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Model of Financial Development: A cluster analysis

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Les modèles de développement financier : une analyse en termes de Clusters

Résumé

Cet article est une contribution à l'analyse de la diversité des modèles de développement financière dans des pays en voie de développement. Partant de variables clés comme le degré de contrôle de système bancaire et des marches financiers, la capitalisation boursière des pays, notre analyse empirique nous conduit à proposer une typologie de systèmes financiers : un système embryonnaire et répressif, un système de finance intermédié et un système financier à la maturité. Cette typologie ne peut valider l'hypothèse d'un modèle financier spécifique aux pays émergents, mais plutôt celle d'un modèle spécifique aux PED dans leur globalité et un modèle pour les pays développés.

Mots-clés : Développement financier, croissance, modèle de capitalisme, analyse factorielle et cluster.

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Abstract

This article is a contribution to the analysis of financial development diversity in developing countries and lies within model of capitalism's framework. By taking into account the degree of control of banking system and securities markets, our empirical analysis produces a three-group typology identifying an embryonic financial system, an intermediate financial system bank oriented and a financial system in maturity. Moreover, this typology cannot support the hypothesis of a model specific to emerging countries but a model for LDC countries and a model for developed countries.

Keywords: Financial development, growth, models of capitalism, factorial analysis, and cluster analysis.

JEL: O16, O10, O43, C8, F3

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1. Introduction

The financial system consists of the banking sector (including supervisory institutions such as central banks and governments), stock markets, and the money supply. As regards financial development's role in economic development, there are two main schools of thought. The first one asserts that financial development plays a limited role in accompanying the development of real activity (Robinson, 1952; Lucas, 1998). This school considers that when the economy develops, the financial system develops. For example, Robinson (1952), asserts that "where enterprises lead, finance follows" and, for Lucas (1998), economists "badly over-stress" the role of financial factors in economic growth. As for development economists, they frequently ignore this role in their studies. For Rajan and Zingales (1998) or Cameron (1967), although financial development is essential for growth, it is only "a lubricant but not a substitute for the machine". For Rajan and Zingales (1998), it is the availability of profitable investment opportunities which is essential. The second school of thought accords a crucial role to financial development in boosting the processes of growth, innovation and economic development (Bagehot, 1873, Schumpeter, 1911, Mac Kinnon 1973, Levine 1997). For these authors, causality proceeds from financial to economic development; it is only at a later stage that financial development leads on to growth. Haber, North and Weingast, (2008) assert that « countries do not have large banking systems and securities markets because they are wealthy; they are wealthy because they have large banking systems and securities markets ». Similarly, for King and Levine (1993), finance does not merely follow in the wake of economic activity. They affirm that the significant robust relationship between the degree of financial development and the rate of economic growth indicates much more than a positive association between contemporaneous shocks and financial/economic development. For Levine (1997), there is even evidence according to which the level of financial development is a good predictor of future rates of growth, of capital accumulation and of technological change[1].

Between these two polar positions (financial development merely accompanying economic development vs. financial development as a growth factor), we can find another group of scholars for whom the market promotes growth, with growth, in turn, encouraging market formation (Greenwood and Smith, 1997, Greenwood and Jovanovic, 1990): market structures would, in this case, be endogenous. However, in Greenwood and Jovanovic's model (1990), financial intermediaries invest more productively than individuals, because they can identify investment opportunities more easily. This means that financial intermediaries promote growth by ensuring higher earnings on capital, and growth, in turn, allows costly investments to be implemented. However, a "good" financial system must always enable a country to mobilize its savings for investment inside its frontiers by first allowing the most profitable projects to be identified, and then assigning resources for those projects, thanks to reduced transaction costs. Financial development also has to facilitate risk management and corporate control. Consequently, financial markets must provide for a whole range of services by: helping to mobilize and pool savings; providing payment services to facilitate the exchange of goods and services; producing and processing information about investors; monitoring investments and exercising corporate governance; helping to diversify, transform and manage risk (Levine, 1997; Demirgüc-Kunt, 2007).

