Bissau, Mozambique, Sierra Leone and Uganda, which are mostly politically unstable. Coverage is however low; Tanzania has the highest coverage of 10.9 per cent (maximum) and 9.38 per cent (average) of its population respectively. Only Sierra Leone and Uganda have private credit bureaus but considerably limited in coverage, and therefore may not form a vital part of the credit information-sharing infrastructure. The total coverage of credit information systems is low and potentially indicate relatively higher levels of information asymmetry in the formal financial sector in low-income countries. Coupled with relatively poorer creditor legal property rights protection as shown in Table I, low-income countries have extremely low mortgage credit/GDP ratios, less than 1 per cent in almost all the countries (Centre for Affordable Housing Finance, 2013).

(See Table 2)

However, Table II shows that public credit registers and private credit bureaus are both quite extensive in the middle-income countries. Twenty countries have both systems, with considerable coverage, some over 100 per cent of the population – Malaysia, Dominican Republic, Macedonia, Bosnia and Herzegovina, Costa Rica, El Salvador, Serbia, and Honduras. In these countries, the coverage of public credit registers and private credit bureaus ranges between 2.4 – 56.3 percent and 1.13 – 48.66 percent respectively. The total coverage of credit information systems ranges between 19.6 – 156.1 per cent. Another 19 countries including Mauritius, Mongolia, Belarus, Gabon Vietnam, Tunisia and Cape Verde specialize in public credit registers, while 18 countries like Botswana, Colombia, Fiji, Namibia, South Africa, Swaziland, Sri Lanka and Thailand specialize in private credit bureaus.

Respectively, the coverage of public credit registers and private credit bureaus in these countries ranges between 0.19 - 58.9 per cent and 2.9 - 72.5 per cent of the population. These countries have considerable formal information infrastructure that enables lenders to effectively screen mortgage applications and allocate credit resources more efficiently. Given the relatively strong creditor protection regime as shown in Table II, middle-income countries have deeper mortgage markets: Malaysia (35.91 per cent), South Africa (33 per cent), Morocco (16.90 per cent), Mauritius (12.20 per cent), Panama (22.67 per cent), and Namibia (18.21 per cent). There are also 16 countries that have none of the two systems; they include Belize, Dominica, Guyana, Jamaica, Lesotho, Sudan and Samoa. It indicates a high level of formal credit information asymmetry and it would be expected that these countries would have smaller mortgage markets, all things equal.

(See Table 3)

[10] credit registry is defined as a database managed by the public sector, usually by the central bank or the superintendent of banks that collects information on the creditworthiness of borrowers (individuals or firms) in the financial system and facilitates the exchange of credit information among banks and other regulated financial institutions (while their primary objective is to assist banking supervision) (World Bank, 2016).

[11] A credit bureau is defined as a private firm or nonprofit organization that maintains a database on the creditworthiness of borrowers (individuals or firms) in the financial system and facilitates the exchange of credit information among creditors (World Bank, 2016).

Table III shows that the distribution of credit information systems in high-income countries is similar to middle-income countries. Seven countries (Kuwait, Venezuela, Uruguay, Seychelles, Qatar, St Kitts and Nevis and Poland) out of a sample of 21 countries have both public credit registers and private credit bureaus. Private credit bureaus in St Kitts and Nevis, United Arab Emirates and Seychelles have credit information on 100 per cent of their respective population. Saudi Arabia, Oman, Lithuania, and Bahrain have only public credit registers with less than 40 per cent maximum coverage. While 6 countries have only private credit bureaus, 4 countries (Bahamas, Chile, Hungary, and Equatorial Guinea) have none of the credit information systems. Noteworthy, double counting is likely to occur in countries with both systems that have a total coverage over a 100 per cent (including Malaysia, Dominican Republic, Macedonia, Bosnia and Herzegovina, Costa Rica, El Salvador and Honduras), given the measurement approach. Mortgage markets in these countries generally have similar depth as middle-income countries.

For example, mortgage credit/GDP ratios are approximately 36.18 per cent (Bahamas), 35 per cent (Croatia), and 20 per cent (Chile). With the exception of Kuwait (24 per cent), mortgage depth in relation to the level of economic growth and development in the Middle East region is low: Qatar (9 per cent), Bahrain (4 per cent), United Arab Emirates (7 per cent), and Saudi Arabia (4 per cent).

Three general conclusions can be reached. First, private credit bureaus in most cases have a wider coverage than public credit bureaus in countries where both exist. Second, information sharing efficiency and the strength of creditor protection are positively correlated and improve with increasing levels of economic development. For instance, correlation matrices in Appendix D show that the correlation between creditor protection (measured by the formal mortgage rules on the books) and coverage of private credit bureaus is positive and increases from 21.87 per cent in low-income countries to 54.6 per cent in middle-income countries and then to 63.7 per cent in high-income countries. Nonetheless, the relationship between creditor protection and the coverage of public credit registers seems non-linear, as it rises from negative correlation (-14.1 per cent) in the low-income countries, becomes positive in the middle-income countries (36.5 per cent) and high-income countries (22.1 per cent), but falls in magnitude in the latter. A possible reason for this effect is that public credit registers can be considered somewhat as administrative remedies to market information failures and once the market jump-starts, market- oriented private credit bureaus emerge to take over. Third, there appears to be a pecking order in creditor protection mechanisms, running from ex ante information sharing institutions (private credit bureaus to public credit registers) to ex poste legal institutions (mortgage rules to foreclosure enforcement), with increasing levels of economic development. Particularly, the limited coverage of credit information systems and thus the possibility of high information asymmetry in low-income countries indicates that improvements in creditor protection via the legal institution is likely to be more relevant than the former in developing their mortgage markets.

CONTROL VARIABLES

First, closely linked to financial access is the level of urbanization, and in this regard, urban areas are more likely to develop the needed financial infrastructure for mortgage finance than rural areas (Boleat and Coles, 1985). This reason is primarily due to higher levels of demand for financial services and banking availability in urban areas (Barajas, 2013). Besides, higher house prices in urban areas also increase the need for long-term financing (Hansenn, 2013). Hence, as urban populations grow and urbanization accelerates, the need for mortgage finance grows (Renaud, 1998; Chiquier and Lea, 2009). Therefore, we use the World Development Indicators measure for the share of the urban population as a proxy for urbanization. Further, mortgage financing requires long-term funds and retirement (pension) funds usually have matching investment horizons (Sing, 2009). Raviv (1991) suggests that a lack of long-term financing typically in a developing country would make it more difficult to finance fixed assets, such as housing. Traditionally, pension funds have invested in mortgages as secondary lenders and the likelihood of the existence of a retirement fund and the amount of funds available to them often reflects the longevity structure of the population in an economy. We use the World Development Indicators measure for life expectancy at birth to gauge the availability of long-term funds for mortgage financing. As it were, the life expectancy of a borrower should also influence the term of a mortgage contract and consequently have an impact on mortgage affordability, access and then deepening. We also control for the size of the

potential mortgage market using the World Development Indicators measure for the share of the economically active population – percentage of population between 15 and 64 years. Appendix A provides a summary of the variables and their sources.

IV. EMPIRICAL RESULTS AND DISCUSSION

In this section, we present cross-country random effects regression results of the institutional determinants of mortgage market depth as indicated by the Hausman tests the most appropriate. First, Table IV presents panel regression results for the three country groups. We then carry out some robustness checks, which are presented in Tables V and VI. The robustness checks are structured in 2 different ways. First, we resample countries based on the strategy utilized by Djankov et al (2007). Second, we substitute the creditor protection variable with three other variables.

(See Table 4)

Table IV shows that both ex ante and ex poste creditor protection mechanisms are important in determining the proportion of investments in the economy that goes to mortgage financing. However, their relative importance is conditioned on the level of a country's economic growth and development. Comparing effect size for example, creditors in low-income countries tend to be more responsive to improvements in ex poste creditor protection mechanisms (i.e. mortgage legal rules, i.e. property rights, and mortgage foreclosure proceedings) than middle-income and high-income emerging markets and developing countries. On a comparative basis, the efficiency of mortgage foreclosure proceedings is a more powerful predictor of mortgage deepening than creditor protection (mortgage legal rules) and credit information sharing in all the three groups.

This effect might be due to many reasons. First, a notable feature of substantive mortgage law in most of the less developed countries is the limitation they place on foreclosure, and where creditors are allowed to foreclose, their right is often subject to judicial discretion (Butler et al.,

2009), which usually requires the following of inefficient bureaucracies, characterized by lengthy, time-consuming and costly court procedures. The more relevance of mortgage foreclosure efficiency in low-income and middle-income countries than in the high-income countries could be ascribed to the ability of the economy to absorb the increasing cost of enforcement due to lengthy enforcement procedures. While rich countries are better place to absorb the high cost of enforcement, the same cannot be said of low-income countries. The efficiency gains in reducing the number of foreclosure procedures may thus not be overwhelming in rich countries. Therefore, marginal improvements in the efficiency of law enforcement due to reductions in the number of procedures and transaction cost make enforcement of foreclosures through the legal system more attractive to creditors in low-income countries. Such efficiency gains, which in recent times have been achieved through the passage of legislation and regulations that allow for non-judicial foreclosure proceedings (for example, the new Home Mortgage Finance Law, 2008, Act 770 in Ghana) invoke predictability and confidence in the legal system and hence mitigate the probability of creditors losing their investments. Second, the extremely limited coverage of credit information systems in general means relatively higher information asymmetry in low-income countries and as a result creditors face substantial risk in determining the creditworthiness of borrowers for the efficient allocation of the limited credit resources ex ante. Thus, which borrowers get credit or rationed become an arduous decision to make, with a high possibility of lending to lemons. Therefore, when creditor rights improve through the strengthening of property rights and efficient enforcement of foreclosures in the event of mortgage default to recoup their investments and/or to limit investment losses ex poste, they tend to increase their resource allocations to mortgage financing, all things equal.

Between the two credit information sharing efficiency variables, while public credit registers are statistically significant, private credit bureaus are not in all three groups. Public credit registers are statistically more significant in middle and high-income countries than in low-income countries, but the effect size is larger in the latter than in the former groups. Public credit registers are credit information systems often established and operated by a national body, i.e. central banks, usually in countries with French civil law heritage (Djankov et al., 2007). Apart the French legal origin connection, they may serve as remedies to possible market information failures in those countries. But, why the connection between legal origins and credit information systems? The basic thrust of the legal origins theory is that English common law, as opposed to French civil law and (to a lesser extent) German and Scandinavian civil law, is associated with more orientation towards institutions of the market (instead of state intervention), which is why, according to proponents of the legal origins theory, common law countries tend to be economically more developed (LLSV, 1997). The level of economic development in turn affects investments in financial infrastructure, the level of financial inclusion and therefore the production of credit information. In poor countries, most people have extremely limited access to or use the formal financial system and thus barely produce any useful information in both qualitative and quantitative terms that can stimulate the emergence of viable market-based credit information systems, i.e. private credit bureaus, for the purpose of credit screening. The World Bank Global Financial Development Indicators for instance show that only 15 bank accounts for every 100 adults in the median African country, while there are 42 outside Africa. There are 3.1 branches per 100,000 adults in Africa, while there are 9.6 outside Africa. Similarly, 16.5 per cent of adults in the median African country indicate that they have an account with a formal financial institution, while this share is 21 per cent outside Africa. This situation attests to the evidence that credit information systems, particular private credit bureaus are more likely to develop in large, heterogeneous markets with high mobile pools of borrowers and low cost of exchanging information, which are a natural monopoly with increasing returns to scale in information sharing (Jappelli and Pagano, 1993; Davis and North 1970).

