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Banking Regulation around the World: Patterns, Determinants, and Impact

Tao Li

This article empirically investigates the patterns, determinants and impact of banking regulation in a large cross section of countries. Major differences of banking regulation across countries are found to be in four dimensions, i.e., the extent of government ownership of banks, the intensity of direct regulation of banks, the amount of measures to empower outside investors to monitor banks and the comprehensiveness of explicit deposit insurance. Based on these four dimensions, we identify five different patterns of banking regulation around the world. The article then tests economic, legal and cultural theories of the determinants of banking regulation, and finds dominant support for economic theory. Assessment regressions present evidence of different correlations of various banking regulation measures with banking efficiency, development and overall financial development. The findings imply a 'big push' view of reforming banking regulation, i.e., a big push to economic and financial sector development will lead to subsequent improvements in banking regulation, which in turn will help the country's banking and financial development.

JEL Classification: G21, G38, K2, L51
Keywords: Banking regulation, law, culture, economic development, banking efficiency, banking development, financial development

1. Introduction

Commercial banks are very important in financing firm projects. Beck et al. (2002) find banking financing is the most important one among all external

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financing alternatives even in traditionally argued market-based countries such as Singapore, the United States and the United Kingdom. It amounts to 24.07 per cent, 20.33 per cent and 14.53 per cent of the investment financed for Singapore, the US and the UK respectively.

To mainly prevent a contagious liquidity crisis and maintain stability, or protect small depositors or investors, or enhance efficiency, or for other social purposes, the banking sector is tightly regulated around the world (Herring and Santomero 2000). There, however, was an epidemic of banking crises in the last two decades of the 20th century and inappropriate banking regulation attracted the most critics (Caprio 1998).

There is a large body of research on what kind of banking regulation is good. Barth et al. (2004) provide an excellent survey in their literature review and they also empirically investigate the impact of banking regulation on banking development, efficiency and the possibility of a banking crisis. They find both government ownership and restrictions on banking activities and entry into banking negatively affect banking development or bank efficiency. Moreover, explicit deposit insurance positively relates with previous banking crisis, while private monitoring is good for banking development and efficiency. There is no significant finding on the effect of official supervisory action and power, and overall capital stringency on the development and efficiency of banks.

However, a key and under-studied question is what are the fundamental factors determining the patterns and quality of banking regulation? Due to recent banking crises, banking regulation reform has become the consensus around the world, which is documented by a series of files issued by the Basel Committee. Different determinants of banking regulation patterns and quality imply correspondingly different reform approaches. Calomiris (2000) and Kroszner and Strahan (2001) point out that the political economy affects banking regulation reform, and thus a direct policy implication is to reform the political system first.

There are three clusters of theories to explain the fundamental determinants of banking regulation—economic, legal and cultural theories. The economic theory argues that both economic and banking development determines the patterns and the quality of banking regulation. The legal theory emphasises the role of the legal origin of a country in determining banking regulation patterns and quality. The cultural theory, however, points out that a country's dominant religion has a great influence on the patterns and quality of banking regulation in that country.

To fill the above gaps in literature, we first propose a comprehensive classification of different governmental regulations on the banking sector

across 118 countries around the world. Following this classification, we empirically answer the following three questions: What are the patterns of banking regulation around the world? What are the fundamental determinants of banking regulation? And what is the impact of banking regulation on banking development, efficiency and overall financial development?

Utilising a unique data set from the World Bank, we classify different ways of banking regulations around the world into four broad dimensions: government ownership of banks, government direct regulation, government empowerment, and explicit deposit insurance. Then five different banking regulation patterns across countries are described, which are different combinations of these four broad dimensions: India-China, UK-Japan, Germany-US-Switzerland-France, Italy-Liechtenstein-Belgium, and another type without clear characteristics. Regression results on the fundamental determinants of banking regulation indicate the dominant explanatory power of economic theory over legal and cultural theories. There is a higher fraction of government ownership, higher independence and flexibility of regulatory agencies, less government ex-ante and ex-post direct regulation, more government empowerment, but surprisingly larger explicit deposit insurance power in countries with higher economic or initial banking development. The fraction of government ownership is the largest in Socialist countries, in between are French and German Civil Law countries, while it is the smallest in English Common Law countries. English Common Law countries have the most independent and flexible regulatory agencies. Countries with a larger population of Protestants have a smaller fraction of government-owned banks.

Assessment results show that measures to guarantee the independence or flexibility of regulatory agencies positively correlate with bank efficiency, but government ownership, general or specific ex-ante and ex-post direct regulation negatively correlate with banking efficiency and development. Moreover, some specific measures to either guarantee the flexibility of regulatory agencies, or promote empowerment, and explicit deposit insurance schemes positively correlate with the level of overall financial development, while the exact opposite role is played by government ownership, some specific ex-ante and ex-post direct regulation measures.

It should be noted that this article is quite different from Barth et al. (2001, 2004), although the same data set is employed. Utilising a data set from a cross country survey on banking regulation practices collected by the World Bank, Barth et al. (2001), among other researchers, first provide very detailed summary statistics on specific banking regulation measures such as restrictions on banking activities and entry into banking, capital

stringency, official supervisory resources and actions, private monitoring and explicit deposit insurance across countries. Their article, however, lacks a comprehensive classification of banking regulation measures around the world, and their results could not provide us a systematic map of different patterns across countries. With the same data, Barth et al. (2004) empirically investigate the impact of seven aspects of banking regulation, while their banking regulation measures are still rather specific, since the authors are interested in those aspects of banking regulation that are quite important in the sense that there are more academic discussions on them. Similar to Barth et al. (2001), their 2004 study also lacks a systematic classification of banking regulation around the world. What is more, fundamental factors as the determinants of different banking regulation patterns around the world are rarely analysed in literature. Barth et al. (2004) only use legal origins, and religious affiliations as instruments for banking regulation, while they do not take these factors as fundamental determinants of banking regulation.

This article is organised as follows. Section 2 presents related literature on the classification and fundamental determinants of banking regulation. Section 3 gives the data and correlation analysis. Section 4 describes five patterns of banking regulation around the world. Section 5 discusses the regression results of the fundamental determinants of banking regulation. Assessment regression results of banking regulation on banking development, efficiency, and the level of overall financial development are analysed in Section 6. Section 7 gives the conclusion.

2. Literature Review

Different countries deal with their commercial banks in different ways. Major differences are found to be in four dimensions, according to the 'Core Principles for Effective Banking Supervision' (henceforth 'Core Principles') and 'The New Basel Capital Accord' (henceforth 'New Accord') issued by the Basel Committee in 1997 and 2001 respectively. The first is the extent of government ownership of banks, which is listed as a special regulation arrangement in the 'Core Principles' (1997). La Porta et al. (2002) provide an insightful analysis on the distribution, determinants and financial and economic consequences of government ownership of banks. The second is the intensity of direct regulation. According to the 'Core Principles' (1997), government direct regulation might be further divided into four subdimensions, preconditions for banking regulation, ex-ante, ongoing and ex-post banking regulation. Preconditions deal with regulatory agencies'

independence and flexibility during the direct regulation process. Ex-ante measures are mainly those regulations imposed on banks before their operations, and ongoing ones focus on banks' daily operations, while ex-post ones come into effect when some problem occurs.[1] The third is the amount of measures to empower outside investors to monitor banks, which has attracted more and more favourable arguments recently such as 'market discipline' as the third pillar of the 'New Accord' (2001). Flannery (2001) concisely defines 'market discipline'. The last is the comprehensiveness of explicit deposit insurance for which Demirgüç-Kunt and Kane (2002) and Garcia (1999) provide good surveys. Explicit deposit insurance is quite special, since it might be a pre-requirement prior to a banking operation, which comes into effect either on the ongoing or ex-post process. Similar to government ownership of banks, explicit deposit insurance is also taken as a special arrangement of banking regulation in the 'Core Principles' (1997).

In reality, different combinations of these four dimensions are used in regulating banks across countries, and there are three competing theories fundamentally explaining the determinants of those banking regulation dimensions, i.e., legal, cultural and economic theories.[2]

The first line of thinking is the 'legal origin matters' view, which argues (1) 'legal traditions differ in terms of the priority they attach to protecting the rights of private investors vis-à-vis the State' (Beck et al. 2003a: 138); (2) different priorities between the private sector and the state determine different legitimate rights of those in power 'to stay in power and amass resources' (La Porta et al. 1999: 227); and (3) these different legitimate rights of the government have formed the basis of governmental regulation, including banking regulation. According to La Porta et al. (1998, 1999), three broad legal families are widely accepted by comparative law researchers: Common Law, Civil Law and Socialist Law. A further detailed classification would divide the Civil Law tradition into French, German and Scandinavian branches. The English Common Law, French Civil Law and German Civil Law came into being centuries ago in Europe and then 'were spread through conquest, colonization, and imitation' (Beck et al. 2003a: 138). Socialist

[1] For a much more detailed description on these sub-dimensions, see (1) 'Core Principles for Effective Banking Supervision' by Basel Committee (1997); (2) Section 3; and (3) Appendix 1 and 2 of this article.

[2] These three theories are firstly summarised by La Porta, Lopez-de-Silanes, Shelifer and Vishny (1999) to explain government performance. We think these theories, however, are very general in a sense that they can be applied to explain most institutional arrangement, including government regulation on banks, as what we tend to do in this article.

law originated from the former Soviet Union and spread quickly to Middle-and-East-European and some Asian countries at the end of World War II.

English Common Law is created by judges when they solve specific disputes (La Porta et al.1998), and is dominated by professionalism. As Zweigert and Kötz (1992) document, the character of English Law has unquestionably been deeply marked by the fact that leading lawyers have never been professors or officials but always legal practitioners, who are in the closest social and professional contact at the central seat of the major courts. This professional style emphasises judges' experience and independence from state power rather than relying on formalised rules during the juristic judgement process. Modern Common Law is the result of the victory of Parliament over the King in 16th and 17th centuries in England, when the Crown attempted absolutist prerogatives against the interests of landlords and merchants who controlled the Parliament. After the Stuarts were defeated, the role of the Common Law as the 'supreme law of the land' was finalised. Common Law becomes the guarantee of freedom and private property rights against expropriations by state power.

French Civil Law is characterised by its concrete rules and only regional applicability before the French Revolution. Before the French Revolution, there were no fewer than 60 customary laws of extensive significance, and over 300 customs of limited territorial application (Zweigert and Kötz 1992). Unlike the English, French lawyers, allied with the King and tried to protect the power of royal courts, which facilitate the King's control over individuals. The unification of private law started with the French Revolution and ended with the French Civil code by Napoleon, where the principle is that state power over the Courts is strictly followed (Beck et al. 2003a). The independence of judges in the courts is heavily restricted according to the Civil Code, and it is even written in the Civil Code that if a judge refuses to make a decision on the ground that the law is silent or obscure or inadequate, he may be held responsible (Zweigert and Kötz 1992). Besides spreading to France's own colonies, Portugal and Spain, and their colonies, are heavily influenced by the French Civil Code (La Porta et al. 1998).

There was no unified German Private Law until the middle of the 19th century. When Bismarck helped create the Empire in 1871, he began to codify and unify the private law for the new empire and as a result, the German Civil Law came into force in 1900 (Zweigert and Kötz 1992). The German Civil Law was created to facilitate the emperor's control over the country and thus attaches priority to the state rather than the private. Compared with the French Civil Law, the German Civil Law, however, is more dynamic and adaptable to changing realities, as is pointed out by Beck et al.

(2003b). According to them, German Civil Law is less regulation-oriented than the French Civil Law, while more than the English Common Law.

The Scandinavian Civil Law is historically based on the old Germanic law and is the result of co-operation between all Nordic countries. Scandinavian Civil Law is very different from other civil law traditions (French and German). Nenova (2000) finds that the benefit of private control in Nordic countries as even lower than that in countries with the English Common Law, which is quite contrary to other civil law countries and out of the prediction of the 'Law and Finance' theory made by La Porta et al. (1998). Coffee (2001) proposes social norms to solve this puzzle. There are only four countries with Scandinavian Civil Law in our sample (Denmark, Finland, Iceland and Sweden). Due to both their specialty and a small number of observations, we are not interested in Scandinavian Civil Law countries and only consider them for the model completeness.

Socialist law spread rapidly from the former Soviet Union to Central and Eastern Europe and some Asian countries at the end of World War II. Socialist law expresses the will of the state to control the whole economy and all major economic decisions (La Porta et al. 1999; Zweigert and Kötz 1992), which directly leads to the argument for government ownership of banks. Lenin even made the remark that, 'The big banks are the "state apparatus" which we need to bring about the socialism, and which we take ready-made from capitalism…' (La Porta et al. 2002: 266).

In summary, legal theory predicts that: (1) the professional style of English Common Law leads to the highest independence and flexibility of regulatory agencies in these countries. What's more, in English Common Law countries, a greater emphasis on freedom and private property right results in a lower extent of government ownership, less intensity of direct regulation on commercial banks and less comprehensiveness of explicit deposit insurance, while more government empowerment than French and German Civil Law countries and Socialist Law countries. (2) Compared with French Civil Law countries, the higher adaptability in German Civil Law countries might blur the difference with English Common Law countries mentioned above than that between French Civil Law and English Common Law countries. (3) Government ownership of banks is most prevalent in Socialist Law countries.

The second line of thinking is the 'culture matters' view. Culture influences human belief and attitude, and thus the formation of institutions (Lal 1999; Landes 1998). Religious affiliation is a major proxy for culture, since religion is a key component of culture (Stulz and Williamson 2003). There is substantial amount of literature documenting the difference of the doctrines among

Protestant, Roman Catholic (henceforth Catholic) and Muslim religions and hence their different political and economic effect. Weber (1930) initiates a modern academic discussion on the influence of religions on the formation of economic institutions. He points out: 'Calvinism opposed organic social organization in the fiscal-monopolistic form… and … this attitude played a large and decisive part … against the authority of the State' (ibid.: 179). Recently, Inglehart (2000) found that historically Protestant churches were decentralised while the opposite appeared to be the case in Catholic churches, which are both hierarchical and centralised. According to Putnam (1993), hierarchical churches lead to less horizontally interpersonal trust. This might both generate and facilitate state intervention in Catholic countries than in Protestant ones. Moreover, Landes (1998) argues that intolerance such as burning heretics, spread quickly in European Catholic countries in the Middle Ages, and it consequently increased the power of the Church and the state (La Porta et al. 1999). Similar to Catholic countries, close-mindedness emerged in Muslim countries between 9th and 11th centuries (La Porta et al. 1999; Lal 1999), which hampered the development of dynamic and flexible political and legal institutions, and thus made Muslim countries authoritarian (Lal 1999). La Porta et al. (1999) further point out that both Catholic and Muslim are characterised by interventionism since these two religions support state power and 'like to tell people what to do' (p. 233). In summary, the culture theory has following predictions: less favour for state power in Protestant countries supports a smaller extent of government ownership of banks, less intensity of direct regulation, and less comprehensiveness of explicit deposit insurance, while higher independence and flexibility of regulatory agencies, and more government empowerment than in Catholic or Muslim countries.