In this paper we want to understand if the shape of the financial system (whether market-based or bank-based) or the financing modalities of economy (credits or securities, informal) – in other sense- if model of financial system are in relationship with model of development. And finally if exits a specific system for emerging countries this in relationship with the theses according to which

[1] However, for Rajan and Zingales (1998), financial development may predict economic growth simply because financial markets anticipate future growth. Equally, they consider that the stock market capitalizes the present value of growth opportunity, while financial institutions lend more if economic sectors grow.

emerging market are emerging financial market. To answer this question we proceed in three steps. We justify the choice of the variables which allow us to measure the size, the depth and the accessibility of financial markets. We propose then a typology of financial models. To finish classify countries, in particular emerging countries according to this typology. This allow us to answer the question; Is there a specific model of financial system for emerging economies?

2. How can financial development or efficiency be measured?

In the literature on subject, financial development can be measured in terms of: i) *size, ii) accessibility* and iii) *performance*. But, we can also consider iv) institutional indicators to categorize financial system.

i) Goldsmith's pioneering study (1969) of 35 countries over the period 1860-1963, uses the value of intermediary assets divided by GNP to gauge financial development and thereby measure the size of financial systems. King and Levine (1993), using a sample of 80 countries over the period 1960-1989, proposed four indicators of the level of financial development:

- *"Depth", to* measure the size of financial intermediaries. This variable is equal to the liquid liabilities of the financial system (M2) plus demand and the interest-bearing liabilities of bank and non-bank financial intermediaries, all subsequently divided by GDP.
- *"Bank", to* compare the different roles played by central or commercial banks in allocating credit. This variable is equal to the ratio of bank credit divided by bank credit plus central bank domestic assets. Commercial banks are likely to offer better risk management and investment information services than central banks. Financial systems that primarily fund the private sector probably provide more services than those that simply funnel credit to the government or to state enterprises.
- *"Private",* to measure the place occupied by banks and markets in the financing of the private sector. This variable is equal to the ratio of credit allocated to private enterprises divided by total domestic credit (excluding credit to banks).
- *"Privy",* to measure the place occupied by banks and markets in the financing of firms. This variable is equal to credit to private enterprises divided by GDP.

In Demerguc-Kunt's study (2007), *private credit* (value of credit by financial intermediaries to private sector divided by GDP) and *stock markets capitalization* (value of listed shares divided by GDP) are used to measure financial depth.

Levine and Zervos (1996) also use "stock market capitalization" to measure the size of stock markets. To measure stock market liquidity, they use two measurements. First, they compute the *ratio of total value of trades on the major stock exchanges divided by GDP*. This measures the value of equity transactions in relation to the size of the economy. The second liquidity measurement is equal to the ratio of the total values of trades on the major stock exchanges divided by market capitalization (*turnover ratio*).

Rajan and Zingales (1988) also uses two measurement of financial development: the first one is the ratio of *domestic credit plus stock market capitalization to GDP. T*he second, "*accounting standards"*, a proxy for financial development, is an index developed by the CIFA and research which ranks the amount of disclosure required in each country's annual company reports.

ii) In some studies, liquidity is measured by secondary market trading costs - but merely to evaluate the relationship between stock market liquidity and national growth rates, capital accumulation rate and rates of technological change. As for Demerguc-Kunt (2007), they generally use "*M2"* as a proxy of financial system size. They also use an index of freedom in the banking and the financial sector to measure banking industry openness. This index includes several dimensions: the extent of government involvement in the financial sector through ownership and control of financial institutions, the quality of regulation and supervision, the existence of interest control, activity restriction and the ability of foreign institutions to operate freely.