According to Ball (2006), appropriate answers to country differences cannot actually be found by reference to institutional variations only; hence, attempts to understand differences in market performance and behavior between countries must recognize key country peculiarities. With respect to our control variables, higher levels of financial inclusion are positively and significantly associated with mortgage deepening across all groups, with the exception of high-income countries. More efficiency in registering and transferring property (reduction in transaction cost) promotes mortgage deepening in high-income countries only. Further, a higher share of the economically active population is associated with mortgage deepening in all the groups, with the exception of high-income countries. On the contrary, increasing urbanization in low-income and high-income countries deepen mortgage markets. Similarly, increasing longevity increases mortgage depth, perhaps due to the supply of long-term mortgage funds. Over time, mortgage markets deepen across all the groups with the exception of low-income countries. This suggests that apart from the necessary institutional frameworks, mortgage markets deepen with increasing availability of long-term funds and increasing potential homeowners in urban centres. The dummies for regional effects show that Sub-Saharan African (SSA) countries in the high-income group are more likely to have narrower mortgage markets than countries in Europe (control group). Within the middle-income countries group, countries in ASIA are however more likely to have deeper mortgage markets than those in Europe, SSA and LAC.

It is noteworthy that credit information sharing through public credit registers increase and become statistically highly significant (1 per cent), contributing powerfully to mortgage deepening in the low-income countries, with increasing likelihood of the supply of long-term mortgage funds and increasing potential homeowners in urban centres. This finding supports Boleat and Coles (1985) and Hansenn (2013) that note that credit information infrastructure is more likely to develop in urban areas. However, given that the poor masses are highly excluded from formal finance in low-income countries, it is arguable that even the few people who are captured on state-sponsored public credit registers as shown in Table I are more likely to be the rich. In that case, the rich who might not need such a system to signal their quality may capture the benefits of investing scarce state resources in the establishment and maintenance of such infrastructure. Competitively, they might eventually crowd out the poor from the credit market, should the latter's credit information feature on the registers at all. Given this constraint, public credit registers might deepen credit markets when for example house prices are

increasing, but may not increase the number of poor people who have access to credit in poorer countries. As pointed out earlier, there seems to be a pecking order in the institutional mechanisms for protecting creditors in the formal sector, running from credit information sharing via private credit bureaus to public credit registers and then legal property rights protection, through mortgage rules and their enforcement. In low-income countries where credit information systems have barely emerged, in other words ex ante creditor protection mechanisms are highly limited, improvements in the property rights regime enables potential borrowers to pose collateral to signal their quality and thus serve as a screening and discipline device that enhances the ability oflenders to mitigate agency risks such as adverse selection and moral hazard risks (see Bester, 1987; 1985; Besanko and Thakor, 1987; Chan and Thakor, 1987). Therefore, investment in the protection of creditor legal property rights (which as far back as 1954 was poorly developed in West Africa according to Bauer) therefore appears to be the optimum and the only strategy (in comparison with the possibility of information sharing) to enhance the chances of the poor to access mortgage credit, which would consequently deepen their mortgage finance markets. More efficient collateral and bankruptcy laws allow creditors to compensate for the lack of clear information regarding the creditworthiness of individual households (Haselmann et al., 2006).

Our results are consistent with theoretical models developed by Besley and Ghatak (2010), that predict that the effect of improved property rights on access to finance is heterogeneous, but stronger in poor countries that usually have larger levels of illiquid wealth (dead capital) than richer countries (that have larger levels of liquid wealth) (De Soto, 2001). This effect is possible because a feature of formal mortgage foreclosure enforcement is that it is a freely available contracting technology that becomes widely available to all lenders once established than an informal mechanism of contract enforcement based on social networks. In other words, improving formal property rights engenders systematic effects (available to all lenders) and may have higher redistributive effects in poor countries. The downside is that lenders are likely to gain more relative to borrowers in poor countries when property rights improve. High moral hazards (default rates) arising not necessarily from a lack of willingness to repay loans but affordability problems might lead to many borrowers losing their homes (Besley and Ghatak, 2010).

In addition, our results are consistent with the assertion made by Milhaupt and Pistor (2008) that as markets grow in size, complexity and have more heterogeneous agents, demand for law increases, but law that provides flexibility and adaptability at the expense of predictability, which is the role of private property rights protection. In other words, simple and small markets with homogenous agents, which are characteristic of mortgage markets in low-income countries, might need more quality legal rules that facilitate more stability and predictability about property rights protection of future contingencies than developed countries might require. Lenders are reluctant to be pioneers in situations where the laws are unclear and there is a lack of legal precedent, as is the case in many emerging markets. In new markets, some ambiguities persist, typical among them are the grounds for default and enforcement of claims, judicial discretion to suspend or refuse execution, permitted defenses to lender's claims, legal priorities among parties, and obtaining orders of eviction and possession of mortgage property. Therefore, it is not surprising that improvements in the quality of creditor protection via improvements in the quality of mortgage rules and their enforcement are more likely to be major determinant of capital allocations to mortgage financing in low-income countries with high information asymmetry than richer countries. However, creditor rights protection does not have much and significant impact on mortgage deepening in middle-income countries, consistent with findings in some transition economies (Pistor, 2000) and African countries.

ROBUSTNESS CHECKS: ALTERNATE SAMPLING STRATEGY

The first alternative strategy is a panel regression of mortgage depth on the legal and credit information institutional characteristics over a heterogeneous sample of 116 countries, using data covering the same period (2006 – 2013). This is a rather common approach given data limitation, where adequate samples of similar countries are difficult to obtain. The following empirical model is estimated

$$Y_{it}=\beta_{\upsilon} +\beta_1 X_{1t}+\beta_2 X_{2t}+\beta_4 X_{4t}+\beta_5 X_{5t}+U_{it} \qquad \text{Eq (1)}$$

where, Y = mortgage depth; X_1 = mortgage legal rules; X_2 = mortgage foreclosure efficiency; X_3 and X_4 = credit information efficiency; X_5 = controls; and U_{it} = error term. These variables are the same in the subsequent models.

The second strategy is adopted from Djankov et al (2007), which groups countries as poor or rich, using the median income of the distribution: poor countries and rich countries have income per capita below and above the median income respectively. In all, we had 58 poor countries and

86 rich countries - the latter is made up of 58 middle- and high-income countries and 28 advanced economies. The resulting samples are considered as heterogeneous because both have at least two distinct country groups: low- and middle-income countries in the poor country sample and middle- and high-income in the rich country sample. This strategy results in the estimation of mortgage depth as a conditional probability of the legal and credit information institutional characteristics given the income of a country. The downside of these alternative strategies is that the impact of institutions on mortgage depth could well be underestimated or overestimated across countries with heterogeneous incomes than would be expected across countries with similar incomes; say only the middle-income group. For instance, Besley and Ghatak (2010) uses theoretical models to show that factors such as wealth, access to other markets and/or inputs like contract and foreclosure enforcement influence the effect of improved property rights on access to finance, and thus heterogeneous. Such heterogeneous effects are a natural consequence of bringing theoretical considerations to bear on the analysis of the data (ibid.). They further, show that if wealth is very high, the resource allocation is already efficient at the first-best level, and therefore, marginal improvements in property rights will not have any effect. However, this effect would be true on the assumption that more wealth promotes strong property rights, which is not the case in countries like Saudi Arabia, Qatar, Kuwait and the likes. So, it is possible to observe this effect in less wealthier countries that already have moderately strong property rights than those mentioned above. The following empirical model is then estimated:

$$Y_{it}=\beta_0 +\beta_1 X_{1t}|W+ \beta_2 X_{2t}|W+ \beta_3 X_{3t}|W+ \beta_4 X_{4t}|W+ \beta_5 X_{5t|}W+U_{it} \qquad \text{Eq (2)}$$

Table VI presents the results for the above empirical models. The results show that only the ex poste institutional mechanisms are statistically significant across all countries, poor and rich countries. That is, both improvements in creditor protection and mortgage foreclosure efficiency deepen mortgage markets. Nonetheless, whereas creditor protection is only statistically significant across all countries and the rich countries, mortgage foreclosure efficiency is significant across all countries and in the poor countries. Statistically, improvements in mortgage foreclosure efficiency are a more powerful predictor of mortgage deepening than creditor protection. This implies that the formal legal rules (on the books) are important but the dynamism in enforcing these rules, particularly, pertaining to mortgage foreclosures is more important. Other relevant factors include: access to finance, potential mortgage market size, urbanization and the likely availability of long-term sources of funding. Increasing access to finance deepens mortgage markets in poor countries more than in rich countries and across all countries. High levels of urbanization and mortgage market size are associated with

deeper mortgage markets across all countries and in poor countries, but not in rich countries. The availability of long-term sources of funding promotes mortgage deepening in both poor and rich countries, but more in the former.

(See Table 5)

Accounting for regional effect, the results show that across all countries, Asian countries are more likely to develop deeper markets than their counterparts in Europe, contrary to countries in Sub-Saharan Africa (SSA). Although statistically insignificant, poor countries in the SSA and in the Middle East and North Africa (MENA) are more likely to develop deeper mortgage markets than countries in Europe, in contrast to countries in Asia and Latin America and the Caribbean (LAC). With the exception of countries in Asia, the SSA, MENA and the LAC region have a tendency to have smaller mortgage markets than Europe. Since all the regions can be categorized by income per capita levels, it is possible to estimate the effect of income on mortgage deepening. Dummies were created for two discrete groups: (1) low-income countries, and (2) middle-high- income countries. The result shows that there might be a income tipping point for mortgage deepening. While low-income countries correlate negatively with mortgage depth, higher levels of income (middle-high-income) are positively associated with mortgage deepening. Overall, the model explains about 62 per cent of variations in mortgage depth across all countries, 66 per cent in poor countries and just 25 per cent in rich countries.