The third line of thinking is the 'economic and initial banking development matters' view. Demsetz (1967) and North (1981) argue that institutions are created when the costs of institutions are less than the benefits. A further question is whose costs and benefits are these institutions associated with? The 'public interest' theory argues that institutions are designed for the interests of the public, and the costs of maintaining these institutions are also borne by the public (Pigou 1920; Stiglitz 1989). The 'political interest' theory, however, argues that institutions are created for the benefit of the politicians, to facilitate the control of those in power and the cost is also borne by them (Shleifer 1998; Shleifer and Vishny 1994). According to the 'public interest' theory, market failure and negative externalities will hurt the interests of the public, and no regulation is needed. Stiglitz (1989) points out that the possibility of market failures is higher in less-developed

economies such that regulation and preserving stability schemes such as explicit deposit insurance are needed much more in countries with lower economic and initial banking development. According to the 'political interest' theory, with lower level of economic and initial banking development, there are less resources available for the politicians to control, and thus regulation to control more resources is badly needed (La Porta et al. 1999). Combining these two theories, there is more regulation needed when economic and initial banking development is lower. Boot et al. (2001) also point out that with economic and banking development, there is a general trend to restrict government direct regulation, while favouring government empowerment if regulation is needed. In countries with higher economic and initial banking development, regulatory agencies' independence and flexibility could be guaranteed since these countries are able to afford it due to their developed banking sector and economy. Moreover, as La Porta et al. (2002) summarise, under-developed countries depend more on government owned banks either to channel critical financial sources to achieve economic growth (Gerschenkron 1962; Lewis 1950) or for political purposes (Kornai 1979; Shleifer and Vishny 1994). In summary, economic theory suggests that in countries with under-developed economy and banking sectors, government ownership of banks, direct regulation and comprehensive explicit deposit insurance are more prevalent, while regulatory agencies' independence and flexibility is lower and government empowerment is less.

Both economic and initial banking development, however, might be endogenously determined with banking regulation. Earlier literature built up two channels describing this endogeneity, the first of which is from banking regulation to banking development (Barth et al. 2004), and the second of which is from both banking and stock market development, and thus overall financial development to economic growth (Beck and Levine 2004; Levine 2002). Endowments are the most widely used instruments to control the endogeneity of both economic and financial (including banking) development. Endowments could be measured by both ethnic heterogeneity and latitude.[3] Ethnic heterogeneity is widely used to explain economic growth, such as by Mauro (1995) and Easterly and Levine (1997), and it is also employed by La Porta et al. (1999) to explain government performance. 'In ethnically heterogeneous societies, it has been common for the groups come

[3] Both geographical and ethologic endowment, however, might directly determine banking regulation measures. To partly control for this potentiality, we introduce over-identifying restriction test in empirical regressions. In addition, we also try more regressions where those endowment variables are used as regressors rather than instrument variables, which are discussed in Section 5. We thank an anonymous referee for pointing it out.

to power… to expropriate the ethic losers, restrict their freedom of opposition, and limit the production of public goods' (La Porta et al. 1999: 231), and hence poor economic growth appears. Latitude also might affect economic growth, as La Porta et al. (1999) suggest, since agriculture and thus economy develops well in temperate zones far away from the equator. Acemoglu et al. (2001) establish an indirect channel, where tropic climate near the equator made European settlers hard to survive and they built up institutions to extract resources rather than support the long-run growth of the colonies. Both ethnic heterogeneity and latitude also consistently affect a country's financial development, as Beck et al. (2003a) show.

3. Data and Correlation Analysis

In this section, we present the data used in this article and then carry out some simple correlation analysis.

3.1 Data

3.1.1 Banking Regulation Data

Our banking regulation data comes from the project 'Banking Regulation and Supervision' funded by the World Bank Group, where comprehensive information on commercial bank regulatory practices for 118 countries were collected during 1998–2000. The collection time is mainly 1999 (65 survey responses were received, and the rest returned in either 1998 or 2000). Barth et al. (2001) describe the survey questions and data collection process in detail and also do some preliminary data analysis.[4] We re-classify its original 12 aspects of questions on banking regulation into four broad dimensions as described at the beginning of this article, i.e., (1) the extent of government ownership of banks, (2) the intensity of government direct regulation, which includes preconditions for banking regulation, ex-ante, ongoing and ex-post regulation, (3) the amount of measures of government empowerment, and (4) the comprehensiveness of explicit deposit insurance.

A possible shortcoming of this classification is that the effect of some particularly important or interesting regulation measures might be blurred in this general setting. To avoid this concern, we also defined three narrow banking regulation measures for preconditions, ex-ante direct regulation and government empowerment, in addition to the broadly defined ones,

[4] They make all the data freely accessible through the Internet which made our work possible. Data is available at: http://www.worldbank.org/research/projects/bank_regulation.htm.

according to Barth et al. (2004). By 'broadly defined', we try to cover all possible measures as our classification includes, while by 'narrowly defined', we are more interested in some specific while more academically debated measures as Barth et al. (2004) are and hence their reference is discussed. Put more concretely, as Appendix 1 shows, broadly defined preconditions include both the independence and flexibility of regulatory agencies, while narrowly defined ones only consider the latter. Broadly defined government ex-ante direct regulation includes restrictions on ownership structure, business activities, submitted files for license, initial capital stringency and owning non-financial firms, while narrowly defined ones focus on restrictions on business activities and submitted files for license. Broadly defined empowerment contains the allowance of subordinated debt as part of capital, requirements on external auditing, accounting standards, information accuracy and information disclosure to public, while only accounting standards is used as narrowly defined empowerment.

Appendix 1 and 2 provide detailed information on the data, sources and specific questions used to construct our banking regulation variables. The brief definitions are:

I. Government Ownership of Banks. There are two alternative measures:

   1. GB95: Is taken from La Porta et al. (2002), measuring the percentage of assets of the top 10 banks in a given country owned by the government of that country in 1995.
   2. GOVBANK: The percentage of bank system's assets in banks which is 50 per cent or more government owned in that country.

II. Government Direct Regulation, which is further divided into four sub-dimensions:

   1. PRECOND: The extent of regulatory agencies' independence and flexibility.
      PRECONDN: Narrowly defined PRECOND, which only measures the extent of regulatory agencies' flexibility.
   2. EX-ANTE: Ex-ante requirements set by the regulatory agencies, which covers: ownership structure of banks (OWNERSHIP), activities that the banks are allowed to engage in (BUSISCOPE), files need to be submitted to get license (ENTRY), initial capital requirement (ININTIALK), and banks owning non-financial firms (INVESTMENT).

EX-ANTEN: Narrowly defined EX-ANTE, which only includes BUSISCOPE and ENTRY.

3. ONGOING: Ongoing regulation on banks which covers overall capital stringency (OVERALLK), credit risk management (RISKMANA) and prompt corrective power of regulatory agencies (CORRECTIVE).
4. EX-POST: Regulation measures taken when some problem occurs, which include sanctions imposed on management (SANCTION), the regulatory agencies' power to declare insolvency and suspend banking operations (DECINSOL) and regulatory agencies' power during the restructuring process (RESTRUC).

III. EMPOWERMENT: Government empowers non-governmental forces to monitor banks, which consists of:

1. SUBDEBT: The possibility of subordinated debt as part of capital.
2. AUDITING: The requirements of independent outside auditing.
3. ACCOUNTING: The requirements of accounting standards on banks.
4. ACCURACY: Whether bank directors are legally responsible for the false information.
5. DISCLOSURE: The requirement of information disclosure to the public.
   EMPOWERMENTN: Narrowly defined empowerment, which only contains ACCOUNTING.

IV. DIP: The power of explicit deposit insurance agency.

As for the coding of all these variables, since most of the questions (except 5) are of yes/no type, we assign 1 to denote the existence of banking regulation specified in a question, and 0 to denote its non-existence. For the remaining five questions, we assign higher value 4 or 3 to countries with 'tighter' regulation, while lower value 1 to countries with 'looser' regulation, and 3 or 2 to countries with a 'mild' regulation.[5] Higher value on these banking regulation variables denotes more/stronger requirements on the aspect specified in the question.

Following Barth et al. (2004), two methods are applied in creating banking regulation indices listed in Appendix 1. An intuitive method is by simply summing up the numerical value of each individual question under the

[5] For coding details, see Appendix 1.

same category. Intuitive and simple as it is, the equal-weight assumption of all variables under a given category might be questioned. An alternative method is to create indices with first principal component method, where optimal weight is sought for and applied. A shortcoming of this method is its unclear implications of the influence by one unit change of an index on dependent variables, for example, the impact on overall financial development by one unit change of a regulation measure. In spite of this difficulty, we carry out the analysis with indices generated by the first principal component method, similar to Barth et al. (2004). To make our argument more convincing, we re-do the analysis using the simple summation method.[6] Fortunately, the major conclusions are not affected by the difference of these two methods. The data for all banking regulation dimensions is listed in Appendix 3.

3.1.2 Fundamental Factors

Three groups of fundamental variables on the determinants of banking regulation are investigated in this article as suggested by the 'legal origin matters', 'culture matters' and 'economic and initial banking development matters' views.

For legal origin measures, we use data from La Porta et al. (1999) that identifies each country's Company/Commercial Law as English, French, German, Scandinavian or Socialist. Our sample comprises of 42 countries with English Common Law, 37 countries with French Civil Law, eight countries with German Civil Law, four countries with Scandinavian Civil Law, and 27 countries with Socialist Law.

For religious affiliation measures, we also use data from La Porta et al. (1999) that measures the fraction of population of each country that belongs to Protestant, Catholic, Muslim, or other religion type (including non-religious). The data covers 116 countries in our sample, except Guernsey and Lithuania.

For economic development measures, we use 'logGNP' from La Porta et al. (1999), which is equal to the logarithm of GNP per capita in current US dollars for the period 1970–95, and covers 108 countries. For initial banking development measures, we introduce two measures from Beck et al. (2001). The first is DMBAGDP70, which is the ratio of a country's deposit money banking assets to GDP in 1970, and the second is PCDMBGDP70, which is the ratio of claims on the private sector by deposit money banks divided by GDP in 1970. Both of them have 87 observations. Following

[6] The results are available upon request.

our previous argument, to control the endogeneity of economic and initial banking development, we introduce two instruments, LATITUDE and ETHNO, both of which are taken from La Porta et al. (1999). LATITUDE equals the absolute value of the latitude of the country and is scaled to a 0 and 1 interval, which is a geographic endowment. ETHNO, is the average value of five different indices of ethono-linguistic fractionalisation, and is also scaled between 0 and 1, which is an ethnologic endowment. Our sample contains 113 and 85 observations for LATITUDE and ETHNO respectively.

3.1.3 Assessment Variables

In the assessment regressions, two types of assessment variables are considered. First, banking efficiency and development variables are introduced. Following Barth et al. (2004), we employ two variables to measure banking efficiency, i.e., OVERCOST and MARGIN. OVERCOST is a measure of the overhead cost, which equals total bank overhead costs as an average share of total bank assets for the period 1995–97. MARGIN measures the net interest margin, which equals the average of net interest income divided by total bank assets during 1995–97. According to their definitions, both OVERCOST and MARGIN are inverse measures of banking efficiency. The observations are 61 for both OVERCOST and MARGIN. Banking development is also measured by two variables following Beck et al. (2001), i.e., DMBAGDP and PCDMBGDP. DMBAGDP is a measure of banking assets, which equals the average ratio of deposit money banking assets to GDP for the period 1995–97. PCDMBGDP measures bank credit, which equals the average ratio of claims on the private sector by deposit money banks to GDP during 1995–97. The observations are 60 for both DMBAGDP and PCDMBGDP. Second, the level of overall financial development is also employed. As Levine (2002) shows, it is overall financial development, rather than specific banking or stock market development that is robustly linked with economic growth. Accordingly, we introduce three variables to measure the level of overall financial development, i.e., FINAACTI, FINASIZE, and FINAEFFI. FINAACTI is a measure of the activity of stock markets and banks, which is equal to the logarithm of the product of the ratio of total stock value traded to GDP and the ratio of private credit by money deposit banking to GDP for the period 1995–97. FINASIZE measures the size of stock markets and banks, and equals to the logarithm of the stock market capitalisation to GDP ratio plus private credit by deposit money banking to GDP ratio for the period 1995–97. FINAEFFI

measures the whole financial sector efficiency, and equals to the logarithm of the total value traded in stock market to GDP ratio over deposit money banking overhead cost to assets ratio for the period 1995–97. The observations are 48, 50, and 53 for FINAACTI, FINASIZE and FINAEFFI respectively in our sample.

The definitions, sources and observations of both fundamental and assessment variables are summarised in Appendix 4.