To measure stock market liquidity, Levine and Zervos (1996) use two indicators: the first, "*LLY1"*, is the ratio of total value of trades on the major stock exchanges divided by GDP; the second, "*LLY2", is* equal to the ratio of the total value of trades on the major stock exchanges divided by market capitalization (*turnover ratio*).

iii) The *net interest margin* (the gap between what banks pay the providers of funds and what they obtain from bank credit users)[2] is generally employed in studies to measure market efficiency, and this is particularly the case for Demerguc-Kunt (2007).

To measure *risk diversification and international integration*, Levine and Zervos (1996) use Korajczyk's (1996) estimate of the degree of international integration of national stock markets, as well as the IAPM (International Arbitrage Pricing Model).

We should note that, in order to measure market accessibility (Table 1), we have added "*informal sector",* to take into account the specificity of LDCs in which personal wealth remains the primary source of business start-up capital, since small firms have only limited access to banks. In fact, the use of bank loans is correlated with company size, and only the biggest firms have most of their start-up capital financed by bank debt. For example, Fafchamps (2004) shows in his study on Zimbabwe that bank business start-up loans were used by only 10% of firms. Loans from friends or family are significant sources of start-up capital for microenterprises and, to a lesser extent, for small firms whose contact with banks is negligible. Consequently, the existence of a large "informal sector" signifies that access to bank financing is really limited.

iv) Institutional indicators.

The earliest attempts to explain financial system differences between countries focused on the history of the country and, in particular, on the origins of that country's legal system. For legal origins theory, a country's financial development level is determined by its colonial history. British colonies, since they had adopted the legal institutions of British common law, benefited from better protection for minority shareholders and enjoyed a more developed financial system than the French colonies, which had adopted the French Civil Code (Haber, North et Weingast, 2008, La Porta, 1998)[3].

According to Modigliani and Miller's model (Modigliani and Miller, 1958), the size of capital markets should be proportional to GNP, because their size is determined by the cash flow coming from investors. But differences in the size of financial markets in countries with similar GNP cannot be explained by this model. The agency model could, however, explain why some countries have much bigger capital markets than others, since it is clear that countries differ in the extent to which they offer legal protection to investors (La Porta and Lopez de Silanes (1998)).

[2] NIM equals interest income minus interest expense divided by interest-bearing assets, averaged for each country's bank(s).
[3] We can use dummies (English or French colonies) to measure this.

La Porta and Lopez de Silanes (1998), considered two legal traditions: *common law* and *civil law.* Most English-speaking countries have inherited the common law tradition, with its commercial law being based on the British Companies Act. Other countries respect the civil law tradition, derived from Roman law. There are three main families: the French one, based on the Napoleonic code of 1804; the German one, based on Bismarck's code of 1911[4]; and the Scandinavian family, described by La Porta as being less derived from Roman law. In general, it is considered that common law countries give shareholders and creditors strong legal rights, and that French civil law countries offer only weak protection.

For La Porta and Lopez de Silanes (1998), the legal origins of law matter, and good protection and financial development are determined by different factors which concern the legal rules applying to shareholders, creditors and to contract enforcement[5].

Shareholders' rights: these concern, in particular, the right to vote, which is shareholders' main source of power. Other rights include anti-director rights; voting powers[6]; corporate voting participation rights[7]; cumulative voting for directors; proportional board representation mechanisms[8]; legal protection against directors' oppression[9]; a pre-emptive right[10]; the capacity to call an extraordinary shareholders' meeting[11], the right to a mandatory dividend[12]; and, finally, protection from expropriation by management.

Creditors' rights: in La Porta and Lopez de Silvanes (1998), the rules concerning creditors' rights cover loan security, asset seizure in case of loan default, and the impossibility for management to seek unilateral protection from creditors. Accordingly, La Porta and Lopez de Silvanes' study consider five dummies and an index: "No automatic stays on assets"[13]; "secured creditors paid first"[14]; "restrictions on going into reorganization"[15]; "Management cannot stay in reorganization"[16]; "creditors' rights"[17] and "Minimum mandatory legal reserve[18]". It is considered that these indicators measure the ease with which investors can exercise their powers against management.