A number of reasons can be ascribed to the negative relationship between mortgage depth and the low-income group. About 91 per cent of the countries in the low-income groups are from SSA, which is particularly notorious for economic and financial underdevelopment. Among other things, SSA and LAC share a common challenge in macroeconomic instability, which has negative consequences on savings, currency strength, mortgage affordability and the attractiveness of long-term mortgage investment [12] . Macroeconomic volatility tends to distort price signals and may heighten the perceived risk of default, which may lead to a higher risk premium on borrowing rates for private firms and individuals [13] . A direct consequence of macroeconomic instability is dollarization, involving the pricing or indexation of repayments in dollars, which is not uncommon in some of the property and mortgage markets in these regions. For example, properties are usually priced in dollars in Ghana and the two major mortgage firms

- Ghana Home Loans Limited and HFC bank – that account for about 74 per cent of mortgage market share offer dollar-denominated mortgages to hedge against price instabilities. The effect is that, severe and continuous depreciation of the local currency automatically increases the debt service obligation (repayments), and given the low incomes, prices out most people, about 90 percent of the population (Akuffo, 2009) from the market and/or increases default tendencies and actual defaults, which reduces the size of the market. Besides the political problem of mortgage bond boycotts, low-income households characterized by affordability problems (Porteous and Naicker, 2003) and high levels of default in South Africa are particularly redlined (Tomlinson, 1997). Moss and Pillay (2000) suggests that among households unable to access institutional finance, 41 per cent were not provided with mortgage loans mainly because of their low-incomes. This finding suggests that the mortgage market might be a luxury, requiring some minimum income as a tipping point for its deepening to take place. We conduct further robustness checks in following using alternative measures of creditor protection

[12] Mortgage finance markets would normally be effective in an environment where prospective borrowers have enough income and/or secured jobs (Nyasulu and Cloete, 2007). Various reports including the UN-Habitat (2005) and World Bank (2000) highlights Sub-Saharan Africa (SSA) as the only region where per capita GDP is lower in the

late 1990s than it was 30 years ago with nearly 40% of its population living below the international poverty threshold of US$1/day. Recent studies evidence the low level of income in Africa and indicate that daily minimum wage has been below US$2.00 for most part of post-independence Africa (Centre for Affordable Housing Finance, 2012; Walley, 2009). See also (Tomlinson, 2007; Nubi 2010; Akuffo, 2009; Walley, 2009; Mutero, 2008; Okoroafor 2007; Erbas and Nothaft, 2005; Chiqiuer et al., 2004; Pugh, 1991; Robinson, 1976).

[13] Macroeconomic instability has been identified as one of the major obstacles to mortgage finance development in

Africa (see Butler et al., 2009; Akuffo, 2009; Walley, 2009; Warnock and Warnock, 2008; Sanders, 2005; Renaud, 2004; Agénor, et al., 2000; Pugh, 1994a; 1994b; 1994c; 1991).

ALTERNATIVE MEASURES OF CREDITOR PROTECTION

Table VI (for low-, medium- and high-income countries) and Table VII (for poor and rich countries) present results for the last set of robustness check, where we use different proxies for creditor protection. The first alternative measure is the World Bank Doing Business strength of legal rights index, which measures the quality of legal rules relating to property right. The other two alternatives are governance indicators: (1) estimate of the control of corruption, and (2) estimate of government effectiveness, sourced from the World Governance Indicators database, constructed by Kaufmann, Kraay and Mastruzzi (2010). Control of corruption is 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. Higher values indicate better control of corruption. Government effectiveness is the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. The results are sensitive to the alternative variables used. The legal rights index works like the creditor protection variable in all six groups, but for the all countries and high- income groups. While, the corruption control variable fails only in the all countries group, the government effectiveness variable does not work for rich countries and low-income countries. To a greater extent, the alternative measures of the quality of creditor protection show similar results to our main models.

(See Tables 6 & 7)

V SUMMARY AND CONCLUSION

This study presents empirical evidence on the institutional determinants of mortgage finance development across emerging markets and developing countries over time. We examine in particular the role of information and power theories of credit in explaining the variation in mortgage depth during the period 2006 – 2013. Our empirical strategy, which to a greater extent deals with the problem of sample heterogeneity, enables us to estimate the relative importance of information and legal rights protection in countries at different levels of economic growth. We find that improvements in creditor legal property rights and mortgage foreclosure enforcement matter more in low-income countries than in middle- and high-income countries. Credit information sharing, particularly through public credit bureaus is important for mortgage deepening across all levels of development, but may not be an effective mechanism for protecting creditors, due to their limited coverage as a result of low levels of financial inclusion. There is room for countries at different levels of economic growth to specialize in any of the two mechanisms for creditor protection. While low-income countries may be limited to ex poste creditor protection mechanisms, middle- and high-income countries are effectively open to credit information in addition (or as a substitute) as ex ante creditor protection mechanism.

The results show that the effect of legal and information institutions on mortgage deepening is quite sensitive to the empirical strategy adopted. For instance, a regression across all 114 countries show that only the ex poste mechanisms of creditor protection (quality of mortgage rules and efficiency of mortgage foreclosure proceedings) are relevant, while the ex ante mechanisms (credit information sharing either via public credit registers or private credit bureaus) are not. Further, by breaking the sample into poor and rich countries, we replicate results similar to Djankov et al (2007); where the quality of mortgage rules (similar to their creditor legal rights variable) is only relevant in rich countries and only credit information sharing is relevant in poor countries. By grouping the countries into low-income, middle-income and high-income countries, the results confirm and contradict at the same time some of the findings of previous studies - Djankov et al (2007). Our findings support the assertion that improvements in credit information sharing have a stronger impact on credit deepening in low-income countries than in middle- and high-income countries, given high levels of urbanization, potential homeowners and long-term fund supply. This in our opinion may be due to the elasticity of credit information coverage. It would be expected that when credit information systems, whether public credit registers or private credit bureaus are established in countries where they do not exist, the marginal coverage would most

likely be higher in the short-term compared to the long-term when they are fully established. So, with rich countries already having a higher coverage, few people are added periodically in contrast to low-income countries. This means that many more people in absolute terms may have access to credit in the low-income countries and thus deepen their mortgage markets. In contrast, we argue that credit information sharing matter for mortgage deepening in middle- and high-income countries, apart from low-income (poorer) countries. And by lumping countries together as shown in the first stage empirical strategy, which is typical of most previous studies, the true impact of credit information institutions and legal institutions on mortgage deepening in the intermediate countries may be masked due to the problem of sample heterogeneity. This may in effect prompt international organizations like the World Bank and IMF to inappropriately pursue legal transplants and legal harmonization projects, as is the case in recent times (Pistor, 2008).

Therefore, in summary and as a general proposition, there appears to be a consensus that poor legal fundamentals – in particular the inability to create and enforce a mortgage lien in a reasonably efficient and cost-effective manner – and high information asymmetry leads to increased risk of mortgage lending, higher transactions costs and markets that are both smaller and shallower in terms of income strata served and the total size of investments. Regardless of the statistical proofs, it seems self-evident that any rules or procedures that increase the risks and costs associated with lending will have a price that may be higher interest rates or less credit than would otherwise be available, or may be in encouraging the use of alternative systems of securing credit that provide fewer formal legal protections to debtors. Future research could focus on examining the extent of substitution between the ex ante (information) and ex poste (legal) mechanisms of creditor protection.

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TABLE I: COEVOLUTION OF INSTITUTIONS: LOW-INCOME COUNTRIES (2006 -2013)

(Source: World Bank Doing Business Database; # is Author's Estimate; CAR = Central African Republic)

	Maximum Coverage (%)		Average Coverage# (%)		Total Coverage# (%)	Average Score	
Economy	Public Credit Registers	Private Credit Bureau	Public Credit Registers	Private Credit Bureau	Both	Creditor Protection Quality	Mortgage Foreclosure Efficiency
Haiti	0.8	0	0.4	0	0.8	15.63	35
Nepal	2.4	0	1.94	0	2.4	50	39
Benin	0.3	0	0.23	0	0.3	28.91	42
Burkina Faso	2.4	0	1.7	0	2.4	23.44	37.25
Congo Dem.Rep.	1.1	0	1.01	0	1.1	18.75	43.25
Gambia, The	1.1	0	0.31	0	1.1	31.25	33
Guinea	0.3	0	0.14	0	0.3	23.44	49
Liberia	4.1	0	3.21	0	4.1	27.34	40.86
Madagascar	4.4	0	2.13	0	4.4	12.5	38
Malawi	1.2	0	0.91	0	1.2	43.75	42.25
Mali	0.7	0	0.09	0	0.7	23.44	37.5
Niger	3.6	0	2.86	0	3.6	23.44	39
Tanzania	10.9	0	9.38	0	10.9	43.75	38
Togo	0.7	0	0.65	0	0.7	23.44	41
Uganda	0	0.5	0	0.25	0.5	43.75	38
Sierra Leone	0	3.7	0	0.98	3.7	37.5	39.75
Burundi	0	0	0	0	0	17.97	44
CAR	0	0	0	0	0	23.44	43
Chad	0	0	0	0	0	23.44	41
Eritrea	0	0	0	0	0	12.5	39
Guinea-Bissau	0	0	0	0	0	23.44	40.63
Mozambique	0	0	0	0	0	18.75	30.63

TABLE II: COEVOLUTION OF INSTITUTIONS: MIDDLE-INCOME COUNTRIES (2006 -2013)

(Source: World Bank Doing Business Database; # is Author's Estimate)