3.2 Correlation analysis

Table 1 presents the correlations between different banking regulation dimensions, which reveal a number of fascinating patterns. First, two alternative measures of government ownership are positively correlated, which confirms our alternative use of these two variables to measure the fraction of government-owned banks. Second, there is a positive correlation between government ownership of banks (GB95) and broadly defined government direct ex-ante banking regulation, which implies that government-owned banks are tightly regulated ex-ante, such as setting high entry barriers and only allowing very restricted business activities, which is consistent with Barth et al. (2004). Third, a negative correlation exists between government ownership of banks (GOVBANK) and government empowerment (broadly or narrowly defined), and it confirms the intuition that government ownership hinders market forces to play, which is also consistent with Barth et al. (2004). Fourth, government ex-ante direct regulation (broadly or narrowly defined) negatively correlates with government empowerment (broadly or narrowly defined), but positively correlates with the ex-post one. Moreover, we also find that narrowly defined government empowerment negatively correlates with the government ex-post direct regulation. Taking them together, it seems that the government tends to impose more ex-ante and ex-post regulation on banks at the same time, and these direct regulations substitute, rather than complement non-government forces in monitoring bank operations. Similar finding appears in Barth et al. (2004). Fifth, a government's ongoing direct regulation has no significant correlation with other dimensions of banking regulation, which might show ongoing regulations as being more independently adjusted in a rapidly changing environment. Sixth, the positive correlations between each category of broadly and narrowly defined banking regulation, including preconditions for government direct regulation, government ex-ante direct regulation, and government empowerment, reinforce our confidence of the use of two types of

Table1
Correlation of Banking Regulation Measures

	GB95	*GOVBANK*	*PRECOND*	*PRECOND*	*EX-ANTE*	*EX-ANTEN*	*DIRECT*	*EMPOWER-MENT*	*EMPOWER-MENT*	*EX-POST*
GOVBANK	0.6597***									
obs	*61*									
PRECOND	0.0150	0.0713								
obs	*65*	*98*								
PRECONDN	–0.0649	0.1231	0.7367***							
obs	*65*	*106*	*104*							
EX-ANTE	0.4098***	0.2165	–0.0718	0.0261						
obs	*63*	*96*	*95*	*101*						
EX-ANTEN	0.1895	0.1566	–0.0201	–0.0545	0.0035					
obs	*69*	*108*	*104*	*108*	*113*					
DIRECT	–0.1241	–0.0295	–0.0401	–0.0964	–0.1144	–0.0281				
obs	*62*	*94*	*94*	*98*	*93*	*101*				
EMPOWERMENT	0.0607	–0.2737***	0.1091	–0.0717	–0.3803***	–0.2838***	0.0356			
obs	*58*	*91*	*90*	*93*	*87*	*97*	*87*			
EMPOWERMENTN	–0.0554	–0.3316***	0.2294	0.1202	–0.3049***	–0.2826***	–0.0564	0.6379***		
obs	*66*	*105*	*101*	*109*	*101*	*113*	*98*	*97*		
EX-POST	0.0310	0.0611	–0.1461	–0.1138	0.2607**	0.3263***	0.1899	–0.025	–0.2605***	
obs	*59*	*96*	*94*	*99*	*92*	*101*	*90*	*86*	*98*	
dip	–0.1409	–0.0352	–0.0294	0.0463	–0.0007	–0.1275	–0.0217	0.1476	0.0395	–0.0402
obs	*67*	*104*	*100*	*109*	*101*	*114*	*98*	*93*	*109*	*97*

Notes: ***, **, and * indicate significant at the 1%, 5%, and 10% levels respectively.

alternative measures for each of the three indices. Last, there lacks significant correlations between explicit deposit insurance power and other banking regulation, consistent with Barth et al. (2004), which indicates that explicit deposit insurance schemes might not be well designed in many countries since there is a lack of strong government empowerment to ameliorate the bad incentives from explicit deposit insurance.

Table 2 provides the correlations between different fundamental factors suggested by our three theories. The results are consistent with La Porta et al. (1999) except those with initial banking development measures. First, English Common Law and French Civil Law countries are closer to the equator, while countries with German and Scandinavian Civil Law, Socialist Law and larger population of Protestants are further away. Countries closer to the equator are more ethono-linguistically fractionalised and with lower economic and initial banking development, consistent with the endowment theory. Second, countries with Socialist Law are less ethono-linguistically fractionalised, while the opposite appears in English Common Law countries. Both economic and initial banking development is lower in those countries which have larger ethono-linguistic fractions, which is also consistent with the endowments theory. Third, Protestants, Catholics, Muslims and people of other religious affiliations, are mutually exclusive. Protestants mainly live in countries with English Common Law or Scandinavian Civil Law, and Catholics mainly in French Civil Law countries, while people in Socialist Law countries are of other religions. Fourth, economic development is lower in English Common Law countries, while higher in German or Scandinavian Civil Law or Protestant countries. Last, countries with German Civil Law or more Protestants have higher banking development initially, while Muslim countries have lower banking development. Countries with higher initial banking development tend to enjoy higher subsequent economic development. What's more, both the initial banking development measures are positively correlated.

Table 3 summarises the correlations between different assessment variables. First, two measures of banking efficiency are significantly and positively correlated. Moreover, banking efficiency also significantly and positively correlates with banking and overall financial development. Second, two measures of banking development are positively and significantly correlated, and both of them significantly and positively correlate with overall financial development. Finally, consistent with Levine (2002), all three measures of the level of overall current financial development are significantly and positively correlated, although they focus on different aspects of financial sector development as their definitions show.

Table 2
Correlation of Fundamental Factors

	English	*French*	*German*	*Scandinavian*	*Socialist*	*Protestant*	*Catholic*
French	–0.5024***						
obs	*118*						
German	–0.2005**	–0.1823**					
obs	*118*	*118*					
Scandinavian	–0.3930	–0.1266	–0.0505				
obs	*118*	*118*	*118*				
Socialist	–0.4049***	–0.3681***	–0.1469	–0.102			
obs	*118*	*118*	*118*	*118*			
Protestant	0.3079***	–0.3307***	0.0008	0.5505***	–0.2247**		
obs	*116*	*116*	*116*	*116*	*116*		
Catholic	–0.3118***	0.5213***	0.0703	–0.1664*	–0.1946**	–0.2141**	
obs	*116*	*116*	*116*	*116*	*116*	*115*	
Muslim	0.0016	0.0819	–0.1284	–0.104	0.0299	–0.3024***	–0.4249***
obs	*116*	*116*	*116*	*116*	*116*	*115*	*116*
Other	0.1349	–0.4277***	0.0355	–0.1393	0.3636***	–0.1962***	–0.5467***
obs	*115*	*115*	*115*	*115*	*115*	*115*	*115*
logGNP	–0.1955**	0.5680	0.3065***	0.2883***	–0.1367	0.2225**	0.1528
obs	*108*	*108*	*108*	*108*	*108*	*107*	*107*
DMBAGDP70	–0.1729	–0.1818	0.5766***	0.0982	NA	0.2621*	0.0593
obs	*55*	*55*	*55*	*55*	*55*	*55*	*55*
PCDMBGDP70	–0.2224	–0.1703	0.5889***	0.157	NA	0.2780**	0.0741
obs	*55*	*55*	*55*	*55*	*55*	*55*	*55*

LATITUDE	–0.3829***	–0.2365**	0.1610*	0.3512***	0.4413***	0.1894**	–0.0388
obs	*113*	*113*	*113*	*113*	*113*	*112*	*113*
ethno	0.4286***	–0.1361	–0.1615	–0.1598	–0.2237**	0.0022	–0.1371
obs	*85*	*85*	*85*	*85*	*85*	*85*	*85*

	Muslim	*Other Religions*	*logGNP*	*DMBAGDP70*	*PCDMBGDP70*	*LATITUDE*
French						
obs						
German						
obs						
Scandinavian						
obs						
Socialist						
obs						
Protestant						
obs						
Catholic						
obs						
Muslim						
obs						
Other	–0.2686***					
obs	*115*					
logGNP	–0.1272	–0.2187**				
obs	*107*	*106*				
DMBAGDP70	–0.2355*	–0.1208	0.7177***			
obs	*55*	*55*	*55*			

(*Table 2 continued*)

(*Table 2 continued*)

	Muslim	*Other Religions*	*logGNP*	*DMBAGDP70*	*PCDMBGDP70*	*LATITUDE*
PCDMBGDP70	–0.2713**	–0.1272	0.7040***	0.9823***		
obs	*55*	*55*	*55*	*87*		
LATITUDE	–0.1087	0.0278	0.5712***	0.5477***	0.5414***	
obs	*113*	*112*	*107*	*55*	*55*	
ethno	0.0314	0.1284	–0.3533***	–0.3312**	–0.3320**	–0.3815***
obs	*85*	*85*	*85*	*55*	*55*	*85*

Note: ***, **, and ** indicate significant at the 1%, 5%, and 10% levels respectively.

Table 3
Correlation of Overall Financial Development

	OVERCOST	*MARGIN*	*DMBAGDP*	*PCDMBGDP*	*FINAACTI*	*FINASIZE*
MARGIN	0.8186***					
obs	*61*					
DMBAGDP	–0.5750***	–0.6147***				
obs	*60*	*60*				
PCDMBGDP	–0.5703***	–0.5892***	0.9639***			
obs	*60*	*60*	*60*			
FINAACTI	–0.6202***	–0.4805***	0.7121***	0.7485***		
obs	*59*	*59*	*59*	*59*		
FINASIZE	–0.6754***	–0.5477***	0.7865***	0.8516***	0.8823***	
obs	*56*	*56*	*57*	*57*	*56*	
FINAEFFI	–0.7144***	–0.5774***	0.6481***	0.6724***	0.9780***	0.7948***
obs	*61*	*61*	*60*	*60*	*54*	*52*

Note: *** indicates significant at the 1% level.

4. Patterns of Banking Regulation

In this section, we discuss five different patterns of banking regulation around the world based on our 118 sample countries. To clearly investigate the impact of different banking regulation patterns on overall financial development, we consider narrowly defined PRECOND, EX-ANTE and EX-POST rather than broadly defined ones. We summarise our findings in Table 4.

First, government ownership of banks is prevalent in countries such as China and India. Taking 50 per cent of the fraction of government ownership as the cut-off point, there are 33 countries with dominant government-owned banks, accounting for 28 per cent of our sample, which we call the India-China type of banking regulation. A further classification might divide the India-China type into India type and China type according to the comparison of the flexibility of regulatory agencies between individual countries and whole sample median, where the India type of banking regulation grants more (larger than sample median) flexibility to regulatory agencies, while the China type is less likely to do so. There are six countries with the India type and 26 countries with the China type of banking regulation, which account for 5 per cent and 22 per cent of our sample respectively. There is no corresponding PRECONDN for Vietnam.

Second, among those countries without dominant government ownership of banks, there are some with more (larger than sample median) government direct regulation imposed either ex-ante or ex-post, and less (smaller or equal to sample median) government empowerment such as the United Kingdom and Japan. There are 43 countries with this type of banking regulation pattern, accounting for 36 per cent of our sample, which we define as the UK-Japan type. Similar to the division of the India-China type, we also further divide the UK-Japan type of banking regulation into the UK type and the Japan type according to the comparison of the flexibility of regulatory agencies between individual countries and whole sample median. There are five countries with the UK type of banking regulation, where regulatory agencies enjoy higher flexibility, and 37 countries with the Japan type of banking regulation, where less flexibility is granted to regulatory agencies. UK and Japan types account for 4 per cent and 37 per cent of our sample respectively, while PRECONDN for Gambia is missing.

Third, there are 24 countries with exactly the opposite banking regulation pattern to the UK-Japan type discussed above, which account for 21 per cent of our whole sample. This type of banking regulation, which we call the Germany-US-Switzerland-France type, is characterised by no dominant government ownership, lower (less than or equal to sample median)

Table 4
Patterns of Banking Regulation around the World

GB95 and GOVBANK	*GB95 or GOVBANK>=50%*			*GB95 or GOVBANK>=50%*			*GB95 or GOVBANK>=50%*		
Missing	*Precondn >Median*	*Precondnn <=Median*	*Data Missing*	*Ex-anten, or Ex-post> Median, and Empowermentn<=Median*			*Ex-anten and Ex-post<=Median, and Empowermentn>=Median*		
				Precondn> Median	*Precondn<= Median*	*Data Missing*	*Precondn> Median*	*Precondn<= Median*	*Data Missing*
Latvia	Argentina	Albania	Vietnam	Ireland	Armenia	Gambia	Aruba	Cayman Islands	France
Namibia	Bangladesh	Austria		Lithuania	Azerbaijan		Australia	Croatia	
	Bhutan	Belarus		South Africa	Bahrain		Canada	Cyprus	
	India	Brazil		St. Kitts	Bolivia		Chile	Denmark	
	Romania	Bulgaria		United Kingdom	Bosnia-Herzegovina		Estonia	Finland	
	Slovakia	Burundi			Botswana		Germany	Kuwait	
		China			British Virgin Islands		Panama	Luxembourg	
		Czech Republic			Cambodia		Portugal	Macau	
		Egypt			Georgia		United States	Moldova	
		Greece			Ghana			Netherlands	
		Iceland			Gibraltar			Spain	
		Israel			Guatemala			Switzerland	
		Jamaica			Guyana			Sweden	
		Kazakhstan			Hungary			Trinidad & Tobago	
		Lesotho			Indonesia				
		Maldives			Japan				
		Poland			Jordan				
		Russia			Kenya				

(*Table 4 continued*)

(*Table 4 continued*)

GB95 and GOVBANK	*GB95 or GOVBANK>=50%*			*GB95 or GOVBANK>=50%*			*GB95 or GOVBANK>=50%*		
				Ex-anten, or Ex-post> Median, and Empowermentn<=Median			*Ex-anten and Ex-post<=Median, and Empowermentn>=Median*		
Missing	*Precondn >Median*	*Precondnn <=Median*	*Data Missing*	*Precondn> Median*	*Precondn<= Median*	*Data Missing*	*Precondn> Median*	*Precondn<= Median*	*Data Missing*
		Rwanda			Kyrgyzstan				
		Slovenia			Lebanon				
		Sri Lanka			Macedonia				
		Taiwan (China)			Malawi				
		Turkey			Malta				
		Turkmenistan			Mauritius				
		Venezuela			Mexico				
		Yugoslavia			Morocco				
					Nigeria				
					Oman				
					Peru				
					Philippines				
					Qatar				
					Salvador, El				
					Samoa (Western)				
					Tonga				
					Vanuatu				
					Zambia				
					Saudi Arabia				
obs 2	6	26	1	5	37	1	9	14	1
% 2%	5%	22%	1%	4%	31%	1%	8%	12%	1%

	GB95 or GOVBANK>=50%		*GB95 or GOVBANK>=50%*		
	Ex-anten, or Ex-post> Median, and Empowermentn<=Median		*Other*		
	Precondn<= Median	*Data Missing*	*Precondn> Median*	*Precondn<= Median*	*Data Missing*
	Italy Liechtenstein	Belgium	Guernsey Solomon Islands	Honduras Tajikistan Thailand Turks and Caicos Islands	Malaysia Nepal New Zealand Puerto Rico Seychelles Singapore
obs	2	1	2	4	6
%	2%	1%	2%	3%	5%

government direct regulation imposed both ex-ante and ex-post, but higher (higher than sample median) government empowerment. Comparing PRECONDN for individual countries and sample median, we might further divide the Germany-US-Switzerland-France type into two types—the Germany-US type and the Switzerland type, where regulatory agencies in countries with the former type are more (larger than sample median) flexible while countries with the latter type are less so. There are nine countries of the Germany-US type, while 14 countries have the Switzerland type, which account for 8 per cent and 12 per cent of our whole sample respectively. There is no corresponding PRECONDN for France.