Other authors stress the role of geographic endowments. Engerman and Sokoloff (1997) show that if geographic endowments and agricultural production fostered a large middle class, the institutions were more egalitarian but more closed if they fostered the rise of powerful elites.

[4] The first law was voted in 1883.
[5] This point is developed in part 4.3.
[6] Investors may be better protected when dividend rights are closely bound up with voting rights (i.e when companies in a country are subject to the one share/one vote rule). In the La Porta and Lopez de Silvanes study, the dummy "one share/one vote rule" is used to identify this shareholder right.
[7] Anti-director rights measure how strongly the legal system favours minority shareholders versus management or dominant shareholders in the corporate decision-making process, including the voting process. For these anti-director rights, the authors use a proxy: "voting by mail".
[8] The effect of either rule is to give minority shareholders more power to put their representatives on the boards of directors.
[9] These mechanisms may include, for example, the right to challenge the directors' decisions in court, or the right to force the company to repurchase the shares of those minority shareholders who object to certain fundamental management decisions.
[10] This right is intended to protect shareholders from dilution.
[11] It is assumed that the higher this percentage is, the harder it is for minority shareholders to organize a meeting to challenge or oust management. This percentage varies from 3 percent to 33 percent.
[12] The mandatory dividend right is a legal substitute for the weakness of other forms of minority shareholder protection.
[13] When a firm risks bankruptcy, two creditor strategies are possible: liquidation or reorganization. In some countries, in the case of re-organization, the procedures impose an automatic stay on assets. This rule protects managers and unsecured creditors against secured creditors, and prevents automatic liquidation.
[14] The dummy considers whether the secured creditors have the right or not to collateral in the event of reorganization.
[15] The dummy equals one if the reorganization procedures impose restrictions, such as creditor consent to file for reorganization. Such protection is called Chapter 11 in the USA.
[16] The dummy equals one when an official, appointed by the court or creditors, is responsible for the operation of the business during reorganization. This variable also equals one if the debtor does not keep the administration of the property pending the resolution of the reorganization process.
[17] This is an index which aggregates previous creditor rights. The index ranges from 0 to 4.
[18] This is the minimum mandatory percentage of total share capital required to avoid the dissolution of an existing firm.

Many other scholars, however, consider that politics and political institutions matter, and are more important than legal origins (Rajan and Zingales, 2003; Acemoglu, Johnson and Robinson 2004; Lamoreaux and Rosenthal, 2005). Nonetheless, it is clear that the size and structure of banking systems are influenced by both the demand for and the supply of financial services. The demand for banks and financial services is an endogenous outcome of the size and structure of the real economy. When wealth is highly concentrated, and the overall level of development is low, demand for banks is modest[19]; but, as economies grow, and wealth becomes more widely distributed, demand for bank and financial services increases (Haber, 2008). However, according to Haber (2008), bank and financial service supply and demand depend on four factors: *expropriation, contract enforcement, imprudent bankers, and political institution centrality.*

In order to eliminate or reduce the problem of expropriation, the only solution for a country is to creation political institutions that limit the authority and discretion of government (for example, when the central bank is independent). Alesina et al.(2003), and Easterly and Levine (2003), argue that in economies where there are major ethnic differences, the ruling group tends to implement policies that expropriate resources, and to restrict the rights of other ethnic groups. In the same vein, Fafchamps (2001) shows, in a study on Kenya, Tanzania, Zambia and Zimbabwe, that in the case of "trade credit usage", there is an ethnic bias among manufacturing firms. The direction of this bias is, in general, detrimental to entrepreneurs of African descent, but favourable to entrepreneurs originating from outside Africa. In this study, statistical discrimination and network effects can exclude certain firms from credit markets and from "normal" commercial practices. Black entrepreneurs and female-headed firms appear to have a harder time obtaining supplier credit, but ethnicity and gender do not greatly interfere with access to bank overdrafts and formal loans.