	Maximum Coverage (%)		Average Coverage# (%)		Total Coverage# (%)	Average Score	
Economy	Public Credit Registers	Private Credit Bureau	Public Credit Registers	Private Credit Bureau	Both	Creditor Protection Quality	Mortgage Foreclosure Efficiency
Bulgaria	56.3	13.1	33.91	3.79	69.4	85.94	39
Malaysia	56.1	100	48.66	43.4	156.1	96.09	29.75
Dominican Republic	44.1	60	27.06	46.23	104.1	55.47	34
Macedonia	39.4	72.2	18.89	17.56	111.6	56.25	38.38
Ecuador	37.9	57.9	22.26	42.13	95.8	46.09	39
Bosnia and Herzegovina	36.2	69.2	15.61	41.38	105.4	61.72	37.13
Peru	31.2	42.5	23.26	33.28	73.7	78.13	41.13
Costa Rica	28.3	100	15.84	55.96	128.3	46.09	40
El Salvador	26.5	94.6	22.08	83.79	121.1	67.97	32.75
Iran	26.5	31.9	22.21	7.6	58.4	53.91	40
Turkey	23.5	63	14.51	39.64	86.5	61.72	36.38
Honduras	22.7	100	15.61	47.34	122.7	75.78	45.5
Guatemala	20.7	28.4	15.19	13.34	49.1	74.22	31
Paraguay	16.7	52.2	12.15	49.45	68.9	56.25	38
Romania	15.2	44.9	7.56	24.06	60.1	79.69	34.38
Bolivia	14.8	35.9	11.91	29.14	50.7	36.72	40
Nicaragua	14.8	31.9	12.51	30.31	46.7	53.13	37
Egypt, Arab Rep.	4.3	16.4	2.48	6.66	20.7	37.5	42
Morocco	2.4	17.2	1.13	6.96	19.6	34.38	40
Serbia	0.1	100	0.04	72.6	100.1	67.97	36
Mongolia	58.9	0	25.01	0	58.9	56.25	32
Mauritius	56.3	0	29.21	0	56.3	53.91	36.5
Belarus	56.2	0	21.04	0	56.2	30.47	28.25
Gabon	53.8	0	14.3	0	53.8	28.13	38
Vietnam	37.8	0	17.43	0	37.8	58.59	36
Tunisia	27.8	0	18.29	0	27.8	37.5	39
Cabo Verde	22.1	0	18.86	0	22.1	39.06	37
Albania	19.7	0	8.21	0	19.7	75.78	39
Lebanon	18.6	0	8.94	0	18.6	38.28	37
Cameroon	9.1	0	3.44	0	9.1	24.22	42.88
Congo, Rep.	8.3	0	3.86	0	8.3	26.56	44
Senegal	4.7	0	4.33	0	4.7	23.44	43.75
Côte d'Ivoire	3.1	0	2.83	0	3.1	23.44	33
Azerbaijan	2.9	0	6.65	0	2.9	46.88	40
Angola	2.3	0	2.41	0	2.3	18.75	46
Jordan	1.9	0	1.14	0	1.9	12.5	39
Yemen	0.9	0	0.31	0	0.9	12.5	36
Djibouti	0.2	0	0.2	0	0.2	6.25	40
Mauritania	0.2	0	0.19	0	0.2	18.75	46.25
Botswana	0	59.6	0	51.65	59.6	62.5	28.75
Colombia	0	72.5	0	50.79	72.5	62.5	33
Fiji	0	69.5	0	47.33	69.5	68.75	34
Georgia	0	35.5	0	12.3	35.5	58.59	35.75
Ghana	0	5.7	0	1.38	5.7	48.44	36.25
Kazakhstan	0	39.3	0	22.64	39.3	39.06	37
Kenya	0	4.9	0	2.35	4.9	62.5	40.5
Namibia	0	63.9	0	53.94	63.9	68.75	33
Panama	0	57.9	0	45.06	57.9	68.75	32
Papua New Guinea	0	2.9	0	0.66	2.9	31.25	42.5
Philippines	0	9	0	6.26	9	34.38	37
São Tomé and Príncipe	0	9.41	0	1.18	9.41	12.5	43
South Africa	0	64.8	0	56.11	64.8	79.69	29.63

TABLE II: COEVOLUTION OF INSTITUTIONS: MIDDLE-INCOME COUNTRIES (2006 -2013)

(Source: World Bank Doing Business Database; # is Author's Estimate)

Ukraine	0	25.5	0	7.05	25.5	65.63	50
Zambia	0	5.4	0	1.65	5.4	60.16	35
Algeria	0	0	0.45	0	0	18.75	46
Belize	0	0	0	0	0	43.75	51
Dominica	0	0	0	0	0	56.25	46.38
Grenada	0	0	0	0	0	43.75	46.38
Guyana	0	0	0	0	0	25	36.13
Jamaica	0	0	0	0	0	50	34.63
Lesotho	0	0	0	0	0	37.5	40.88
Samoa	0	0	0	0	0	40.63	44
Solomon Island	0	0	0	0	0	36.72	37
St Lucia	f0	0	0	0	0	43.75	46.38
St Vincent and Grenadines	0	0	0	0	0	43.75	44.38
Sudan	0	0	0	0	0	25	53.13
Surinam	0	0	0	0	0	25	44
Tajikistan	0	0	0	0	0	17.19	35
Tonga	0	0	0	0	0	46.88	37
Vanuatu	0	0	0	0	0	46.09	30

TABLE III: COEVOLUTION OF INSTITUTIONS: HIGH-INCOME COUNTRIES

(Source: World Bank Doing Business Database; # is Author's Estimate)

	Maximum Coverage		Average Coverage# (%)		Total Coverage# (%)	Average#	
Economy	Public Credit Registers	Private Credit Bureau	Public Credit Registers	Private Credit Bureau	Both	Creditor Protection Quality	Mortgage Foreclosure Efficiency
Kuwait	24.4	81.2	11.713	34.6	105.6	42.19	50
Venezuela	16.8	15.7	2.1	5.89	32.5	23.44	30
Uruguay	37.4	34.5	31.038	24.44	71.9	61.72	40
Seychelles	32.9	100	18.36	94.29	132.9	25	37
Qatar	0.2	33.3	0.05	17.26	33.5	34.38	43
St Kitts and Nevis	37	100	30.28	99.38	137	43.75	46.38
Poland	9	31.7	5.21	12.36	40.7	86.72	36.5
Saudi Arabia	37.3	0	18.26	0	37.3	57.03	42.63
Oman	32.2	0	7.188	0	32.2	39.84	32
Lithuania	3.9	0	2.71	0	3.9	65.63	32
Bahrain	17.7	0	4.43	0	17.7	37.5	48
Argentina	0	46	0	38.49	46	62.5	36
Trinidad and Tobago	0	29.1	0	19.16	29.1	79.69	42
Brunei Darussalam	0	31.2	0	24.74	31.2	43.75	47
United Arab Emirates	0	100	0	62.8	100	44.53	49.38
Croatia	0	16.1	0	10.05	16.1	60.16	38
Antigua and Barbuda	0	91.7	0	61.18	91.7	43.75	44.38
Bahamas	0	0	0	0	0	56.25	49
Chile	0	0	0	0	0	58.59	33
Hungary	0	0	0	0	0	69.53	34
Equatorial Guinea	0	0	0	0	0	23.44	40

TABLE IV: PANEL MODELS

	Dependent Variable: Private Credit/GDP Ratio		
Variables	Low-Income Countries	Middle-Income Countries	High-Income Countries
Creditor Protection	0.212 (0.094)**	0.040 (0.033)	0.147 (0.067)**
Foreclosure Efficiency	-2.143 (0.647)***	-1.161 (0.386)***	0.184 (0.401)
Information Efficiency (Public Credit Register)	0.645 (0.271)**	0.038 (0.012)***	0.156 (0.054)***
Information Efficiency (Private Credit Bureau)		0.004 (0.022)	0.005 (0.031)
Financial Access	0.344 (0.064)***	0.221 (0.028)***	0.121 (0.083)
Property Market Liquidity	0.177 (0.084)**	0.074 (0.038)**	-0.060 (0.028)**
Price (Inflation) Volatile	-0.001 (0.001)	-0.001 (0.000)*	0.0012 (0.0013)
Housing Supply Elasticity	0.001 (0.065)	-0.036 (0.028) 0.086	0.296 (0.182) 0.071
2007.year	-0.046 (0.057)	(0.025)*** 0.125	(0.034)** 0.088
2008.year	0.052 (0.062)	(0.028)*** 0.149	(0.038)** 0.156
2009.year	0.045 (0.069)	(0.030)*** 0.124	(0.041)*** 0.103
2010.year	0.054 (0.076)	(0.033)*** 0.122	(0.045)** 0.049
2011.year	0.160 (0.083)**	(0.036)*** 0.139	(0.050) 0.026
2012.year	0.097 (0.101)	(0.040)*** 0.167	(0.055) 0.037
2013.year	0.120 (0.106)	(0.041)*** 1.488	(0.059) 1.275
Potential Market Size	4.842 (1.013)***	(1.788) 0.810	(3.072) 1.606
Urbanization	8.010 (1.489)***	(0.558) 2.201	(0.700)** 1.695
Long-Term Funds Availability	1.374 (0.669)**	(0.498)*** 0.400	(0.598)*** -0.703
SSA	0.091 (0.236)	(0.259)	(0.233)***
MENA		0.256 (0.239)	-0.059 (0.247)
LAC	-0.399 (0.358)	0.161 (0.204)	-0.133 (0.225)
ASIA		0.420 (0.229)*	0.148 (0.371)
Constant	-18.800 (4.950)***	-6.106 (3.384)*	-12.815 (3.736)
Observations	176	584	168
No. of Groups	22	73	21
R-squared within	0.616	0.402	0.408

TABLE IV: PANEL MODELS

	Dependent Variable: Private Credit/GDP Ratio		
Variables	Low-Income Countries	Middle-Income Countries	High-Income Countries
Creditor Protection	0.212 (0.094)**	0.040 (0.033)	0.147 (0.067)**
Foreclosure Efficiency	-2.143 (0.647)***	-1.161 (0.386)***	0.184 (0.401)
Information Efficiency (Public Credit Register)	0.645 (0.271)**	0.038 (0.012)***	0.156 (0.054)***
Information Efficiency (Private Credit Bureau)		0.004 (0.022)	0.005 (0.031)
Financial Access	0.344 (0.064)***	0.221 (0.028)***	0.121 (0.083)
Property Market Liquidity	0.177 (0.084)**	0.074 (0.038)**	-0.060 (0.028)**
Price (Inflation) Volatile	-0.001 (0.001)	-0.001 (0.000)*	0.0012 (0.0013)
Housing Supply Elasticity	0.001 (0.065)	-0.036 (0.028)	0.296 (0.182)
2007.year	-0.046 (0.057)	0.086 (0.025)***	0.071 (0.034)**
2008.year	0.052 (0.062)	0.125 (0.028)***	0.088 (0.038)**
2009.year	0.045 (0.069)	0.149 (0.030)***	0.156 (0.041)***
2010.year	0.054 (0.076)	0.124 (0.033)***	0.103 (0.045)**
2011.year	0.160 (0.083)**	0.122 (0.036)***	0.049 (0.050)
2012.year	0.097 (0.101)	0.139 (0.040)***	0.026 (0.055)
2013.year	0.120 (0.106)	0.167 (0.041)***	0.037 (0.059)
Potential Market Size	4.842 (1.013)***	1.488 (1.788)	1.275 (3.072)
Urbanization	8.010 (1.489)***	0.810 (0.558)	1.606 (0.700)**
Long-Term Funds Availability	1.374 (0.669)**	2.201 (0.498)***	1.695 (0.598)***
SSA	0.091 (0.236)	0.400 (0.259)	-0.703 (0.233)***
MENA		0.256 (0.239)	-0.059 (0.247)
LAC	-0.399 (0.358)	0.161 (0.204)	-0.133 (0.225)
ASIA		0.420 (0.229)*	0.148 (0.371)
Constant	-18.800 (4.950)***	-6.106 (3.384)*	-12.815 (3.736)
Observations	176	584	168
No. of Groups	22	73	21
R-squared within	0.616	0.402	0.408
R-squared between	0.835	0.472	0.590
R-squared overall	0.800	0.467	0.583

The models include the four institutional variables of interest: (1) creditor protection, (2) foreclosure efficiency, (3) information efficiency via public credit registers, and (4) information efficiency via private credit bureaus. Seven control variables are also included: (1) financial access (Number of bank branches per 100,000 adults), (2) property market liquidity (property registration/transfer cost), (3) price stability (inflation volatility), and (4) housing supply elasticity (ease of construction permitting), (5) potential market size (the share of the economically active population

- 15 -64 years), (6) urbanization (the share of the urban population), and (7) Long-Term Funds Availability (life expectancy). Estimation is by random effects panel modelling. *, **, *** represent statistical significance at the 10%,

5%, and 1% levels, respectively. Regional effects are captured by SSA = Sub-Saharan Africa; MENA= Middle East and North Africa; ASIA = Asia; LAC = Latin America and the Caribbean, and the control group is Europe.