Fourth, there are only three countries, i.e., Italy, Liechtenstein and Belgium, with lower (less than 50 per cent) government ownership, but higher (larger than sample median) government direct regulation imposed either ex-ante or ex-post, and larger (larger than sample median) government empowerment, defined as the Italy-Liechtenstein-Belgium type. These three countries account for 3 per cent of our whole sample. Considering PRECONDN for these countries, we might call Italy and Liechtenstein as the Italy type, where regulatory agencies enjoy less (less than or equal to sample median) flexibility, and this account for 2 per cent of our whole sample. PRECONDN for Belgium is missing.

Fifth, there are six countries with other regulation patterns and these account for 5 per cent of our whole sample. Among them, regulatory agencies are more flexible in Guernsey and Solomon Islands. In addition, there are eight countries with missing data for either government ownership, or government ex-ante or ex-post direct regulation, or government empowerment. They only account for 7 per cent of our whole sample.

5. Regression Results

In this section, we present the multivariate regression results on the fundamental determinants of different dimensions of banking regulation around the world. The results are provided in Tables 5–7, where three theories of the fundamental factors are investigated at the same time. Since economic and initial banking development are highly correlated, we use logGNP, DMBAGDP70, and PCDMBGDP70 as three alternative measures for economic theory in these regressions.

As argued earlier, both economic and initial banking development might be endogenously determined with banking regulation. To control for the endogeneity, we employ instrumental analysis of the two-stage efficient generalised method of moments (GMM) in the regressions. The underlying

Table 5
Two-Stage GMM Regression Analysis on the Determinants of Banking Regulation with logGNP as Economic Development Measure

	Independent Variables														
Dependent Variables	*logGNP*	*French*	*German*	*Scandin.*	*Socialist*	*Catholic*	*Muslim*	*Other*	*Constant*	*Hansen J*	*So. vs F.*[a]	*So. vs G.*[b]	*So. vs Scand.*[c]	*obs*	*Centered R-square*
Government ownership of banks GB95	–2.76	11.75	19.94	59.45***	48.04***	0.44*	0.65**	0.63**	–6.75	0.226	10.67***	3.59*	0.26	58	0.4473
	(–0.87)	(1.14)	(1.61)	(3.34)	(5.00)	(1.95)	(2.31)	(2.54)	(–0.18)						
GOVBANK	–3.5	–0.4	8.34	14.52	5.86	–0.01	0.11	0.14	39.22	2.15	0.3	0.03	0.15	77	0.2085
	(–1.28)	(–0.05)	(0.90)	(0.84)	(0.51)	(–0.06)	(0.54)	(0.84)	(1.54)						
Government direct regulation															
1. Preconditions	0.28**	–0.80**	–1.20**	–1.78***	–0.32	–0.01	0.005	–0.003	–1.22	0.053				76	0.1464
	(2.26)	(–2.35)	(–2.19)	(–3.65)	(–0.76)	(–0.92)	(0.59)	(–0.29)	(–0.97)						
Preconditions (narrowly-defined)	0.37***	–0.77**	–1.39**	–1.14**	–0.71	0.01	0.01	0.01	–2.92**	0.228				80	0.0574
	(3.10)	(–2.12)	(–2.41)	(–2.42)	(–1.32)	(0.78)	(0.67)	(0.76)	(–2.09)						
2. Ex-ante requirement	–0.55***	0.39	0.39	0.39	0.28	–0.004	0.001	0.003	3.97***	1.902				76	0.2884
	(–3.67)	(1.19)	(0.61)	(0.52)	(0.65)	(–0.45)	(0.14)	(0.32)	(2.90)						
Ex-ante requirement (narrowly-defined)	–0.38***	0.3	–0.22	–0.86	0.32	–0.01	–0.01	–0.003	3.30***	0.815				85	0.2537
	(–3.98)	(1.14)	(–0.42)	(–0.86)	(1.23)	(–1.25)	(–1.06)	(–0.46)	(3.78)						
3. Ongoing regulation and supervision	–0.002	0.21	0.13	–0.91	0.21	0.01	0.001	–0.001	–0.24	1.784				74	0.1419
	(–0.01)	(0.62)	(0.37)	(–1.46)	(0.51)	(0.99)	(0.20)	(–0.24)	(–0.22)						
4. Ex-post measures	–0.61***	0.29	1.50**	–0.53	0.91**	–0.01	–0.02	–0.01	5.20***	0.523				72	0.1113
	(–4.14)	(0.76)	(2.05)	(–0.80)	(2.02)	(–0.88)	(–1.89)	(–1.28)	(3.82)						

(*Table 5 continued*)

(*Table 5 continued*)

	Independent Variables													
Dependent Variables	*logGNP*	*French*	*German*	*Scandin.*	*Socialist*	*Catholic*	*Muslim*	*Other*	*Constant*	*Hansen J*	*So. vs F.*[a]	*So. vs G.*[b]	*So. vs Scand.*[c]	*obs*	*Centered R-square*
Government empowerment	0.39***	0.2	–0.72	0.02	0.63**	–0.001	0.005	–0.003	–3.07***	0.345				72	0.2817
	(2.74)	(0.55)	(1.30)	(0.03)	(2.01)	(–0.07)	(0.62)	(–0.55)	(–2.62)						
Government empowerment (narrowly-defined)	0.63***	–0.05	–2.30***	–1.09*	0.09	–0.01	0.004	–0.01	–4.16***	1.305				81	0.2738
	(4.72)	(–0.16)	(–3.55)	(–1.75)	(0.19)	(–0.89)	(0.51)	(–0.86)	(–3.72)						
Explicit deposit insurance	0.52*	–0.37	–0.79	–0.55	0.41	0.01	0.01	–0.003	–4.03*	0.222				83	0.1024
	(1.82)	(–0.53)	(–0.88)	(–0.48)	(0.60)	(0.73)	(0.83)	(–0.29)	(–1.81)						

Notes: The two-stage GMM method is used. Instruments are LATITUDE and ETHNO. Over-identifying restriction test are reported by Hansen J. ***, **, and * indicate significant at the 1%, 5%, and 10% levels respectively.

[a] denotes coefficients comparison between Socialist and French, [b] between Socialist and German, and [c] between Socialist and Scandinavian. Normal test statistics are shown in parentheses.

Table 6

Two-Stage GMM Regression Analysis on the Determinants of Banking Regulation with DMBAGDP70 as Initial Banking Development Measure

	Independent Variables											
Dependent Variables	*DMBAGDP70*	*French*	*German*	*Scandin.*	*Socialist*	*Catholic*	*Muslim*	*Other*	*Constant*	*Hansen J*	*obs*	*Centered R-square*
Government ownership of banks												
GB95	–9.65	2.86***	25.96	45.02**	dropped	0.2	0.4	0.47	–8.74	0.018	44	0.311
	(–1.54)	(2.90)	(1.19)	(2.34)		(0.87)	(1.27)	(1.60)	(–0.30)			
GOVBANK	–66.57**	14.96*	35.69**	–11.92	dropped	–0.50*	–0.38	–0.26	63.93***	1.052	50	0.149
	(–2.31)	(1.72)	(2.15)	(–0.72)		(–2.24)	(–1.54)	(–1.20)	(2.88)			
Government direct regulation												
1. Preconditions	2.27*	–0.79**	–1.74**	–2.06***	dropped	–0.01	–0.002	–0.02*	0.94	0.18	51	0.1547
	(1.71)	(–2.33)	(–2.10)	(–3.18)		(–1.44)	(–0.25)	(–1.81)	(0.94)			
Preconditions (narrowly-defined)	2.78**	–0.59**	–1.90**	–1.39**	dropped	–0.002	–0.01	–0.005	–0.1	0.142	51	–0.0055
	(2.50)	(–2.29)	(–2.35)	(–2.21)		(–0.21)	(–0.55)	(–0.53)	(–0.11)			
2. Ex-ante requirement	–4.57***	0.51	1.4	0.3	dropped	–0.002	0.02	0.0003	0.72	1.058	49	–0.0885
	(–2.68)	(1.18)	(1.03)	(0.25)		(–0.13)	(1.03)	(0.02)	(0.51)			

(*Table 6 continued*)

(*Table 6 continued*)

	Independent Variables											
Dependent Variables	*DMBAGDP70*	*French*	*German*	*Scandin.*	*Socialist*	*Catholic*	*Muslim*	*Other*	*Constant*	*Hansen J*	*obs*	*Centered R-square*
Ex-ante requirement (narrowly-defined)	–2.60**	0.18	0.21	–0.64	dropped	0.001	0.01	–0.0002	0.5	0.512	55	0.1423
	(–2.35)	(0.70)	(0.23)	(–0.54)		(0.05)	(0.60)	(–0.002)	(0.46)			
3. Ongoing regulation and supervision	0.3	0.33	–0.23	–1.04	dropped	0.007	0.003	–0.002	–0.25	1.676	50	0.2256
	(0.23)	(0.80)	(–0.36)	(–1.39)		(0.67)	(0.27)	(–0.17)	(–0.24)			
4. Ex-post measures	–4.22**	–0.04	1.92*	–0.99	dropped	–0.002	0.001	–0.01	1.53	2.143	48	0.1069
	(–2.54)	(–0.11)	(1.67)	(–1.04)		(–0.15)	(0.12)	(–0.68)	(1.14)			
Government empowerment	4.14**	–0.15	–1.62	1.2	dropped	0.01	0.01	0.01	–2.19*	0.017	50	0.0745
	(2.10)	(–0.39)	(–1.55)	(1.41)		(1.08)	(0.80)	(0.86)	(–1.68)			
Government empowerment (narrowly-defined)	5.80***	–0.1	–3.41***	–0.08	dropped	0.0002	0.01	–0.002	–1.63	0.112	54	0.0402
	(3.71)	(–0.25)	(–3.32)	(–0.08)		(0.02)	(0.88)	(–0.14)	(–1.36)			
Deposit insurance power	3.86	–0.44	–2.52	–0.91	dropped	–0.002	–0.002	–0.01	–0.17	0.305	53	–0.0389
	(1.24)	(–0.48)	(–1.17)	(–0.63)		(–0.11)	(–0.13)	(–0.99)	(–0.10)			

Notes: The two-stage GMM method is used. Instruments are LATITUDE and ETHNO. Over-identifying restrictions test are reported by Hansen J. ***, **, and * indicate significant at the 1%, 5%, and 10% levels respectively. Normal test statistics are shown in parentheses.

Table 7
Two-Stage GMM Regression Analysis on the Determinants of Banking Regulation with PCDMBGDP70 as Initial Banking Development Measure

	Independent Variables											
Dependent Variables	*PCDMBGDP70*	*French*	*German*	*Scandin.*	*Socialist*	*Catholic*	*Muslim*	*Other*	*Constant*	*Hansen J*	*obs*	*Centered R-square*
Government ownership of banks												
GB95	–27.87	24.31***	29.27	47.60***	dropped	0.2	0.38	0.48*	–8.68	0.017	44	0.3254
	(–0.54)	(3.08)	(1.12)	(2.61)		(0.91)	(1.18)	(1.69)	(–0.30)			
GOVBANK	–84.10**	15.58*	42.31**	–2.32	dropped	–0.44*	–0.35	–0.22	59.07***	0.867	50	0.1186
	(–2.21)	(1.76)	(2.16)	(–0.13)		(–1.84)	(–1.40)	(–0.95)	(2.61)			
Government direct regulation												
1. Preconditions	2.84	–0.83**	–1.94**	–2.35***	dropped	–0.01	–0.002	–0.02**	1.09	0.27	51	0.1087
	(1.63)	(–2.30)	(–1.97)	(–3.64)		(–1.57)	(–0.16)	(–2.03)	(1.10)			
Preconditions (narrowly-defined)	3.57**	–0.66**	–2.17**	–1.74***	dropped	–0.003	–0.004	–0.01	0.02	0.045	51	–0.1216
	(2.37)	(–2.45)	(–2.28)	(–2.69)		(–0.35)	(–0.37)	(–0.69)	(0.03)			
2. Ex-ante requirement	–6.29**	0.55	2.07	0.86	dropped	0.0004	0.01	0.002	0.7	0.648	49	–0.3552
	(–2.44)	(1.10)	(1.19)	(0.63)		(0.02)	(0.73)	(0.11)	(0.44)			

(*Table 7 continued*)

(*Table 7 continued*)

	Independent Variables											
Dependent Variables	*PCDMBGDP70*	*French*	*German*	*Scandin.*	*Socialist*	*Catholic*	*Muslim*	*Other*	*Constant*	*Hansen J*	*obs*	*Centered R-square*
Ex-ante requirement (narrowly-defined)	–3.30**	0.21	0.46	–0.28	dropped	0.003	0.01	0.002	0.33	0.57	55	0.0839
	(–2.21)	(0.78)	(0.45)	(–0.23)		(0.22)	(0.60)	(0.16)	(0.29)			
3. Ongoing regulation and supervision		0.52	0.33	–0.31	–1.09	dropped	0.01	0.003	–0.002	–0.27	1.6250	0.2182
	(0.31)	(0.80)	(–0.42)	(–1.46)		(0.64)	(0.27)	(–0.16)	(–0.26)			
4. Ex-post measures	–5.21**	0.02	2.27*	–0.31	dropped	0.003	0.01	–0.01	1.08	2.177	48	0.0715
	(–2.48)	(0.05)	(1.71)	(–0.30)		(0.23)	(0.44)	(–0.37)	(0.81)			
Government empowerment	5.59**	–0.21	–2.18	0.61	dropped	0.01	0.01	0.01	–2.06	0.001	50	–0.0614
	(1.98)	(–0.50)	(–1.57)	(0.70)		(0.79)	(0.73)	(0.62)	(–1.51)			
Government empowerment (narrowly-defined)	7.48***	–0.15	–4.02***	–0.9	dropped	–0.004	0.01	–0.01	–1.28	0.216	54	–0.1415
	(3.30)	(–0.34)	(–3.05)	(–0.88)		(–0.34)	(0.74)	(–0.47)	(–0.98)			
Deposit insurance power	4.93	–0.43	–2.82	–1.4	dropped	–0.01	–0.003	–0.02	0.03	0.229	53	–0.0556
	(1.24)	(–0.47)	(–1.18)	(–0.90)		(–0.29)	(–0.16)	(1.16)	(0.02)			

Notes: The two-stage GMM method is used. Instruments are LATITUDE and ETHNO. Over-identifying restrictions test are reported by Hansen J. ***, **, and * indicate significant at the 1%, 5%, and 10% levels respectively. Normal test statistics are shown in parentheses.

assumption is that endowments only indirectly affect the dimensions and thus the patterns of banking regulation across countries through either economic or the initial banking development channel. To test both this indirect channel assumption and the correctness of our instruments, we introduce the over-identifying restriction (OIR) test by reporting Hansen's J,[7] where the null hypothesis is that endowments are suitable instruments for both economic and initial banking development, and they only indirectly (if they do) affect the dimensions and thus the patterns of banking regulation through economic or initial banking development.