The problem of contract enforcement: For an extensive financial system to exist in a country, property rights must be transparent and enforceable at low cost (La Porta and Sivanes 1998; Levine 1999, Beck, Levine and Loayza (2000)). In countries where the judicial system facilitates contracts between private agents, and protects the rights of property and investors, savers are more inclined to invest in financial markets The country must have laws and rules which give guarantees to debtors and banks (a property register, a law regarding bankruptcy and foreclosure, a police force with the power of coercion). Countries with effective legal systems, and whose financial systems offer lower interest, are more efficient (Demirguc-Kunt, Laeven and Levine, 2005).

In what concerns the enforcement of laws, La Porta and Lopez de Silvanes (1998) consider the quality of legal rule enforcement, as well as that of their accounting systems. Do laws give enough protection, especially as regards corporate bankruptcy/ reorganization? These authors use five investor indicators, plus an index of the quality of a country's accounting standards[20]; the efficiency of its judicial system[21]; the rule of law[22]; the level of corruption[23]; the risk of expropriation[24]; and the likelihood of governmental contract repudiation[25].

For all these points, the quality of financial institutions matters but so, too, does the particular type of religion. For Stulz and Williamson (2003), religion and culture influence financial

[19] We can use the Gini coefficient of income inequality to measure this situation.
[20] For La Porta and Lopez de Silvanes (1998), accounting plays a crucial role in corporate governance. If investors are to know anything about the companies they invest in, basic accounting standards are needed to render company disclosures interpretable.
[21] This index, an assessment of the "efficiency and integrity of the legal environment as it affects business", is produced by Business International Corporation.
[22] This index, an assessment of the law and order tradition in the country, is produced by International Country Risk.
[23] This index, an assessment of corruption in government, is produced by International Country Risk.
[24] This index, an assessment of "outright confiscation" or "forced nationalization", is produced by International Country Risk.
[25] This index is created by examining and rating companies on their inclusion or omission of 90 items including general information, income statements, balance sheets, fund flow statements, accounting standards, stock dates.

development, so that Catholic and Muslim countries maintain, for example, more controls, and limit competition and private property rights. Consequently, we also include a dummy variable to indicate whether or not Islamic law matters in a particular country.

The problem of imprudent bankers. For banks to grow beyond the wealth of their initial shareholders, they must attract the wealth of outsider individuals and firms. These outsiders (depositors) will not deploy their wealth if they fear that bankers might behave imprudently. In order to avoid this, institutions can be created to reduce this risk (reserves against risk). Consequently, in what concerns financial development, the legal and judicial framework do matter.

The centrality of political institutions: Centralized and powerful states are more responsive to, and efficient at, implementing policies that protect the interest of the elite than is the case for decentralized, competitive political systems. As the banking system constitutes a source of finance for government, this means that powerful, centralized states are more sensitive to bank system control and tend to foster bank concentration (Haber 2004, Rajan and Zingales (2003). Governmental financial sources include revenues from taxes on bank capital or bank profits, dividend income from bank stock, and the mandatory purchase of government bonds. Centralized and powerful states are more likely to control these sources of funds to finance their debt. The amount of the national debt, as well as its financing by securities or credits[26], and the size of securities markets, are good indicators of financial depth.

In this respect, relations between the financial system and government are crucial. On the one hand, central banks, which apply the country's monetary policy, are relatively independent of governments. On the other hand, intensity of competition between banks is determined by politics, and the government relies on banks and markets to provide it with a source of funds (national debt can be financed by monetary financing or by bond markets). The growth of both banks and securities markets is not possible without a government that ensures the enforcement of financial contracts. The interest conflict between these agents has a strong influence on financial development.