TABLE IV (PANEL B): COMPARING PANEL REGRESSION COEFFICIENTS OF INSTITUTIONAL VARIABLES ACROSS GROUPS

Source: Test of Regression Coefficients (Z-Scores)

	Creditor Protection	Foreclosure Efficiency	Information Efficiency (Public Credit Register)	Information Efficiency (Private Credit Bureau)
Low-income vs Middle-income	1.726	-1.303	2.238***	
Low-income vs High-income	0.563	-3.057***	1.770	
Middle-income vs High-income	-1.433	-2.416***	-2.133***	-0.026

TABLE V: PANEL MODELS BASED ON ALTERNATIVE SAMPLING STRATEGIES

	Dependent Variable: Private Credit/GDP Ratio				
Variables		All Countries		Poor Countries	Rich Countries
Creditor Protection	0.082	0.082	0.082	0.042	0.118
	(0.028)***	(0.028)***	(0.028)***	(0.044)	(0.071)*
Foreclosure Efficiency	-0.975	-0.977	-0.977	-0.966	0.167
	(0.278)***	(0.271)***	(0.271)***	(0.469)**	(0.329)
Information Efficiency	0.014	0.014	0.014	0.003	0.018
(Public Credit Register)	(0.013)	(0.013)	(0.013)	(0.028)	(0.025)
Information Efficiency	0.024	0.029	0.029	0.079	0.021
(Private Credit Bureau)	(0.020)	(0.020)	(0.020)	(0.047)*	(0.033)
Financial Access	0.238	0.236	0.236	0.289	0.153
	(0.024)***	(0.024)***	(0.024)***	(0.038)***	(0.050)***
Property Market Liquidity	0.035	0.031	0.031	0.082	-0.152
	(0.023)	(0.023)	(0.023)	(0.045)*	(0.022)***
Price (Inflation) Volatile	-0.000	-0.000	-0.000	-0.001	-0.002
	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)
Housing Supply Elasticity	-0.029	-0.029	-0.029	-0.044	0.161
	(0.027)	(0.027)	(0.027)	(0.064)	(0.166)
2007.year	0.057	0.060	0.060	0.034	0.076
	(0.021)***	(0.021)***	(0.021)***	(0.033)	(0.041)*
2008.year	0.104	0.110	0.110	0.099	0.112
	(0.023)***	(0.023)***	(0.023)***	(0.036)***	(0.043)***
2009.year	0.133	0.141	0.141	0.113	0.187
	(0.024)***	(0.024)***	(0.024)***	(0.036)***	(0.045)***
2010.year	0.111	0.121	0.121	0.094	0.177
	(0.026)***	(0.026)***	(0.026)***	(0.045)**	(0.047)***
2011.year	0.116	0.128	0.128	0.140	0.178
	(0.028)***	(0.027)***	(0.027)***	(0.049)***	(0.052)***
2012.year	0.113	0.128	0.128	0.161	0.173
	(0.031)***	(0.030)***	(0.030)***	(0.057)***	(0.056)***
2013.year	0.139	0.155	0.155	0.202	0.178
	(0.033)***	(0.032)***	(0.032)***	(0.061)***	(0.059)***
Potential Market Size	1.630	1.440	1.440	2.154	-0.437
	(0.379)***	(0.379)***	(0.379)***	(0.605)***	(0.734)
Urbanization	3.029	3.471	3.471	4.305	1.558
	(1.050)***	(1.011)***	(1.011)***	(1.423)***	(2.819)
Long-Term Funds Availability	2.069	1.914	1.914	2.198	2.166
	(0.403)***	(0.354)***	(0.354)***	(0.579)***	(0.744)***
SSA	0.197			0.020	-0.283
	(0.184)			(0.394)	(0.223)
MENA	0.179			0.059	-0.252
	(0.176)			(0.388)	(0.189)
LAC	-0.005			-0.170	-0.383
	(0.157)			(0.361)	(0.156)**
ASIA	0.326			-0.116	0.292
	(0.180)*			(0.354)	(0.191)
Low-Income Dummy		-0.079			
		(0.149)			
Middle-High-Income Dummy			0.079		
			(0.149)		
Constant	-9.841	-8.290	-8.369	-12.339	-5.714
	(2.291)***	(2.009)***	(1.949)***	(3.850)***	(4.425)
	928	928	928		
Observations				464	688
No. of Groups	116	116	116	58	86
R-squared within	0.406	0.406	0.406	0.468	0.213
R-squared between	0.629	0.611	0.611	0.675	0.253
R-squared overall	0.617	0.599	0.599	0.658	0.246

Results based on regressions across all countries and according to Djankov et al (2007) country classification strategy – poor and rich countries – are presented. The models include the four institutional variables of interest: (1) creditor protection, (2) foreclosure efficiency, (3) information efficiency via public credit registers, and (4) information efficiency via private credit bureaus. Seven control variables are also included: (1) financial access (Number of bank branches per 100,000 adults), (2) property market liquidity (property registration/transfer cost), (3) price stability (inflation volatility), and (4) housing supply elasticity (ease of construction permitting), (5) potential market size (the share of the economically active population - 15 -64 years), (6) urbanization (the share of the urban population), and (7) Long-Term Funds Availability (life expectancy). Estimation is by random effects panel modelling. *, **, *** represent statistical significance at the 10%, 5%, and 1% levels, respectively. Life expectancy is however omitted in the all countries model because it correlates highly (77%) with access to finance and the share of the economically active population (15 -64 years) and may cause multicollinearity problems. SSA = Sub-Saharan Africa; MENA= Middle East and North Africa; ASIA = Asia; LAC = Latin America and the Caribbean, and the control group is EUROPE. Income dummies are used to capture the effect of GDP per capita on mortgage deepening.

TABLE V (PANEL B):
COMPARING PANEL REGRESSION COEFFICIENTS OF INSTITUTIONAL VARIABLES ACROSS GROUPS

Test of Regression Coefficients (Z-Scores)

	Creditor Protection	Foreclosure Efficiency	Information Efficiency (Public Credit Register)	Information Efficiency (Private Credit Bureau)
All Countries vs Poor Countries	0.767	-0.017	0.356	-1.077
All Countries vs Rich Countries	-0.472	-2.651***	-0.142	0.078
Poor Countries vs Rich Countries	-0.910	-1.978***	-0.400	1.010

TABLE VI: PANEL MODELS WITH ALTERNATIVE MEASURES OF CREDITOR PROTECTION QUALITY (LOW-, MIDDLE- AND HIGH-INCOME COUNTRIES)

	Dependent Variable: Private Credit/GDP Ratio								
Variables	Low-Income Countries			Middle-Income Countries			High-Income Countries		
Legal Rights	0.182			0.001			-0.100		
	(0.094)**			(0.056)			(0.088)		
Corruption Control		0.261			0.038			0.247	
		(0.123)***			(0.049)			(0.069)***	
Government Effectiveness			0.150			0.159			0.189
			(0.107)			(0.056)***			(0.099)**
Foreclosure Efficiency	-2.009	-1.755	-2.065	-1.164	-1.144	-1.050	0.211	-0.925	-0.945
	(0.645)***	(0.617)***	(0.595)***	(0.387)***	(0.386)***	(0.379)***	(0.407)	(0.552)*	(0.565)*
Information Efficiency	0.753	0.815	0.776	0.043	0.042	0.041	-0.085	-0.108	-0.111
(Public Credit Register)	(0.275)***	(0.264)***	(0.261)***	(0.013)***	(0.013)***	(0.013)***	(0.047)*	(0.052)***	(0.053)**
Information Efficiency				0.003	0.002	-0.001	0.024	-0.041	-0.052
(Private Credit Bureau)				(0.022)	(0.022)	(0.022)	(0.029)	(0.035)	(0.036)
Financial Access	0.339	0.340	0.355	0.222	0.220	0.211	0.200	-0.177	-0.126
	(0.065)***	(0.064)***	(0.063)***	(0.028)***	(0.028)***	(0.028)***	(0.088)**	(0.081)**	(0.082)
Property Market Liquidity	0.145	0.095	0.137	0.071	0.071	0.060	-0.017	0.006	0.007
	(0.082)*	(0.084)	(0.082)*	(0.038)**	(0.038)*	(0.038)	(0.032)	(0.032)	(0.033)
Price (Inflation) Volatile	-0.002	-0.002	-0.002	-0.001	-0.001	-0.001	0.0016	0.002	0.002
	(0.001)*	(0.001)	(0.001)*	(0.000)*	(0.000)*	(0.028)	(0.0013)	(0.001)***	(0.001)***
Housing Supply Elasticity	0.022	0.049	0.038	-0.036	-0.037	-0.037	0.380	0.267	0.247
	(0.063)	(0.058)	(0.058)	(0.028)	(0.028)	(0.028)	(0.185)**	(0.151)*	(0.155)
2007.year	-0.038	-0.043	-0.048	0.087	0.087	0.088	0.075	0.056	0.059
	(0.057)	(0.057)	(0.058)	(0.025)***	(0.0225)***	(0.025)***	(0.035)**	(0.038)	(0.039)
2008.year	0.067	0.060	0.052	0.126	0.127	0.129	0.089	0.062	0.081
	(0.063)	(0.062)	(0.063)	(0.028)***	(0.028)***	(0.027)***	(0.038)**	(0.042)	(0.043)*
2009.year	0.060	0.045	0.044	0.152	0.153	0.157	0.157	0.109	0.132
	(0.070)	(0.069)	(0.070)	(0.030)***	(0.030)***	(0.030)***	(0.041)***	(0.047)**	(0.147)***
2010.year	0.072	0.065	0.062	0.129	0.130	0.136	0.102	0.021	0.047
	(0.076)	(0.075)	(0.076)	(0.033)***	(0.033)***	(0.033)***	(0.045)**	(0.052)	(0.053)
2011.year	0.184	0.175	0.171	0.127	0.128	0.134	0.049	-0.061	-0.033
	(0.083)**	(0.081)**	(0.082)*	(0.036)***	(0.036)***	(0.036)***	(0.051)	(0.057)	(0.058)
2012.year	0.158	0.203	0.186	0.145	0.147	0.153	0.031	-0.139	-0.112
	(0.094)*	(0.092)**	(0.092)*	(0.039)***	(0.039)***	(0.039)***	(0.056)	(0.063)**	(0.064)*
2013.year	0.181	0.229	0.208	0.174	0.175	0.182	0.041	-0.163	-0.128
	(0.100)*	(0.098)**	(0.097)*	(0.042)***	(0.042)***	(0.042)***	(0.059)	(0.069)**	(0.070)*
Potential Market Size	4.986	5.016	4.751	1.530	1.455	1.248	0.962	6.016	1.911
	(1.008)***	(0.967)***	(0.967)***	(1.794)	(1.787)	(1.744)	(3.109)	(2.927)**	(2.936)*
Urbanization	7.793	8.036	7.836	0.785	0.758	0.653	1.527	1.502	1.488
	(1.498)***	(1.381)***	(1.377)***	(0.559)	(0.559)	(0.497)	(0.712)**	(0.781)**	(0.808)
Long-Term Funds Availability	1.410	1.478	1.415	2.202	2.173	1.955	1.956	9.808	9.143
	(0.666)**	(0.614)**	(0.604)**	(0.499)***	(0.499)***	(0.497)***	(0.600)***	(1.560)***	(1.581)***
SSA	0.042	0.018	0.065	0.384	0.366	0.301	-0.816	-0.011	-0.039
	(0.236)	(0.216)	(0.210)	(0.260)	(0.259)	(0.252)	(0.236)***	(0.468)	(0.467)
MENA			-0.450	0.228	0.227	0.210	-0.129	-0.216	-0.136
			(0.318)	(0.243)	(0.237)	(0.230)	(0.250)	(0.481)	(0.478)
LAC	-0.440	-0.456	-18.399	0.151	0.143	0.108	-0.210	-0.600	-0.455
	(0.354)	(0.321)	(4.580)***	(0.206)	(0.204)	(0.197)	(0.228)	(0.443)	(0.440)
ASIA				0.406	0.404	0.377	0.169	0.555	0.511
				(0.230)*	(0.228)*	(0.221)*	(0.375)	(0.720)	(0.718)
Constant	-19.777	-20.814	-18.399	-5.865	-5.665	-4.509	-13.779	-42.225	-39.185
	(4.937)***	(4.635)***	(4.580)***	(3.391)*	(3.339)*	(3.362)	(3.764)***	(7.2010)***	(7.263)***
Observations	176	176	176	584	584	584	168	168	168
No. of Groups	22	22	22	73	73	73	21	21	21
R-squared within	0.611	0.600	0.594	0.402	0.400	0.401	0.399	0.532	0.490
R-squared between	0.837	0.881	0.877	0.462	0.475	0.519	0.565	0.532	0.553
R-squared overall	0.802	0.837	0.832	0.458	0.471	0.512	0.558	0.526	0.545