The test results of equivalence of the coefficients between Socialist law dummy and other law dummies are reported in government ownership of banks regressions, which shows whether our results are consistent with the findings of La Porta et al. (2002).

To clearly summarise the findings on each theory, we divide the following discussion into three sub-sections and each sub-section corresponds to one theory on the fundamental determinants of banking regulation.

5.1 Legal theory

We drop English Common Law dummy in the regressions in Tables 5–7 due to the concern of multi-colinearity. Multivariate regressions indicate very restricted power of legal theories in explaining the dimensions and thus the patterns of banking regulation across countries.

First, the extent of government ownership of banks is the highest in Socialist countries, which is followed by French and German Civil Law countries, while English Common Law countries have the least government ownership, consistent with the prediction of legal theory which argues that Socialist Law countries treat directly owning banks as their prior choice while English Common Law countries are least likely to do so. La Porta et al. (2002) point out 'the advantage of owning banks—as opposed to regulating banks or owning all projects outright—is that ownership allows the government extensive control over the choice of projects being financed while leaving the implementation of these projects to the private sector (pp. 266 and 267)'.

Second, consistent with the prediction of legal theory, regulatory agencies in English Common Law countries enjoy the highest flexibility and independence (either broadly or narrowly defined), compared with all civil law

[7] As Beck et al. (2003b) suggest, this OIR test produces a Lagrange multiplier test statistic that under the null hypothesis is distributed as Chi-Squared (n), where n is the number of over-identifying restrictions. In our regressions, n equals 1.

countries. As we pointed out before, the professional style of English Common Law generates the most independent and flexible regulatory agencies in countries with English Common Law than those with Civil Law, where the agencies often collude with state power.

Third, compared with English Common Law countries, German Civil Law and Socialist countries tend to impose more direct regulation ex-post, while German and Scandinavian Civil Law countries rely less on government empowerment. This is consistent with the prediction of legal theory which argues that both Socialist and German Civil Law countries emphasise state power above individual power and tend to impose more direct regulation, while English Common Law countries stick to the principle of 'private property rights above the state' and rely more on government empowerment instead of direct engagement in the regulation.

Fourth, inconsistent with the prediction by legal theory, we find no evidence for less government direct regulation, more government empowerment, while weaker power of explicit deposit insurance agency in English Common Law countries than in French Civil Law countries. Legal theory on banking regulation argues that compared with French Civil Law countries, English Common Law countries give priority to the individuals rather than the state, so they have less government ownership, less government direct regulation, weaker deposit insurance agency's power but more government empowerment. In addition, comparing the regression results on French and German Civil Law dummies, there is no evidence for the higher adaptability of German Civil Law than French Civil Law, as Beck et al. (2003b) argue. One striking finding on the higher government empowerment in Socialist countries might reflect the incredible enforcement in these countries.

In summary, regression results of legal determinants of banking regulation indicate restricted explanatory power of legal theory on banking regulation dimensions and thus the patterns. The extent of government ownership is the lowest in English Common Law countries, while it is the highest in Socialist countries and French and German Civil Law countries lie in between. Regulatory agencies in English Common Law countries enjoy the highest independence and flexibility, compared with those in all three Civil Law countries. Compared with German Civil Law and Socialist countries, English Common Law countries impose less direct regulation ex-post. Compared with German and Scandinavian Civil Law countries, English Common Law countries rely more on government empowerment to outside investors to monitor commercial banks.

5.2 Cultural theory

To avoid the possible multi-colinearity problem, Protestant is excluded from the regressions. Investigating Tables 5–7, the following messages on the cultural determinants of banking regulation dimensions and thus patterns are revealed to us.

Religious affiliation has even weaker power in explaining banking regulation dimensions and thus patterns, compared with legal origins. The only observation we make is that the extent of government ownership of banks in Protestant countries is the lowest,[8] which is consistent with the prediction of culture theory which argues that Protestant countries are less regulation/intervention oriented than countries of Catholic, Muslim or other religions and thus have the least government ownership of banks. What's more, we also find that regulatory agencies in Protestant countries are more independent and flexible than in countries with other religions.

Inconsistent with the prediction of culture theory, we could not find evidence for higher independence and flexibility of regulatory agencies, less intensity of government direct regulation, more government empowerment and weaker power of explicit deposit insurance agency in Protestant countries than in Catholic and Muslim countries, since culture theory argues that both Catholic and Muslim countries are more interventionist than Protestant countries.

5.3 Economic theory

As noted before, the two-stage GMM method is used in the regressions in Tables 5–7 and we employ two endowments variables i.e., LATITUDE and ETHNO, as instruments for both economic and initial banking development. Hansen's J statistic is reported in all regressions to test whether these instruments are well selected and whether a country's endowments only indirectly affect the banking regulation dimensions and thus patterns through the channel of economic or initial banking development. Summarising the findings with all economic and initial banking development measures, we have the following observations.

[8] The surprising negative coefficient of Catholic in GOVBANK regression equations with initial banking development variables reflect rapid privatisation of previous state-owned banks in countries with larger population of Catholics at the end of the last century (GB95 is calculated for year 1995, while GOVBANK is collected mainly in 1999). Without trying for an exhausting list, some examples of those countries are: former Middle-and-East-European countries (such as Bulgaria, Czech, Hungary and Poland) and other countries such as Argentina, Australia, Austria, Bolivia, Italy, Spain, Kuwait, Greece, Guatemala, Honduras and Mexico.

Economic and initial banking development has the strongest explanatory power in the determinants of banking regulation dimensions and patterns than both legal origins and religious affiliations. The extent of government ownership of banks is lower in countries with higher initial banking development, which is similar to the findings of La Porta et al. (2002). In countries with higher economic and initial banking development, banking regulatory agencies are more independent and flexible, and less government direct regulation is imposed either ex-ante or ex-post, while more government empowerment is relied on. Different from previous predictions, countries with higher economic development have a stronger power of explicit deposit insurance agency. All these results, except for the findings on explicit deposit insurance, are broadly consistent with the 'economic and initial banking development matters' view, which argues that a government will depend less on government ownership and direct engagement, while more on independent and flexible regulatory agencies and government empowerment in regulating banks with the development of the banking sector and the whole economy. The positive coefficient of economic development on the power of explicit deposit insurance agency might reflect two reasons: first, the explicit deposit insurance scheme might not be well designed especially in those countries with lower economic development and they tend to underemphasise the role of explicit deposit insurance without other corresponding developed institutional arrangements such as institutions to prevent government expropriation and corruption (Demirgüç-Kunt and Kane 2002); second, the banking crisis cost is higher in economically developed countries and they are more likely to grant stronger power to explicit deposit insurance agency. Another notable exception is that economic theory could not explain government direct ongoing regulation, which might be because the banking daily operation environment is changing so rapidly nowadays that it requires more independent and prompt adjustment on ongoing regulation, which tends to converge among different countries regardless of economic or initial banking development.

Observing Hansen's J statistics, we find that both economic and initial banking development are well instrumented by geographical endowment (LATITUDE) and ethologic endowment (ETHNO) and these endowments only affect banking regulation dimensions and thus patterns indirectly through economic or initial banking development.

Over-identifying restriction test, however, is relatively easy to pass in the current setting, which needs more serious investigation on the role of endowment on banking regulation. Considering the possibly direct effect of endowment on banking regulation, we also run regressions following La Porta

et al. (1999) where endowment variables are used as regressors rather than instrumental variables. Although latitude as a positive proxy of economic and financial development becomes significant in explaining several banking regulation dimensions such as broadly or narrowly defined preconditions, narrowly defined ex-ante, and ex-post regulation, previously major findings on legal, culture and economic theory do not change qualitatively.[9] To emphasise the possible endogeneity of economic and financial development, we focus the explanation on instrumental analysis, while careful readers should be aware of the potentiality of the direct effect of geographical endowment on banking regulation formation.

A brief re-summary might be useful before we end this section.[10] Multivariate regressions indicate the following message: (1) The extent of government ownership of banks is the highest in Socialist Law countries, while it is the least in English Common Law and Protestant countries, and is also less in countries with higher initial banking development. (2) Banking regulatory agencies are more independent and flexible in those countries with higher economic or initial banking development, or with English Common Law. (3) Countries with higher economic or initial banking development tend to impose less direct regulation both ex-ante and ex-post, while rely more on government empowerment and stronger explicit deposit insurance agency. (4) None of the three theories could explain government direct ongoing regulation across countries.

6. Assessment Regressions

This section briefly investigates the role of banking regulation on banking efficiency, development, and the level of overall financial development. We employ overhead cost (OVERCOST) and net interest margin (MARGIN) to measure banking efficiency following Barth et al. (2004), and deposit bank assets to GDP (DMBAGDP) and private credit by deposit banks to GDP (PCDMBGDP) to measure banking development suggested by Beck et al. (2001). Following Levine (2002), we use financial-activity (FINAACTI), financial-size (FINASIZE) and financial-efficiency

[9] The results are available upon request.

[10] Legal origins and religious affiliations might highly correlate with each other (Stulz and Williamson 2003) in determining banking regulation. To capture this compound effect, we introduce a cross-term of legal origins and religious affiliations instead of both single measures. All the major findings on economic theory kept, except for insignificant results on broadly defined preconditions and explicit deposit insurance power. We thank Songnian Chen for pointing it out and the results are available upon request.

(FINAEFFI) to measure the level of overall financial development. As we have argued earlier, broadly defined banking regulation measures might blur the effect of some particular important and hotly debated measures, documented by Barth et al. (2002). To avoid this concern and compare the effect of comprehensive and specific measures, we analyse two groups of banking regulation measures, i.e., broadly defined and narrowly defined. Note that a possible shortcoming of assessment regressions is that the timing of dependent variables might lead the independent variables and thus endogeneity of banking regulation might appear. For all assessment variables, the time period is 1995–97 (which are average measures), while for all independent variables (banking regulation dimensions), the timing is later than 1997. We, however, could not find corresponding data for our dependent variables in 2001–02. Two reasons partially take care of the concern about timing in assessment regressions. First, as Barth et al. (2004) point out, most of the banking regulation measures have not changed for nearly 20 years, so they are quite stable. Second, it usually takes a short time for banking regulation to influence banking development, efficiency and overall financial development, while a rather long time is needed for a reversal effect. So in a short period, the causality is from banking regulation to banking development, efficiency and overall financial development rather than the reverse. Admitting the possible shortcomings of the design of assessment regressions, the results should be carefully explained as the correlation between banking regulation and banking efficiency, development and the level of overall financial development. The results with broadly defined and narrowly defined measures are given in Tables 8 and 9 respectively.

First, considering banking efficiency and development regressions, we find the extent of government ownership of banks is negatively correlated with banking development measured by private credit by banks to GDP. Government direct ex-post regulation negatively correlates with both banking development measures, while government direct ongoing regulation,[11] government empowerment,[12] and explicit deposit insurance agency's power insignificantly correlate with banking efficiency or development. Both broadly and narrowly defined preconditions positively correlate with banking

[11] Tighter ongoing direct regulation positively correlates with the banking efficiency measure by net interest margin as narrowly defined banking regulation regressions show, for which we do not have a good explanation.

[12] Broadly defined government empowerment negatively correlates with private credit to GDP, which might reflect that market forces monitor bank credit allocation more carefully which possibly reduces the private credit proportion.

Table 8
Assessment Regressions with Broadly-Defined Banking Regulation Measures

	Independent Variables										
Dependent Variables	*GB95*	*GOVBANK*	*Precond*	*Ex-ante*	*Ongoing*	*Ex-post*	*Empowerment*	*DIP*	*Constant*	*obs*	*R-square*
Overhead Cost	0.0002		–0.0054*	–0.0029	–0.0019	0.003s3	0.0037	0.0008	0.0324***	40	0.1870
	(1.27)		(–1.76)	(–0.81)	(–0.54)	(0.89)	(0.83)	(0.55)	(4.69)		
		0.0002	–0.0019	–0.0059*	–0.0046	0.0056*	0.0009	0.0001	0.0391***	49	0.1903
		(1.12)	(–0.77)	(–1.97)	(–1.22)	(1.74)	(0.30)	(0.04)	(7.17)		
Net Interest Margin	0.0001		–0.0057*	0.0067*	–0.0053	0.0012	0.0069	0.0001	0.0380***	40	0.2644
	(1.01)		(–1.83)	(1.94)	(–1.16)	(0.33)	(1.53)	(0.04)	(5.92)		
		0.0003	–0.0022	0.0018	–0.0074	0.0038	0.0011	–0.0013	0.0430***	49	0.1922
		(1.29)	(–0.91)	(0.48)	(–1.38)	(1.12)	(0.31)	(–0.88)	(6.26)		
Bank Assets to GDP	–0.0022		–0.0002	–0.2046**	0.0103	–0.0989**	–0.0296	0.0093	0.5405***	38	0.4033
	(–1.29)		(–0.01)	(–2.43)	(0.27)	(–2.23)	(–0.57)	(0.38)	(5.54)		
		–0.0015	0.0006	–0.1195	0.0429	–0.1037**	0.0237	0.0226	0.4792***	51	0.318
		(–0.82)	(0.02)	(–1.89)	(1.00)	(–2.59)	(0.68)	(1.23)	(7.33)		
Private Credit by Banks to GDP	–0.0039**		0.0031	–0.1485*	0.0093	–0.0899**	–0.0218	0.0048	0.5019***	38	0.409
	(–2.62)		(0.09)	(–1.89)	(0.31)	(–2.20)	(–0.51)	(0.19)	(5.50)		
		–0.0017	0.0018	–0.0836	0.0483	0.0164	–0.0947**	0.0199	0.3900***	51	0.2841
		(–1.04)	(0.08)	(–1.52)	(1.27)	(0.58)	(–2.65)	(1.04)	(6.87)		

(*Table 8 continued*)

(*Table 8 continued*)

	Independent Variables										
Dependent Variables	*GB95*	*GOVBANK*	*Precond*	*Ex-ante*	*Ongoing*	*Ex-post*	*Empowerment*	*DIP*	*Constant*	*obs*	*R-square*
Financial-Activity	–0.04		0.31	–1.05	–0.33	–0.45	0.21	0.31	–3.10**	27	0.35
	(–1.70)		(0.60)	(–1.52)	(–0.73)	(–0.91)	(0.33)	(1.08)	(–2.60)		
		0.01	0.3	–0.74	–0.05	–0.74	0.04	0.4	–4.71***	28	0.2287
		(0.25)	(0.53)	(–1.25)	(–0.10)	(–1.51)	(0.05)	(1.36)	(–4.47)		
Financial-Size	–0.02***		0.06	–0.11	–0.03	–0.24*	–0.2	–0.02	0.18	26	0.5538
	(–3.35)		(0.64)	(–0.64)	(–0.24)	(–1.76)	(–1.36)	(–0.22)	(0.59)		
		–0.01	–0.004	–0.04	0.03	–0.33*	–0.21	0.05	–0.36	27	0.3049
		(–0.66)	(–0.02)	(–0.26)	(0.19)	(–1.91)	(–1.11)	(0.50)	(–1.20)		
Financial-Efficiency	–0.04*		0.35	–0.71	0.02	–0.17	0.43	0.3	1.2	31	0.3044
	(–1.73)		(0.84)	(–1.04)	(0.04)	(–0.40)	(–0.40)	(1.27)	(1.20)		
		–0.02	0.28	–0.52	0.2	–0.33	0.31	0.40*	0.04	31	0.2054
		(–0.78)	(0.64)	(–0.91)	(0.43)	(–0.69)	(0.48)	(1.81)	(0.04)		

Notes: Ordinary least squares method is used. ***, **, and * indicate significant at the 1%, 5%, and 10% levels respectively. The statistics of t test are shown in parentheses.