Three alternative measures of creditor protection quality are included: (1) legal rights index, (2) corruption control, and (3) government effectiveness. SSA = Sub-Saharan Africa; MENA= Middle East and North Africa; ASIA = Asia; LAC = Latin America and the Caribbean. The control group is Europe. Estimation is by random effects panel modelling. *, **, *** represent statistical significance at the 10%, 5%, and 1% levels, respectively.

TABLE VI (PANEL B): COMPARING PANEL REGRESSION COEFFICIENTS OF INSTITUTIONAL VARIABLES ACROSS GROUPS

Test of Regression Coefficients (Z-Scores)

	Creditor Protection (Legal Rights)	Creditor Protection (Corruption Control)	Creditor Protection (Government Effectiveness)	Foreclosure Efficiency	Information Efficiency (Public Credit Register)	Information Efficiency (Private Credit Bureau)
Low-income vs Middle-income	1.654	1.684	-0.075	-1.124	2.579***	
Low-income vs High-income	2.190***	0.099	-0.268	-2.911***	3.004***	
Middle-income vs High-income	0.968	-2.470***	-0.270	-2.448***	2.625***	-0.577

TABLE VII: PANEL MODELS WITH ALTERNATIVE MEASURES OF CREDITOR PROTECTION QUALITY (POOR AND RICH COUNTRIES)

Variables	All Countries			Poor Countries			Rich Countries		
Legal Rights	0.055			0.094			0.289		
	(0.043)			(0.058)			(0.095)***		
Corruption Control		0.044			-0.099			0.098	
		(0.039)			(0.065)			(0.059)*	
Government Effectiveness			0.085			-0.104			-0.001
			(0.044)*			(0.071)			(0.007)
Foreclosure Efficiency	-0.989	-9.76	-0.971	-0.907	-1.027	-1.026	0.160	0.276	0.202
	(0.280)***	(0.280)***	(0.278)***	(0.469)**	(0.470)**	(0.472)**	(0.334)	(0.339)	(0.339)
Information Efficiency	0.023	0.023	0.023	0.008	0.015	0.014	-0..006	-0.001	-0.001
(Public Credit Register)	(0.013)*	(0.013)*	(0.127)*	(0.027)	(0.028)	(0.028)	(0.023)	(0.024)	(0.023)
Information Efficiency	0.010	0.012	0.014	-0.064	-0.061	-0.063	0.041	0.038	0.036
(Private Credit Bureau)	(0.019)	(0.019)	(0.020)	(0.044)	(0.044)	(0.044)	(0.032)	(0.032)	(0.032)
Financial Access	0.240	0.242	0.241	0.290	0.289	0.286	0.129	0.156	0.155
	(0.025)***	(0.024)***	(0.024)***	(0.038)***	(0.038)***	(0.038)***	(0.051)**	(0.050)***	(0.051)***
Property Market Liquidity	0.030	0.033	0.031	0.085	0.078	0.074	-0.166	-0.157	-0.154
	(0.024)	(0.024)	(0.024)	(0.045)**	(0.045)*	(0.045)*	(0.022)***	(0.022)***	(0.022)***
Price (Inflation) Volatile	-0.000	-0.000	-0.000	-0.001	-0.001	-0.001	-0.002	-0.001	-0.001
	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)*	(0.001)*	(0.001)	(0.001)	(0.001)
Housing Supply Elasticity	-0.026	-0.025	-0.025	-0.044	-0.033	-0.036	0.128	0.095	0.162
	(0.027)	(0.027)	(0.027)	(0.063)	(0.063)	(0.063)	(0.166)	(0.172)	(0.167)
2007.year	0.059	0.060	0.060	0.034	0.034	0.036	0.075	0.081	0.080
	(0.021)***	(0.021)***	(0.021)***	(0.033)	(0.033)	(0.033)	(0.040)*	(0.040)**	(0.040)**
2008.year	0.106	0.106	0.107	0.100	0.099	0.103	0.112	0.115	0.115
	(0.023)***	(0.023)***	(0.023)***	(0.036)***	(0.036)***	(0.036)***	(0.042)***	(0.042)***	(0.042)***
2009.year	0.136	0.137	0.140	0.112	0.114	0.114	0.190	0.192	0.190
	(0.024)***	(0.024)***	(0.024)***	(0.040)***	(0.040)***	(0.040)***	(0.044)***	(0.044)***	(0.044)***
2010.year	0.116	0.118	0.121	0.095	0.097	0.097	0.180	0.185	0.180
	(0.026)***	(0.026)***	(0.026)***	(0.044)**	(0.044)**	(0.044)**	(0.047)***	(0.047)***	(0.047)***
2011.year	0.121	0.125	0.128	0.140	0.146	0.147	0.177	0.186	0.180
	(0.028)***	(0.028)***	(0.028)***	(0.049)***	(0.049)***	(0.049)***	(0.051)***	(0.051)***	(0.051)***
2012.year	0.123	0.131	0.134	0.161	0.169	0.171	0.171	0.183	0.175
	(0.031)***	(0.031)***	(0.031)***	(0.055)***	(0.054)***	(0.054)***	(0.0556)***	(0.056)***	(0.056)***
2013.year	0.150	0.157	0.160	0.201	0.210	0.212	0.176	0.189	0.181
	(0.033)***	(0.033)***	(0.033)***	(0.059)***	(0.058)***	(0.058)***	(0.058)***	(0.059)***	(0.058)***
Potential Market Size	1.641	1.556	1.463	2.172	2.136	2.221	-0.300	-0.483	-0.443
	(0.382)***	(0.388)***	(0.391)***	(0.603)***	(0.604)***	(0.608)***	(0.740)	(0.743)	(0.747)
SSA	0.181	0.140	0.125	0.048	0.001	0.034	-0.255	-0.257	-0.312
	(0.186)	(0.186)	(0.184)	(0.393)	(0.394)	(0.396)	(0.227)	(0.231)	(0.230)
MENA	0.165	0.120	0.109	0.115	0.066	0.100	-0.202	-0.203	-0.292
	(0.178)	(0.177)	(0.175)	(0.388)	(0.388)	(0.392)	(0.194)	(0.200)	(0.195)
LAC	-0.010	-0.047	-0.058	-0.140	-0.192	-0.193	-0.334	-0.347	-0.405
	(0.159)	(0.159)	(0.157)	(0.360)	(0.361)	(0.362)	(0.161)**	(0.164)**	(0.162)**
ASIA	0.320	0.298	0.281	-0.087	-0.115	-0.104	0.249	0.306	0.309
	(0.182)*	(0.182)	(0.180)	(0.353)	(0.355)	(0.357)	(0.195)	(0.196)	(0.198)
Constant	-9.697	-9.278	-8.588	-12.678	-12.165	-12.709	-5.343	-4.966	-5.438
	(2.306)***	(2.333)***	(2.357)***	(3.843)***	(3.844)***	(3.881)***	(4.455)	(4.490)	(4.513)
Observations	928	928	928	464	464	464	688	688	688
No. of Groups	116	116	116	58	58	58	86	86	86
R-squared within	0.402	0.401	0.401	0.470	0.468	0.468	0.225	0.221	0.221
R-squared between	0.622	0.624	0.633	0.676	0.681	0.679	0.253	0.233	0.233
R-squared overall	0.610	0.612	0.620	0.659	0.663	0.661	0.247	0.229	0.229

Three alternative measures of creditor protection quality are included: (1) legal rights index, (2) corruption control, and (3) government effectiveness. SSA = Sub-Saharan Africa; MENA= Middle East and North Africa; ASIA = Asia; LAC = Latin America and the Caribbean. The control group is Europe. Estimation is by random effects panel modelling. *, **, *** represent statistical significance at the 10%, 5%, and 1% levels, respectively.

TABLE VII (PANEL B): COMPARING PANEL REGRESSION COEFFICIENTS OF INSTITUTIONAL VARIABLES ACROSS GROUPS

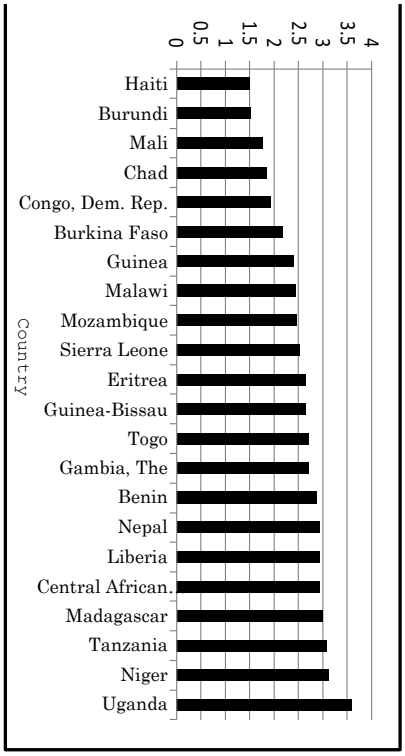
Test of Regression Coefficients (Z-Scores)

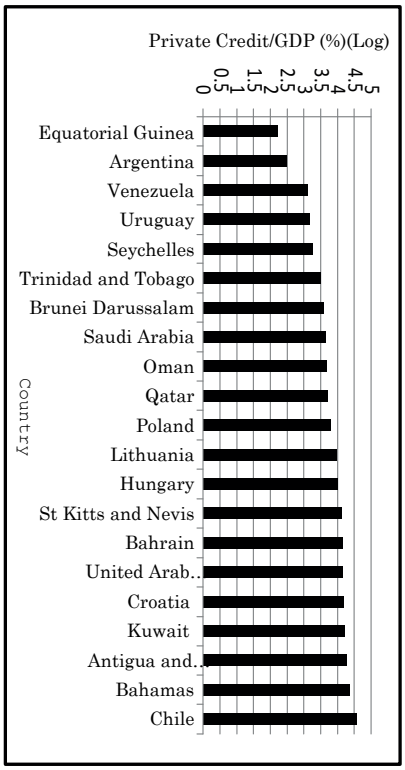
	Creditor Protection (Legal Rights)	Creditor Protection (Corruption Control)	Creditor Protection (Government Effectiveness)	Foreclosure Efficiency	Information Efficiency (Public Credit Register)	Information Efficiency (Private Credit Bureau)
All Countries vs Poor Countries	-0.540	1.886	2.263***	-0.150	0.501	1.544
All Countries vs Rich Countries	-2.244***	1.618	1.930***	-2.636***	1.098	-0.833
Poor Countries vs Rich Countries	-1.752	-2.244***	-1.444	-2.448***	0.395	-1.930***

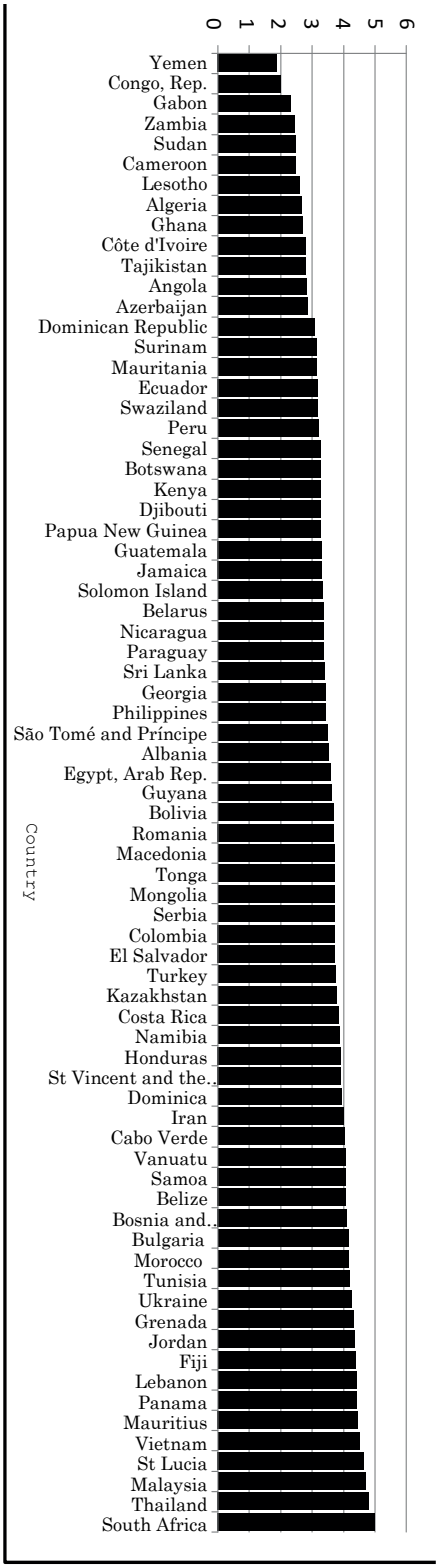
APPENDIX A: DEFINITIONS AND SOURCES OF VARIABLES

Construct Measured	Variable	Definition and Source
Mortgage Depth	Private Credit/GDP (%)	Private credit is domestic credit (financial resources) such as loans, purchases of non-equity securities, and trade credits and other accounts receivable provided to the private sector by financial corporations that establish a claim for repayment. The variable is expressed as a percentage of GDP. Source: *World Bank Financial Development Database.*
Strength of Creditor Protection Mechanisms	Getting Credit	The World Bank Doing Business 'Getting Credit' variable is a composite index consisting of the strength of legal rights index and the depth of credit information index. The strength of legal rights index has 12 components and measures the degree to which collateral and bankruptcy laws protect the rights of borrowers and lenders and thus facilitate lending. The depth of credit information index has 8 features of the credit bureau or credit registry and measures rules and practices affecting the coverage, scope and accessibility of credit information, and thus the extent of credit information sharing in a country. The index also assesses the availability and operation of a collateral registry or registration institution for security interests granted over movable property by incorporated and non-incorporated entities, and whether they are unified geographically through an electronic database indexed by debtors' names. Source: *World Bank Doing Business Database.*
	Legal Rights Index	The strength of legal rights index has 12 components and measures the degree to which collateral and bankruptcy laws protect the rights of borrowers and lenders and thus facilitate lending. Source: *World Bank Financial Development Database.*
	Corruption Control Estimate	Control of corruption is 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. Higher values indicate better control of corruption. Source: *World Governance Indicators database*, constructed by Kaufmann, Kraay and Mastruzzi (2010).
	Government Effectiveness Estimate	Government effectiveness is the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. Source: *World Governance Indicators database*, constructed by Kaufmann, Kraay and Mastruzzi (2010).
Mortgage Foreclosure Efficiency	Contract Enforcement Procedures	These are the procedures compiled for each economy that traces the chronology of a commercial dispute before the relevant court. Procedural steps include steps to file and serve the case, steps to assign the case to a judge, steps for trial and judgment and steps necessary to enforce the judgment. This has implication for transaction costs associated with mortgage foreclosure. Source: *World Bank Doing Business Database.*
Information Efficiency	Private credit bureau and public credit register	The number of individuals and firms listed in a private credit bureaus and public credit register databases as of January 1, 2015, with information on their borrowing history within the past five years, plus the number of individuals and firms that have had no borrowing history in the past five years but for which a lender requested a credit report from the bureau in the period between January 1, 2014, and January 1, 2015. Source: *World Bank Doing Business Database.*
Price Stability	Inflation Volatility	Inflation volatility estimated as the variance of each year's inflation rate from its mean over the 8-year (2006 – 2013) sample period.
Property Market Liquidity	Property Registration & Transfer Cost	This is the cost necessary for a business (the buyer) to purchase a property from another business (the 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. Source: *World Bank Doing Business Database.*
Housing Supply Elasticity	Ease of Construction Permitting	This include procedures involved in obtaining and submitting all relevant project-specific documents (for example, building plans, site maps and certificates of urbanism) to the authorities; hiring external third-party supervisors, engineers or inspectors (if necessary); obtaining all necessary clearances, licenses, permits and certificates; submitting all required notifications; and requesting and receiving all necessary inspections (unless completed by a private, third-party inspector). Source: *World Bank Doing Business Database.*
Financial Access/Inclusion	Bank branches per 100,000 adults	Financial access is one of the dimensions of financial development according to the *World Bank Financial Development Report.*
Urbanization	Urban Population (%)	Urban population refers to people living in urban areas as defined by national statistical offices. It is expressed as the percentage of the urban population as a proportion of total population. Source: *World Bank Development Indicators Database.*
Likelihood of Long-Term Funds Availability	Life expectancy	Life expectancy at birth is the number of years a new born infant would live if prevailing patterns of mortality at the time of its birth were to stay the same throughout its life. Source: World Bank World Bank Development Indicators Database.
Potential Market Size	Population (15 - 64 Years)	Total population between the ages 15 to 64 is the number of people who could potentially be economically active. This is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship - except for refugees not permanently settled in the country of asylum, who are generally considered part of the population of the country of origin. Source: *World Bank World Bank Development Indicators Database.*

APPENDIX B: PRIVATE CREDIT/GDP RATIOS (%) ACROSS GROUPS







APPENDIX C: SUMMARY OF DESCRIPTIVE STATISTICS

Variable	Observations	Mean	Standard Error	Minimum	Maximum
All Countries					
Private Credit	928	3.396	0.026	0.715	5.076
Mortgage Legal Rules	928	3.644	0.018	2.344	4.605
Mortgage Foreclosure	928	3.653	0.004	3.332	3.989
Registering Property (Cost)	928	1.735	0.028	-0.523	3.148
Public Credit Register Coverage	928	1.636	0.042	0.000	4.143
Private Credit Bureaus Coverage	928	2.817	0.025	2.303	4.700
Inflation Volatility	928	0.453	0.661	-86.907	151.345
Construction Permit (Ease)	928	4.073	0.018	0.000	4.530
Financial Access (Bank Branch)	928	2.134	0.038	-1.212	4.989
Urban Population (%)	928	0.154	0.001	0.100	0.340
Population (15 – 64 years)	928	4.118	0.004	3.852	4.454
Life Expectancy	928	4.190	0.005	3.758	4.384
Poor Countries					
Private Credit	464	3.003	0.035	0.715	4.743
Mortgage Legal Rules	464	3.390	0.026	2.344	4.541
Mortgage Foreclosure	464	3.660	0.005	3.401	3.899
Registering Property (Cost)	464	1.943	0.033	0.095	3.148
Public Credit Register Coverage	464	1.529	0.053	0.000	4.093
Private Credit Bureaus Coverage	464	2.514	0.023	2.303	4.700
Inflation Volatility	464	0.439	0.863	-86.907	61.701
Construction Permit (Ease)	464	4.015	0.028	0.000	4.526
Financial Access (Bank Branch)	464	1.427	0.049	-1.212	4.276
Urban Population (%)	464	0.169	0.002	0.110	0.322
Population (15 – 64 years)	464	4.036	0.005	3.852	4.281
Life Expectancy	464	4.110	0.006	3.758	4.328
Rich Countries					
Private Credit	688	4.054	0.029	0.117	5.740
Mortgage Legal Rules	688	4.005	0.016	2.526	4.605
Mortgage Foreclosure	688	3.574	0.007	3.045	3.912
Registering Property (Cost)	688	1.352	0.048	-9.210	2.912
Public Credit Register Coverage	688	2.064	0.049	0.000	4.663
Private Credit Bureaus Coverage	688	3.333	0.036	2.303	4.700
Inflation Volatility	688	-0.622	0.448	-36.802	36.869
Construction Permit (Ease)	688	4.240	0.008	3.653	4.562
Financial Access (Bank Branch)	688	3.054	0.028	0.442	4.989
Urban Population (%)	688	0.126	0.001	0.100	0.210