Table 9
Assessment Regressions with Narrowly-Defined Banking Regulation Measures

	Independent Variables										
Dependent Variables	*GB95*	*GOVBANK*	*Precond*	*Ex-anten*	*Ongoing*	*Ex-post*	*Empowerment*	*DIP*	*Constant*	*obs*	*R-square*
Overhead Cost	0.0002		–0.0049	0.0004	–0.0015	0.0021	0.0011	–0.0002	0.0363***	50	0.0946
	(1.29)		(–1.24)	(0.13)	(–0.48)	(0.60)	(0.46)	(–0.12)	(6.41)		
		0.0003*	–0.0045	0.0035	–0.0032	0.0027	0.0037	–0.0004	0.0377***	60	0.1741
		(2.07)	(–1.14)	(1.19)	(–1.08)	(0.81)	(1.32)	(–0.27)	(7.94)		
Net Interest Margin	0.0002		–0.0051	0.0045	–0.0052	0.0011	–0.0004	0.0007	0.0378***	50	0.1781
	(1.15)		(–1.36)	(1.66)	(–1.43)	(0.31)	(–0.14)	(0.49)	(7.48)		
		0.0003**	–0.0070*	0.0078***	–0.00718*	0.0014	0.0007	–0.0006	0.0417***	60	0.2588
		(2.17)	(–1.96)	(2.69)	(–1.93)	(0.44)	(0.26)	(–0.38)	(8.49)		
Bank Assets to GDP	–0.0022		0.0077	–0.1601**	0.0276	–0.0723*	–0.0158	–0.0046	0.5800***	47	0.2532
	(–1.14)		(0.12)	(–2.26)	(0.73)	(–1.70)	(–0.33)	(–0.23)	(6.46)		
		–0.0034**	0.0191	–0.1706***	0.0344	–0.0670*	–0.0022	0.0083	0.5468***	62	0.3302
		(–2.11)	(1.30)	(–3.19)	(0.88)	(–1.77)	(–0.06)	(0.39)	(8.64)		
Private Credit by Banks to GDP	–0.0036**		0.0066	–0.1346**	0.0228	–0.0685*	–0.0300	–0.0046	0.5188***	47	0.3121
	(–2.34)		(0.11)	(–2.47)	(0.76)	(–1.75)	(–0.77)	(–0.22)	(6.33)		
		–0.0034**	0.0181	–0.1413***	0.0348	–0.0641*	–0.0165	0.0078	0.4458***	62	0.3239
		(–2.37)	(1.35)	(–3.36)	(1.02)	(–1.81)	(–0.55)	(0.37)	(8.25)		

(*Table 9 continued*)

(*Table 9 continued*)

Dependent Variables	*Independent Variables*									*obs*	*R-square*
	GB95	*GOVBANK*	*Precond*	*Ex-anten*	*Ongoing*	*Ex-post*	*Empowerment*	*DIP*	*Constant*		
Financial-Activity											
	–0.04		0.33	–0.64	–0.06	–0.13	0.91	0.28	–2.82**	33	0.3928
	(–1.70)		(0.61)	(–1.45)	(–0.18)	(–0.30)	(1.32)	(1.07)	(–2.71)		
		–0.03	0.26	–0.82*	0.08	–0.32	0.67	0.42	–3.98***	34	0.2979
		(–1.21)	(0.43)	(–1.82)	(0.18)	(–0.69)	(1.05)	(1.61)	(–4.85)		
Financial-Size	–0.02***		0.27*	–0.06	–0.08	–0.21*	–0.24	–0.03	0.21	32	0.5366
	(–3.05)		(1.95)	(–0.74)	(–0.84)	(–1.76)	(–1.40)	(–0.61)	(0.82)		
		–0.02**	0.2	–0.18	–0.03	–0.26*	–0.32	0.03	–0.12	33	0.428
		(–2.19)	(1.07)	(–1.37)	(–0.20)	(–1.98)	(–1.71)	(0.37)	(–0.47)		
Financial-Efficiency											
	–0.04*		–0.02	–0.79*	0.03	0.01	1.07*	0.3	1.41	36	0.4167
	(–1.94)		(–0.05)	(–1.84)	(0.12)	(0.03)	(1.99)	(1.34)	(1.59)		
		–0.03	–0.08	–0.88**	0.2	–0.19	0.83	0.39*	0.34	36	0.3741
		(–1.68)	(–0.17)	(–2.59)	(0.64)	(–0.46)	(1.67)	(1.71)	(0.46)		

Notes: Ordinary least squares method is used. ***, **, and * indicate significant at the 1%, 5%, and 10% levels respectively. The statistics of t test are shown in parentheses.

efficiency, measured by net interest margin. Both broadly and narrowly-defined ex-ante direct regulation negatively correlates with banking efficiency measured by net interest margin,[13] and negatively correlates with both banking development variables. Moreover, government ownership of banks negatively correlates with both banking efficiency and development measures as narrowly defined banking regulation regressions show. Broadly defined banking regulation regressions indicate that the independence and flexibility of regulatory agencies positively correlate with banking efficiency measures by overhead cost, while a negative correlation appears for ex-post direct regulation.

Second, overall financial development regressions show that the extent of government ownership of banks is always negatively correlated with the level of overall financial development, measured by financial-size or financial-efficiency. Government direct ex-post regulation negatively correlates with financial-size, while explicit deposit insurance agency's power always positively correlates with financial-efficiency. Government direct ongoing regulation, however, has no significant correlation with financial development. Focusing on narrowly defined banking regulation dimensions, more interesting information is revealed. The flexibility of regulatory agencies positively correlates with financial-size. Consistent with Barth et al. (2002), we find narrowly-defined government ex-ante direct regulation negatively correlates with financial development,[14] measured by financial-activity and financial-efficiency, while narrowly defined government empowerment positively correlates with financial-efficiency.

7. Conclusion

In this article, we first classified all governmental banking regulation measures into four broad dimensions: (1) the extent of government ownership of banks; (2) the intensity of government direct regulation, which further includes preconditions, ex-ante, ongoing and ex-post regulation; (3) the amount of measures to empower outside investors to monitor banks; (4) the comprehensiveness of explicit deposit insurance. We also defined narrow dimensions for preconditions, ex-ante direct regulation and government

[13] Surprisingly, broadly defined ex-ante direct regulation positively correlates with banking efficiency measured by overhead cost, for which we do not have a good explanation.

[14] The significant negative relation between government ex-ante and ex-post direct regulation and overall financial development is consistent with the historical evidence that the free banking system stimulated financial and economic development; see Dowd (1992) for the introduction of free banking system.

empowerment to capture the possible effects of some specific banking regulation measures.

Following this classification, with a comprehensive data set on banking regulation practices across 118 countries between 1998 and 2000 provided by Barth et al. (2001) of the World Bank Group, we tried to answer three related questions on banking regulation: What are the patterns of banking regulation around the world? What are the fundamental determinants of banking regulation? And what is the impact of banking regulation on overall financial development?

We derived five different patterns of banking regulation across countries. First, the India-China type of banking regulation relies more on dominant government ownership. Second, the UK-Japan type of banking regulation relies more on government direct regulation imposed either ex-ante or ex-post, while less government empowerment or government ownership. Third, the Germany-US-Switzerland-France type of banking regulation relies less on government ownership or direct regulation imposed either ex-ante or ex-post, while more on government empowerment. Fourth, the Italy-Liechtenstein-Belgium type of banking regulation relies more on both government direct regulation imposed ex-ante and ex-post and government empowerment, while less on government ownership. Last, there is a small group of countries with other banking regulation patterns.

Through empirically testing three theories on the fundamental determinants of different dimensions and patterns of banking regulation, i.e., legal, cultural and economic theories, we answered the second question as: economic theory has the broadest explanatory power, while both legal and cultural theories only provide very restricted explanations for the determinants of banking regulation. Countries with lower initial banking development, Socialist Law, French or German Civil Law, or larger population of non-Protestant people exhibit larger fractions of government ownership of banks. Countries with higher economic or initial banking development, or English Common Law have more independent and flexible regulatory agencies. Moreover, countries with higher economic or initial banking development impose less government direct regulation both ex-ante and ex-post, while they rely more on government empowerment and explicit deposit insurance. Surprisingly, none of the three theories could explain the difference of government direct ongoing regulation across countries.

The third question is answered by assessment regressions of both broadly and narrowly defined banking regulation dimensions. Regressions results

show that the extent of government ownership of banks, and ex-post and some general or specific ex-ante regulation measures negatively correlate with banking efficiency, development and the level of overall financial development, while some specific measures to guarantee the flexibility of regulatory agencies positively correlates with banking efficiency and the level of overall financial development. Moreover, some general measures to guarantee both the independence and flexibility of regulatory agencies also positively correlates with banking efficiency, and stronger power of explicit deposit insurance agency and some specific measures to promote government empowerment positively correlate with the level of overall financial development.

Two direct policy implications could be derived from this article. First, banking regulation and legal system reform should go hand in hand, since our results show that legal origins affect banking regulation. Good banking regulation for overall financial development needs corresponding legal rules to guarantee both the independence and flexibility of regulatory agencies and the incentive and working platform for non-governmental forces to engage in the regulation process. Second, and more importantly, good banking regulation for financial development could be attained by a 'big push' to current economic and banking development, as reflected in the significant role of economic theory in explaining banking regulation. It is often emphasised that good banking regulation is very important in promoting economic and banking development, while the reversal relation is always ignored, especially in some developing countries. Good banking regulation, we think, could endogenously come out as the result of economic and banking development. To reform banking regulation, a big push to the current banking sector and the whole economy is indispensable. Rather than exogenously imposing some banking regulation measures on the domestic banking sector, we suggest that a government first try to invoke the development of economy and banking sector through opening the door for both foreign and domestic private investors to join the game, which will endogenously lead to subsequent improvements in banking regulation, and thus in turn will help the country's economic and financial development.

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Appendix 1
Information on Banking Regulation Variables

Index	*Variable name*	*Definition*
I. Government ownership of banks	GB95 or GOVBANK	GB95: Government ownership of banks in 1995, which is the share of assets of the top 10 banks in a given country by the government of that country in 1995. Source: La Porta et al. (2002) GOVBANK=Q3.7. Source: Barth et al. (2001)
II. Government direct regulation and supervision		
1. Preconditions	PRECOND	a+b
a. Operational independence	SUPERINDE	Q12.14+Q5.4+Q5.5+Q10.4. Source: Barth et al. (2001)
b. Supervisory flexibility	SUPERFORB	Q12.10+Q12.11. Source: Barth et al. (2001)
Narrowly-defined preconditions	PRECONDN	b
2. Ex-ante requirements	EX-ANTE	c+d+e+f+g
c. Ownership structure	OWNERSHIP	Q2.1+Q2.2+Q2.3+Q2.5. Source: Barth et al. (2001)
d. Business scope	BUSISCOPE	Q4.1+Q4.2+Q4.3. Source: Barth et al. (2001)
e. Submitted files	ENTRY	Q1.8.1+Q1.8.2+Q1.8.3+Q1.8.4+Q1.8.5+Q1.8.6+Q1.8.7+Q1.8.8. Source: Barth et al. (2001)
f. Initial capital stringency	INITIALK	Q1.4+Q1.5+Q1.5.1+Q1.6+Q1.7. Source: Barth et al. (2001)
g. Acquisition or investment	INVESTMENT	Q4.4. Source: Barth et al. (2001)
Narrowly-defined ex-ante requirements	EX-ANTEN	d+e

3. Ongoing regulation and supervision	ONGOING	h+I+j
h. Capital stringency	OVERALLK	Q3.1.1+Q3.2+Q3.3+Q3.9.1+Q3.9.2+Q3.9.3. Source: Barth et al. (2001)
i. Credit risk management	RISKMANA	Q7.1+Q7.2+Q9.1+Q9.6. Source: Barth et al. (2001)
j. Corrective measures	CORRECTIVE	Q6.1+Q11.2+Q11.3.1+Q11.3.2+Q11.3.3. Source: Barth et al. (2001)
4. Ex-post measures	EX-POST	k+l+m
k. Sanction scheme on managers	SANCTION	Q11.1. Source: Barth et al. (2001)
l. Declare insolvency	DECINSOL	Q11.6+Q11.7+Q11.8. Source: Barth et al. (2001)
m. Restructuring	RESTRUC	Q11.9.1+Q11.9.2+Q11.9.3+Q11.9.4+Q11.9.5. Source: Barth et al. (2001)
III. Government empowerment	EMPOWERMENT	n+o+p+q+r
n. Subordinated debt	SUBDEBT	Q3.5. Source: Barth et al. (2001)
o. External auditors	AUDITING	Q5.1*(Q5.2+Q5.3+Q5.6+Q5.7). Source: Barth et al. (2001)
p. Accounting standards	ACCOUNTING	Q10.1+Q10.1.1+Q10.3. Source: Barth et al. (2001)
q. Information accuracy	ACCURACY	Q10.6. Source: Barth et al. (2001)
r. Disclosure to public	DISCLOSURE	Q10.4.1+Q10.5+Q10.7*(Q10.7.3.1+Q10.7.3.2+Q10.7.3.3). Source: Barth et al. (2001)
Narrowly-defined government empowement	EMPOWERMENTN	p
IV. Deposit insurance	DIP	Q8.1*(Q8.1.1+Q8.1.4+Q8.1.5+Q8.1.5*Q8.1.7+Q8.6). Source: Barth et al. (2001)