APPENDIX C: SUMMARY OF DESCRIPTIVE STATISTICS

Population (15 – 64 years)	688	4.205	0.002	4.016	4.395
Life Expectancy	688	4.322	0.003	3.993	4.429
Low-Income Countries					
Private Credit	176	2.545	0.044	1.344	3.969
Mortgage Legal Rules	176	3.197	0.033	2.526	3.912
Mortgage Foreclosure	176	3.673	0.006	3.501	3.784
Registering Property (Cost)	176	2.270	0.039	1.226	3.045
Public Credit Register Coverage	176	2.377	0.007	2.303	2.579
Inflation Volatility	176	-0.210	1.245	-29.907	29.932
Construction Permit (Ease)	176	3.957	0.024	3.328	4.445
Financial Access (Bank Branch)	176	0.661	0.055	-1.021	2.248
Urban Population (%)	176	0.191	0.003	0.131	0.311
Population (15 – 64 years)	176	3.964	0.004	3.852	4.102
Life Expectancy	176	4.008	0.007	3.758	4.225
Middle-Income Countries					
Private Credit	584	3.572	0.028	1.834	5.076
Mortgage Legal Rules	584	3.726	0.023	2.344	4.605
Mortgage Foreclosure	584	3.636	0.005	3.332	3.899
Registering Property (Cost)	584	1.765	0.029	0.095	3.148
Public Credit Register Coverage	584	2.676	0.022	2.303	4.277
Private Credit Bureaus Coverage	584	2.884	0.033	2.303	4.700
Inflation Volatility	584	-0.070	0.663	-36.915	36.893
Construction Permit (Ease)	584	4.163	0.010	3.639	4.530
Financial Access	584	2.363	0.040	-0.409	4.989
Urban Population (%)	584	0.146	0.001	0.107	0.210
Population (15 – 64 years)	584	4.131	0.004	3.899	4.281
Life Expectancy	584	4.223	0.004	3.990	4.384
High-Income Countries					
Private Credit	168	3.721	0.046	2.116	4.664
Mortgage Legal Rules	168	3.838	0.033	2.931	4.541
Mortgage Foreclosure	168	3.687	0.012	3.401	3.912
Registering Property (Cost)	168	1.094	0.089	-0.523	2.646
Public Credit Register Coverage	168	2.602	0.036	2.303	3.510
Private Credit Bureaus Coverage	168	3.119	0.068	2.303	4.700
Inflation Volatility	168	-0.417	0.950	-26.964	26.900
Construction Permit (Ease)	168	4.234	0.017	3.709	4.513
Financial Access (Bank Branch)	168	2.903	0.051	1.401	4.203
Urban Population (%)	168	0.125	0.002	0.100	0.180
Population (15 – 64 years)	168	4.239	0.005	4.122	4.395
Life Expectancy	168	4.333	0.002	4.300	4.389

APPENDIX D: CORRELATION MATRIX

All Countries

Variables	Private Credit	Creditor Protection	Foreclosure Efficiency	Registering Property	Public Credit Register	Private Credit Bureaus	Inflation Volatility	Construction Permit	Financial Access	Urban Population (%)	Population (15-64 years)	Life Expectancy
Private Credit	1.000											
Creditor Protection	0.508	1.000										
Mortgage Foreclosure	-0.145	-0.236	1.000									
Registering Property	-0.054	0.128	-0.048	1.000								
Pubic Credit Register	0.304	0.581	-0.274	0.104	1.000							
Private Credit Bureaus	0.694	0.521	-0.111	0.037	0.327	1.000						
Inflation Volatility	-0.299	-0.308	0.148	-0.109	-0.292	-0.282	1.000					
Construction Permit	0.079	0.141	-0.001	0.102	0.129	0.045	-0.049	1.000				
Financial Access	0.135	0.158	0.078	-0.095	0.048	0.156	-0.086	0.078	1.000			
Urban Population (%)	-0.231	-0.145	0.162	-0.192	-0.262	-0.367	0.225	-0.038	-0.099	1.000		
Population (15 -64 years)	0.661	0.448	-0.065	0.099	0.340	0.633	-0.512	0.036	0.099	-0.457	1.000	
Life Expectancy	0.681	0.413	-0.028	0.116	0.299	0.730	-0.449	0.056	0.099	-0.394	0.760	1.000

Poor Countries

Variables	Private Credit	Creditor Protection	Foreclosure Efficiency	Registering Property	Public Credit Register	Private Credit Bureaus	Inflation Volatility	Construction Permit	Financial Access	Urban Population (%)	Population (15-64 years)	Life Expectancy
Private Credit	1.000											
Mortgage Legal Rules	0.343	1.000										
Mortgage Foreclosure	-0.301	-0.252	1.000									
Registering Property	-0.349	-0.490	0.277	1.000								
Pubic Credit Register	-0.167	-0.009	-0.004	0.119	1.000							
Private Credit Bureaus	0.299	0.516	-0.021	-0.266	-0.001	1.000						
Inflation Volatility	0.155	0.163	-0.022	-0.089	0.104	0.165	1.000					
Construction Permit	0.105	0.268	-0.003	-0.101	-0.180	0.144	0.085	1.000				
Financial Access	0.713	0.376	-0.335	-0.420	-0.156	0.346	0.157	0.172	1.000			
Urban Population (%)	-0.196	-0.010	0.106	-0.033	0.059	-0.192	-0.081	-0.186	-0.363	1.000		
Population (15 -64 years)	0.622	0.347	-0.257	-0.554	-0.211	0.320	0.087	0.089	0.550	-0.382	1.000	
Life Expectancy	0.746	0.312	-0.266	-0.560	-0.187	0.373	0.102	0.105	0.703	-0.312	0.739	1.000

Rich Countries

Variables	Private Credit	Creditor Protection	Foreclosure Efficiency	Registering Property	Public Credit Register	Private Credit Bureaus	Inflation Volatility	Construction Permit	Financial Access	Urban Population (%)	Population (15-64 years)	Life Expectancy
Private Credit	1.000											
Mortgage Legal Rules	0.410	1.000										
Mortgage Foreclosure	-0.247	-0.369	1.000									
Registering Property	0.003	-0.144	0.113	1.000								
Pubic Credit Register	0.088	0.195	-0.194	-0.142	1.000							
Private Credit Bureaus	0.202	0.601	-0.418	-0.204	0.089	1.000						
Inflation Volatility	0.068	0.173	-0.013	-0.042	0.077	0.168	1.000					
Construction Permit	0.267	0.041	-0.037	-0.094	-0.080	-0.047	0.153	1.000				
Financial Access	0.420	0.249	-0.055	-0.011	0.258	0.004	0.002	0.009	1.000			
Urban Population (%)	-0.105	-0.146	0.335	0.235	-0.451	-0.299	0.007	0.011	-0.007	1.000		
Population (15 -64 years)	0.208	0.023	0.014	-0.320	0.280	0.013	0.048	-0.011	0.050	-0.324	1.000	
Life Expectancy	0.373	0.180	-0.136	-0.161	0.479	0.138	0.076	0.132	0.478	-0.303	0.350	1.000

Low-Income Countries

Variables	Private Credit	Creditor Protection	Foreclosure Efficiency	Registering Property	Public Credit Register	Inflation Volatility	Construction Permit	Financial Access	Urban Population (%)	Population (15-64 years)	Life Expectancy
Private Credit	1.000										
Mortgage Legal Rules	0.195	1.000									
Mortgage Foreclosure	-0.329	0.011	1.000								
Registering Property	-0.344	-0.451	0.189	1.000							
Pubic Credit Register	0.344	-0.141	-0.073	0.441	1.000						
Inflation Volatility	-0.153	0.138	-0.043	-0.103	0.079	1.000					
Construction Permit	-0.123	0.314	-0.080	-0.057	0.001	0.201	1.000				
Financial Access	0.728	0.300	-0.514	-0.360	0.145	0.224	-0.046	1.000			
Urban Population (%)	0.213	0.150	0.237	-0.501	-0.308	-0.078	-0.175	-0.094	1.000		
Population (15 -64 years)	0.290	-0.123	0.051	-0.037	-0.011	0.060	-0.130	0.279	-0.300	1.000	
Life Expectancy	0.583	0.051	-0.273	-0.380	-0.121	0.149	-0.108	0.459	0.067	0.348	1.000

Middle-Income Countries

Variables	Private Credit	Creditor Protection	Foreclosure Efficiency	Registering Property	Public Credit Register	Private Credit Bureaus	Inflation Volatility	Construction Permit	Financial Access	Urban Population (%)	Population (15-64 years)	Life Expectancy
Private Credit	1.000											
Mortgage Legal Rules	0.436	1.000										
Mortgage Foreclosure	-0.097	-0.264	1.000									
Registering Property	-0.203	-0.343	0.321	1.000								
Pubic Credit Register	0.183	0.365	-0.165	-0.180	1.000							
Private Credit Bureaus	0.251	0.546	-0.266	-0.351	0.215	1.000						
Inflation Volatility	-0.101	0.166	-0.044	0.010	0.161	0.175	1.000					
Construction Permit	-0.190	0.064	0.083	0.133	-0.106	0.025	0.165	1.000				
Financial Access	0.551	0.444	-0.094	-0.043	0.290	0.247	0.066	0.117	1.000			
Urban Population (%)	0.099	-0.064	0.059	0.170	-0.399	-0.250	-0.037	0.200	-0.222	1.000		
Population (15 -64 years)	0.568	0.413	-0.381	-0.259	0.309	0.248	0.044	-0.114	0.445	-0.341	1.000	
Life Expectancy	0.552	0.319	-0.307	-0.025	0.357	0.159	0.058	0.041	0.640	-0.250	0.682	1.000

High-Income Countries

Variables	Private Credit	Creditor Protection	Foreclosure Efficiency	Registering Property	Public Credit Register	Private Credit Bureaus	Inflation Volatility	Construction Permit	Financial Access	Urban Population (%)	Population (15-64 years)	Life Expectancy
Private Credit	1.000											
Mortgage Legal Rules	0.312	1.000										
Mortgage Foreclosure	-0.257	-0.084	1.000									
Registering Property	-0.217	0.000	-0.026	1.000								
Pubic Credit Register	0.163	0.221	-0.422	-0.023	1.000							
Private Credit Bureaus	0.089	0.637	-0.170	-0.093	0.327	1.000						
Inflation Volatility	-0.108	0.172	0.045	-0.035	0.030	0.125	1.000					
Construction Permit	-0.320	-0.281	0.361	-0.041	-0.127	-0.525	0.119	1.000				
Financial Access	0.372	0.136	-0.124	0.110	-0.117	-0.184	0.034	-0.112	1.000			
Urban Population (%)	0.063	0.008	0.115	0.553	-0.356	-0.227	0.030	0.166	0.284	1.000		
Population (15 -64 years)	0.467	-0.117	0.451	-0.463	-0.179	-0.172	0.144	0.406	-0.087	-0.301	1.000	
Life Expectancy	0.100	0.011	-0.244	-0.183	0.236	0.021	-0.031	0.011	0.091	-0.152	0.225	1.000