Appendix 2
Questions and Coding for Banking Regulation Variables

Questions		*Coding*
1.4 Is information on source of funds for capital required?		yes=1; no=0
1.5 Are the sources of funds to be used as capital verified by authorities?		yes=1; no=0
1.5.1 Are law enforcement authorities consulted?		yes=1; no=0
1.6 Can assets other than cash/govt. securities be used to increase capital?		yes=0; no=1
1.7 Can borrowed funds be used?		yes=0; no=1
1.8 Legal submissions required for banking license:	1.8.1 Draft by-laws	yes=1; no=0
	1.8.2 Intended organisation chart	yes=1; no=0
	1.8.3 First 3-year financial projections	yes=1; no=0
	1.8.4 Financial information on shareholders	yes=1; no=0
	1.8.5 Background/experience of future directors	yes=1; no=0
	1.8.6 Background/experience of future managers	yes=1; no=0
	1.8.7 Sources of funds in capitalisation of new bank	yes=1; no=0
	1.8.8 Intended market differentiation of new bank	yes=1; no=0
2.1 Is there a maximum percentage of capital that can be owned by single owner?		yes=1; no=0
2.2 Can related parties own capital in a bank?		yes=0; no=1
2.3 Regulatory restrictiveness of ownership by non-financial firms of banks		unrestricted=1; permitted=2; restricted=3; prohibited=4
2.5 Can non-bank financial firms own shares in banks?		yes=0; no=1
3.1.1 Is it risk-weighted in line with Basle guidelines?		yes=1; no=0
3.2 Does the ratio vary with a bank's credit risk?		yes=1; no=0

3.3 Does the ratio vary with market risk?		yes=1; no=0
3.5 Is subordinated debt allowable (required) as part of capital?		yes=1; no=0
3.7 Percentage of banking system's assets in banks that are 50 per cent or more government owned		Q3.7
3.9 Before minimum capital adequacy is determined, which items are deducted from capital	3.9.1 Market value of loan losses	yes=1; no=0
	3.9.2 Unrealised securities losses	yes=1; no=0
	3.9.3 Unrealised foreign exchange losses	yes=1; no=0
4.1 The level of regulatory restrictiveness for bank participation in Securities		unrestricted=1; permitted=2; restricted=3; prohibited=4
4.2 The level of regulatory restrictiveness for bank participation in Insurance		unrestricted=1; permitted=2; restricted=3; prohibited=4
4.3 The level of regulatory restrictiveness for bank participation in Real estate		unrestricted=1; permitted=2; restricted=3; prohibited=4
4.4 Regulatory restrictiveness of bank ownership of non-financial firms		unrestricted=1; permitted=2; restricted=3; prohibited=4
5.1 Is an external audit compulsory?		yes=1; no=0
5.2 Are there specific requirements for the extent of audit?		yes=1; no=0
5.3 Are auditors licensed or certified?		yes=1; no=0
5.4 Is auditor's report given to supervisory agency?		yes=1; no=0
5.5 Can supervisors meet external auditors to discuss report without bank approval?		yes=1; no=0
5.6 Are auditors legally required to report misconduct by managers/directors to supervisory agency?		yes=1; no=0
5.7 Can legal action against external auditors be taken by supervisor for negligence?		yes=1; no=0
6.1 Can supervisors force banks to change internal organisational structure?		yes=1; no=0

(*Appendix 2 continued*)

(*Appendix 2 continued*)

Questions	*Coding*
7.1 Are there guidelines for asset diversification?	yes=1; no=0
7.2 Are banks prohibited from making loans abroad?	yes=0; no=1
8.1 Is there an explicit deposit insurance scheme?	yes=1; no=0
8.1.1 Is it funded by the government, banks or both?	government=3; both=2; banks=1
8.1.4 Is there a limit per person?	yes=0; no=1
8.1.5 Does deposit insurance authority make the decision to intervene a bank?	yes=1; no-=0
8.1.7 If yes, does the deposit insurance authority have the legal power to intervene/takeover a troubled (not insolvent) bank?	yes=1; no=0
8.6 Can deposit insurance agency take legal action against bank directors/officials?	yes=1; no=0
9.1 Is there a formal definition of 'non-performing loan'?	yes=1; no=0
9.6 If one loan is non-performing, are other loans of a multiple-loan customer classified as non-performing?	yes=1; no=0
10.1 Does income statement contain accrued but unpaid interest/ principal while loan is performing?	yes=1; no=0
10.1.1 Does income statement contain accrued but unpaid interest/ principal while loan is non-performing?	yes=0; no=1
10.3 Are consolidated accounts covering bank and any non-bank financial subsidiaries required?	yes=1; no=0
10.4 Are off-balance sheet items disclosed to supervisors?	yes=1; no=0
10.4.1 Are off-balance sheet items disclosed to public?	yes=1; no=0
10.5 Must banks disclose risk management procedures to public?	yes=1; no=0
10.6 Are directors legally liable for erroneous/misleading information?	yes=1; no=0
10.7 Do regulations require credit ratings for commercial banks?	yes=1; no=0

10.7.3	Which bank activities are rated?	10.7.3.1 bonds	yes=1; no=0
		10.7.3.2 commercial paper	yes=1; no=0
		10.7.3.3 other	yes=1; no=0
11.1	Are there any mechanisms of cease-desist type orders whose infraction leads to automatic imposition of civil & penal sanctions on bank's directors & managers?		yes=1; no=0
11.2	Can the supervisory agency order directors/management to constitute provisions to cover actual/potential losses?		yes=1; no=0
11.3	Can the supervisory agency suspend director's decision to distribute:	11.3.1 dividends	yes=1; no=0
		11.3.2 bonuses	yes=1; no=0
		11.3.3 management fees	yes=1; no=0
11.6	Can the supervisory agency supercede bank shareholder rights and declare bank insolvent?		yes=1; no=0
11.7	Does banking law allow supervisory agency to suspend some or all ownership rights of a problem bank?		yes=1; no=0
11.8	Does the law establish pre-determined levels of solvency deterioration which forces automatic actions such as intervention?		yes=1; no=0
11.9	Regarding bank restructuring & reorganisation, can supervisory agency or any other govt. agency do the following:	11.9.1 supercede shareholder rights	yes=1; no=0
		11.9.2 remove and replace management	yes=1; no=0
		11.9.3 remove and replace directors	yes=1; no=0
		11.9.4 forbear certain prudential regulations	yes=1; no=0
		11.9.5 insure liabilities beyond any explicit deposit insurance scheme	yes=1; no=0

(*Appendix 2 continued*)

(*Appendix 2 continued*)

Questions	*Coding*
12.10 Must infraction of any prudential regulation found by a supervisor be reported?	yes=0; no=1
12.11 Any mandatory actions in these cases?	yes=0; no=1
12.14 Are supervisors legally liable for their actions?	yes=0; no=1

Notes: Questions are from Caprio and Levine (2001).
The coding is done by us according to our classification.

Appendix 3
Data for Banking Regulation

Code	*Country*	*GB95*	*GOVBANK*	*Precond*	*Precondn*	*Ex-ante*	*Ex-anten*	*Ongoing*	*Ex-post*	*Empowerment*	*EmpowermentN*	*DIP*
ABW	Aruba		0	0.7946	1.3652		–1.0133	–2.1449	–0.4118	0.5218	0.4085	–1.0031
ALB	Albania		61.4	0.3243	–0.4127		0.4907	0.0618	–0.0119	–0.7035	–1.2143	–1.0031
ARG	Argentina	60.5	30	0.7946	1.3652	–1.9868	–1.1560	2.0191	0.8104	2.2364	1.3114	–0.5036
ARM	Armenia		2.5	–1.1900	–0.4127	0.5214	0.4962	–0.6891	0.0925	–1.3228	–1.2143	–1.0031
AUS	Australia	12.33	0	1.4570	1.3652	–0.1841	–0.1107	0.9208	0.0566	–0.0140	0.4085	–1.0031
AUT	Austria	50.36	4.1	–0.3381	–0.4127	–2.5782	–0.7126	0.3702	0.3108	0.0397	–1.7708	–0.5036
AZE	Azerbajan		4.4	0.3243	–0.4127	0.1920	0.0198	0.5718	1.2104	–0.0389	0.4085	–1.0031
BDI	Burundi		63	–0.5276	–0.4127		–0.2526	0.9037		–3.0296	–1.7708	–1.0031
BEL	Belgium	27.59				–0.7403	0.2155	1.2211		1.4950	1.3114	–0.5036
BGD	Bangladesh	95	69.86	1.4570	1.3652	1.2884	–0.6652	–1.0231	–2.0652			2.5095
BGR	Bulgaria	85.68	17.6	0.3243	–0.4127	–0.4963	0.4907	–0.3920	0.5215	1.0698	0.4085	–0.5036
BHR	Bahrain	7.34	3.7	0.3243	–0.4127	–0.5942	0.4909	–1.0008	1.2104	1.0910	0.4085	–0.5036
BIH	Bosnia-Herzegovina		30	–0.3381	–0.4127	–1.5368	–0.7126	1.1918	1.2104	1.0662	0.4085	5.1355
BLR	Belarus		67.3	0.3243	–0.4127	1.6740	1.1431	–0.0060			–3.3936	–0.5036
BOL	Bolivia	18.48	0	–1.1900	–0.4127	1.2527	0.5165	1.1224	–0.7007	–0.1502	–1.2143	–1.0031
BRA	Brazil	31.7	51.5	–1.6061	–0.4127	–0.5075	0.2155	–0.8225	1.3918	1.0698	0.4085	–0.5036
BTN	Bhutan		60	5.5833	8.8819	1.9285	1.5571	–0.8291	0.8104	–2.0280	0.4085	–1.0031
BWA	Botswana		2.39	0.3243	–0.4127	–0.8614	0.4909	1.6803	1.2104	–0.1029	0.4085	–1.0031
CAN	Canada	0	0	1.4570	1.3652	–0.1129	–0.7126	–0.9625	–2.3507	–0.4623	0.4085	5.0591
CHE	Switzerland	13.35	15	0.3243	–0.4127	–2.2562	–1.0133	0.6412	–1.3114	1.0910	0.4085	0.4191
CHI	Chile	19.72	11.7	–0.3381	–0.4127	0.5335	–4.0959	–0.2200	–0.3008	0.6884	0.4085	1.7071
CHN	China	99.45		–0.3381	–0.4127	3.5881	0.6525				1.3114	–1.0031

(*Appendix 3 continued*)

(*Appendix 3 continued*)

Code	*Country*	*GB95*	*GOVBANK*	*Precond*	*Precondn*	*Ex-ante*	*Ex-anten*	*Ongoing*	*Ex-post*	*Empowerment*	*EmpowermentN*	*DIP*
CYM	Cayman Islands		0		–0.4127		–1.0117		–2.4292	–0.5833	0.4085	–1.0031
CYP	Cyprus	0	3.3	0.3243	–0.4127		–0.3864	–2.0756	–0.4118		0.4085	0.7080
CZE	Czech Republic	52	19	–1.1900	–0.4127	–0.2104	–0.4116	–0.8913	–0.1194		1.3114	–0.5036
DEU	Germany	36.36	42	1.4570	1.3652	–2.0393	–3.5234	–0.6458	–1.0330	1.1144	1.3114	0.7080
DNK	Denmark	8.87	0	–0.3381	–0.4127	–0.5119	–0.4116	–0.0555	–0.2636	1.0698	0.4085	–0.5036
EGY	Egypt	88.62	66.6	0.3243	–0.4127	1.3522	0.0472	0.4952		1.0698	0.4085	–1.0031
ESP	Spain	1.98	0	–1.1900	–0.4127	–1.5812	–0.1107	1.8068	–0.7657	0.4415	0.4085	0.7080
EST	Estonia		0	–0.3381	–0.4127	–1.0453	–0.0854	0.9342	–0.0531	1.0698	0.4085	–0.0041
FIN	Finland	30.65	21.9	–0.3381	–0.4127	–1.8743	–4.2543		–1.0275	–0.0816	0.4085	–0.5036
FRA	France	17.26				–1.9494	–1.8270	1.8068	–3.0503	1.0182	1.3114	0.7080
GBR	United Kingdom	0	0	0.6050	1.3652	–2.5868	–0.7126	0.0534	0.2379	0.4628	0.4085	
GEO	Georgia		0	–1.1900	–0.4127	0.7247	–0.7290	–0.1506	1.2104	–0.3744	–0.3114	–1.0031
GHA	Ghana		37.9	0.3243	–0.4127	–0.1773	1.1178	1.3250	0.4565	–0.3264	–1.2143	–1.0031
GIB	Gibraltar		0	0.3243	–0.4127	–0.7571	–0.0836	0.1232	0.8104	0.5254	0.4085	–0.5036
GK	Guernsey		0	1.4570	1.3652	0.5658	0.0279		–1.2069		1.3114	–1.0031
GMB	Gambia		0			1.9273	1.2309	–0.9430	0.8104	–2.0280	0.4085	–1.0031
GRC	Greece	77.82	13	–0.3381	–0.4127	–0.6913	0.2153	–1.6852	–0.4118	0.3224	1.3114	–0.5036
GTM	Guatemala	22.2	7.61	–3.7615	–0.4127	1.0878	1.1434	–0.7632	0.0220	–2.3742	–3.3936	1.2075
GUY	Guyana		19	–1.1900	–0.4127	0.2567	–0.4098	–0.0484	0.4464	0.4415	0.4085	–1.0031
HND	Honduras	29.9	1.1	0.3243	–0.4127	–0.3425	–0.0854	–0.1510	–0.3008		–1.2143	0.9186
HRV	Croatia	1.04	36.99	–0.3381	–0.4127	–2.0383	–0.5563	–0.8779	–0.5758		0.4085	–0.5036
HUN	Hungary	36.56	2.5	0.3243	–0.4127	0.4356	–0.5563	1.2806	1.3918	0.0397	–1.7708	5.1355
IDN	Indonesia	42.9	44	–0.3381	–0.4127	0.9117	0.6470	–0.1510	0.8464	–0.9780	–1.7708	6.0582
IND	India	84.94	80	0.6050	1.3652	0.1000	–0.0255	0.2907	–1.2069	–1.3493	–3.3936	–0.5036
IRL	Ireland	4.48		1.4570	1.3652	–1.0970	0.0018	0.7066	0.2379	0.0821	0.4085	2.2989
ISL	Iceland	71.34	64	–1.1900	–0.4127	–0.1861	0.1702	–2.1797	–1.3814	1.0698	0.4085	2.9249

ISR	Israel	64.64		–0.5276	–0.4127	0.6335	0.0034	0.5140		–0.0140	0.4085	–1.0031
ITA	Italy	35.95	17	–2.4580	–0.4127	0.2095	0.1903	0.5974	–1.7296	–0.7638	1.3114	2.9249
JAM	Jamaica		56	0.3243	–0.4127	0.1471	0.8424	–0.0774	0.8104	–0.3749	0.4085	–0.5036
JOR	Jordan	26.03	0	0.3243	–0.4127	–0.2540	0.4907	1.4240	–1.8498	1.0698	0.4085	–1.0031
JPN	Japan	0	1.15	–1.7956	–0.4127	1.1013	–0.1237		1.3918	–0.9780	–1.7708	
KAZ	Kazakhstan	56.13	1.1	0.3243	–0.4127	–1.2925	–1.0133	–0.3226		1.4914	1.3114	–0.5036
KEN	Kenya	29.94		0.3243	–0.4127	–0.1874	0.8169	–0.7150	1.2104	–0.7140	–0.3114	–0.5036
KGZ	Kyrgyzstan		14.4	–1.1900	–0.4127	–0.4525	–0.4114	–1.1103	0.4565	0.5893	0.4085	–1.0031
KHM	Cambodia		16	0.3243	–0.4127	0.5255	1.7703	0.4921	1.3918	0.3018	–1.2143	–1.0031
KNA	St. Kitts		20.5		1.3652	1.5973	1.1434	0.1767		–0.0389	0.4085	–1.0031
KOR	Korea	25.41	29.7	–0.5276	–0.4127	0.4196	–0.7290	0.4579	1.3918			1.0874
KWT	Kuwait	32.84	0	0.3243	–0.4127	0.0606	–1.6763	1.4750	–0.4430	1.0270	0.4085	–1.0031
LBN	Lebanon	7.18	0	–0.3381	–0.4127	–0.5256	0.7916	–0.5612	–0.4430	1.0910	0.4085	–0.0041
LIE	Liechtenstein		4	–0.3381	–0.4127	–0.7912	0.1903		0.6379	1.5163	1.3114	4.1364
LKA	Sri Lanka	71.39	55	0.3243	–0.4127		–1.9557	0.3091	–0.4118	–0.0140	0.4085	–1.0031
LSO	Lesotho		51	–1.1900	–0.4127	1.0849	1.1178	–0.3224	–0.0119	–2.0280	0.4085	–1.0031
LTU	Lithuania		44	1.4570	1.3652	–0.6816	0.2155	0.6126	–0.0119	–0.5797	0.4085	–0.0041
LUX	Luxembourg		5.03	–0.3381	–0.4127	–0.6437	–0.7126	1.5086	0.0566	1.0698	0.4085	–0.5036
LVA	Latvia				–0.4127		–0.4685					1.5869
MAC	Macau		1.4	0.3243	–0.4127	–0.1806	–1.3538		–2.0652	–1.5475	0.4085	–1.0031
MAR	Morocco	37.9	23.9	0.3243	–0.4127		1.1178	1.1870	0.8104	–0.7335	0.4085	–0.0041
MDA	Moldova		7.05	0.3243	–0.4127	–1.3277	–0.4116	–1.3173	–1.0959	–0.3785	0.4085	–1.0031
MDV	Maldives		75		–0.4127	1.4218	0.3719		0.0923		–1.2143	–1.0031
MEX	Mexico	35.62	25	–1.1900	–0.4127	0.5963	1.1431	1.7022	1.2104		0.4085	0.9186
MKD	Macedonia		0.5		–0.4127	1.5971	1.1431	0.4960	0.9215	–0.1065	0.4085	–0.5036
MLT	Malta		0	–0.3381	–0.4127	0.3439	0.1900	1.4045	1.2104	0.5466	0.4085	–1.0031
MUS	Mauritius		0	–0.3381	–0.4127	1.2572	1.4441	0.2860	–0.3386	0.4415	0.4085	–1.0031

(*Appendix 3 continued*)

(*Appendix 3 continued*)

Code	*Country*	*GB95*	*GOVBANK*	*Precond*	*Precondn*	*Ex-ante*	*Ex-anten*	*Ongoing*	*Ex-post*	*Empowerment*	*EmpowermentN*	*DIP*
MWI	Malawi		48.9	0.3243	–0.4127	0.4591	1.4441	–1.2236	0.2465	–0.9640	0.4085	–1.0031
MYS	Malaysia	9.93	0	0.3243	–0.4127		–0.2553			1.0698	0.4085	–1.0031
NAM	Namibia			0.3243	–0.4127	0.9847	0.2155	–0.7350	1.2104		0.4085	–1.0031
NGA	Nigeria	9.91	13	0.3243	–0.4127	–0.7848	–0.0854	0.3091	1.2104	–0.6659	0.4085	0.7080
NLD	Netherlands	9.2	5.9	0.3243	–0.4127	–1.8841	–0.7126		–1.1657	–0.4623	0.4085	–0.5036
NPL	Nepal		20	0.3243	–0.4127	–0.4294	0.1897	–0.9646	–2.4292			–1.0031
NZL	New Zealand	0	0	0.6050	1.3652	–2.5794	–1.5000	–0.1766		0.4112	1.3114	–1.0031
OMN	Oman	25.84	0	–0.3381	–0.4127	1.6231	1.1178	0.6412	1.2104	0.5929	0.4085	4.6360
PAN	Panama	17.08	11.56	0.7946	1.3652	–1.4063	–0.1107	–0.6891	–0.4118	0.5929	0.4085	–1.0031
PER	Peru	26.46	2.5	–0.3381	–0.4127	–1.0358	–0.0854	1.4392	1.2104	1.7934	0.4085	0.7080
PHL	Philippines	27.23	12.12	–1.1900	–0.4127	–0.2928	–0.7579	0.1522	1.2104	–2.0031	0.4085	–1.0031
POL	Poland	84.29	43.7	–1.1900	–0.4127	–0.8559	–0.1274	0.7120	0.8104	0.4415	0.4085	–0.5036
PRI	Puerto Rico		0		1.3652	2.0733	–0.3137				0.4085	4.1364
PRT	Portugal	25.66	20.8	0.6050	1.3652	–0.8440	–0.7543	–0.2443	–0.4118	0.5254	0.4085	–0.5036
QAT	Qatar	33.74	43.4	0.3243	–0.4127	1.4127	0.4907	1.2376	1.3918		0.4085	–1.0031
ROM	Romania	62.68	70	0.7946	1.3652	0.3239	1.1178	–2.1844	–0.7007	0.1201	–0.3114	0.4191
RUS	Russia	32.98	68	–0.5276	–0.4127		–0.1112	0.2021	–0.5843	0.2087	0.4085	–1.0031
RWA	Rwanda		50	0.3243	–0.4127	0.9240	1.1178	1.5039	1.2104	–4.1995	–3.3936	–1.0031
SAU	Saudi Arabia	29.1		–0.3381	–0.4127	–0.2207	0.5165	–1.5117	0.9918	1.0910	0.4085	–1.0031
SGP	Singapore	13.53	0				–0.5815			1.0910	0.4085	–1.0031
SLB	Solomon Islands		10		1.3652		–0.2523		0.8104		–1.2143	–1.0031
SLV	Salvador, El		7	–0.3381	–0.4127	2.4211	0.3463	–0.3920	–0.2304	1.5487	0.4085	–0.0041
SVK	Slovakia	73.93	25.8	1.4570	1.3652	–0.6965	0.1900	0.5326	–0.7386	1.1144	1.3114	0.4191

SVN	Slovenia	57.29	39.6	0.3243	–0.4127	0.0902	–0.0854	0.0027	1.2104	1.0662	0.4085	–1.0031
SWE	Sweden	23.2	0	0.3243	–0.4127	–0.8168	–0.1107	–1.3094	–2.4292		1.3114	–0.5036
SYC	Seychelles		0	–0.5276	–0.4127	–0.6255	–0.4432	–1.0794		–2.4604	–3.3936	–1.0031
TAI	Taiwan (China)	76.61	43	–0.5276	–0.4127	1.3319	0.7916	–0.6020		–2.2562	–3.3936	–1.0031
TCA	Turks and Caicos Islands		5	–0.3381	–0.4127	0.2791	0.5162		–1.9270	–2.0280	0.4085	–1.0031
THA	Thailand	17.09	30.67	–1.1900	–0.4127	0.4374	–0.0854	0.1736	0.9918	–0.7997	–1.2143	–1.0031
TJK	Tajikistan		7.4	–0.3381	–0.4127	–1.1208	–1.0133	–1.2941	1.2104	1.2455	0.4085	
TKM	Turkmenistan		97.1	–1.1900	–0.4127	1.5876	1.1431	–0.4267	0.4066	–1.2015	–3.3936	
TON	Tonga		0	0.3243	–0.4127	–0.7220	0.5165	–0.3226	0.2465	–0.3785	0.4085	–1.0031
TTO	Trinidad & Tobago	1.54	15	–1.1900	–0.4127	–0.8409	–0.8298	–0.2882	–1.2069	–0.5833	0.4085	1.7071
TUR	Turkey	56.46	35	0.3243	–0.4127	0.8691	0.2429	–1.5651	–0.4118	1.4950	1.3114	0.9186
USA	United States	0	0	1.4570	1.3652	0.7411	–0.1435	–0.9600	–0.3008	0.5929	0.4085	5.0591
VEN	Venezuela	57.98	4.87	0.3243	–0.4127	0.2147	0.2155	–1.7587	–0.3008	0.5893	0.4085	1.2075
VIR	British Virgin Islands	0		–0.4127	1.1110	1.7703	–2.0803			0.4085	–1.0031	
VNM	Vietnam	99.06				1.5491	1.7703					–1.0031
VUT	Vanuatu		10	0.3243	–0.4127	1.6840	1.4696		0.8104	–0.5047	–1.7708	–1.0031
WSM	Samoa (Western)		0		–0.4127	1.8882	1.4693	1.1918	1.2104		–1.2143	–1.0031
YUG	Yugoslavia		90	–0.3381	–0.4127	–0.1348	0.8169	1.5086	0.8104	–1.6161	–1.2143	–0.0041
ZAF	South Africa	0	0	1.4570	1.3652	–0.7711	0.2155	1.3845	–2.7147	–0.0816	0.4085	–1.0031
ZMB	Zambia		23	0.3243	–0.4127		0.7916	–0.2188	0.4464	0.5929	0.4085	–1.0031

Appendix 4
Descriptions on Fundamental and Assessment Variables

Variable Name	*Description and Sources*	*Number of Observations*
Legal origin	Identifies the legal origin of Company Law or Commercial Code of each country. There are five possible origins: (1) English Common Law (English); (2) French Civil Code (French); (3) German Commercial Code (German); (4) Scandinavian Commercial Code (Scandinavian); and (5) Socialist/Communist Laws (Socialist). Source: La Porta et al. (1999).	118
Religion	Identifies the percentage of the population of each country that belonges to the three most widely spread religions in the world in 1980. For countries of recent formation, the data is available for 1990–1995. The number is in percent (scale from 0 to 100). The three religions identified here are: (1) Roman Catholic (Catholic); (2) Protestant (Protestant); and (3) Muslim (Muslim). The remaining are called 'other religions' (Other). Source: La Porta et al. (1999).	116
logGNP	Logarithm of GNP per capita expressed in current US dollars for the period 1970–1995. Source: La Porta et al. (1999).	108
DMBAGDP70	Ratio of deposit money banking assets to GDP in 1970. Source: Beck et al. (2001).	55
PCDMBGDP70	Ratio of claims on the private sector by deposit money banks to GDP in 1970. Source: Beck et al. (2001).	55
LATITUDE	The absolute value of the latitude of the country, scaled to take values between 0 and 1. Source: La Porta et al. (1999).	113
ETHNO	Average value of five different indices of ethno-linguistic fractionalisation. Its value ranges from 0 to 1. The five component indices are: (1) index of ethno-linguistic fractionalisation in 1960, which measures the probability that two randomly selected people from a given country will not belong to the same ethno-linguistic group (the index is based on the number and size of population groups as distinguished by their ethnic and linguistic status); (2) probability of two randomly selected individuals not speaking different languages; (3) probability of two randomly selected individuals not speaking the same language; (4) percent of the population not speaking the official language; and (5) percent of the population not speaking the most widely used language. Source: La Porta et al. (1999).	85

OVERCOST	Overhead cost over the period 1995–1997, equals to total bank overhead costs as an average share of total bank assets. Source: Beck et al. (2001).	61
MARGIN	Net interest margin over the period 1995–1997, equals to the average of net interest income divided by total bank assets. Source: Beck et al. (2001).	61
DMBAGDP	Average ratio of deposit money banking assets to GDP during 1995–1997. Source: Beck et al. (2001).	60
PCDMBGDP	Average ratio of claims on the private sector by deposit money banks to GDP during 1995–1997. Source: Beck et al. (2001).	60
FINASIZE	Financial size over the period 1995–1997, equals to log (ratio of private credit from deposit money banks to GDP + stock market capitalisation ratio). Source: Beck et al. (2001).	50
FINAACTI	Financial activities over the period 1995–1997, equals to log (ratio of private credit from deposit money banks to GDP * total value traded on stock market as a share of GDP). Source: Beck et al. (2001).	48
FINAEFFI	Financial efficiency over the period 1995–1997, equals to log (the ratio of total value traded on stock market to GDP over the ratio of deposit money banking overhead costs to assets). Source: Beck et al. (2001).	53

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