Equally, government policy influences financial development. In order to promote a well-functioning financial system, governments must ensure a stable political and macroeconomic environment, because instability and corruption[27] have negative effects on the business environment, financial development and growth (Detragiache, Gupta and Tressel, 2005; Ayyagari, Demirguc-Kunt and Maksimovic, 2005). Monetary policy choices also affect financial development, and empirical studies show that lower and stable inflation rates permit higher levels of financial development (banks and stock markets) (Boyd, Levine and Smith, 2001). When state-owned banks are predominant - which is often the case in LDCs - the financial system is less developed, more concentrated, and countries are more likely to face systematic risks (La Porta et al 2002).

3. Empirical analysis: Methods and data

3.1 Data

The first dataset consists of 154 countries. The reference year for all observations is 2005 but when data observations were missing, we retain older data until 2000. This strategy seems relevant since we use mainly structural variables which are quite time-invariant. In spite of this adjustment, there are always missing values. Yet, one of the main purposes of our study is to construct a typology of financial models for a sample as large as possible including industrialized, transition, emerging and

[26] In our empirical study we introduce the amount of public debt financed by securities.
[27] In our empirical study we introduce corruption indicators.

less-developed countries. So the treatment of missing observations is an important issue. We have cut down the initial sample of 154 countries by eliminating those for which less than 50% of variables were known and controlled for the representativeness of the remaining sample[28]. In the entire analysis, the role of the remaining missing data has been cancelled out using the corresponding mean values. Finally we use only of 133 countries in our empirical study[29].

In connection with the previous literature, fourteen quantitative variables are retained to implement PCA and k-means cluster analysis[30].

- The Liquid liabilities (M3) as a percent of GDP (M3); a measurement of Financial Development noted by FD[31] and a measurement of Financial Architecture (to determine if system is bank-oriented or market-oriented) noted by ARCHI[32]. DOMCRE measures part of the bank credit in the financing of economy.

ARCHI, DOMCRE , M3 and FD measure **liquidity**, **size and structure** of financial system.

- We use also two indexes to measure investor and creditors protections: Legal rights of Borrowers and Lenders Index (noted LRLI)[33] and a Credit Information Availability index noted by CIA[34]. One variable measures both difficulties to obtain capital and the degree of competition in banking sector: level of Lending Interest Rate (%) noted by LIR.

- Two variables measure internal banking regulation at the level on interest rates: INT_CONT which measures if interest rates or controlled by state, central banks or if banks can propose freely interest rate[35] ; CDTREG which measures a more general internal banking regulation by state or central banks (rules, ownership of banks, foreign bank competition,…)[36]. It) measures the degree of competition between banks (more the rate is low more the competition is strong). It also measures the degree of accessibility to the capital

- Two variables measure investment restrictions on international capital movements: CAPCONTC is an index which measures if exist restriction on international capital movements (without consider restrictions on FDI); CAPCONTC measures restrictions on inflows of capital_index where a higher score indicates less restrictions to capital inflows. We use also CAPCONT–I which measures percentage of capital controls not levied as a share of the total number of capital controls listed by IMF_index and where a higher score means a smaller number of capital controls are used –

- Finally we add level of FDI (percent of GDP) as a proxy of globalization and openness of financial system. INV_REST measures the level of restrictions on FDI.

The data summary statistics and simple correlations between considered variables are in appendix 1. The correlation matrix shows that four variable are strongly correlated the some with others: Domestic Credit; M3 (Liquidity); Financial Development and Market capitalization. We choose to keep all this variables in analysis because this allow us to describe either the depth of the financial

[28] We fill missing values by assigning the nearest neighbour observation on the basis of all the variables retained for the analysis, but when number of missing values was too significant we eliminate countries.
[29] Note that complete information is available for 133 countries (86% of the sample) and that 3.75% of them only suffer a single missing variable.
[30] The sources are presented in table A1.
[31] This variable is constructed as the sum of market capitalization plus domestic credit provided by banking sector (% of GDP).
[32] This variable is constructed as the ratio of market capitalization to domestic credit provided by banking sector.
[33] This index varies from 0 (less protection) to 10 (more protection).
[34] This index varies from 0 (less information) to 6 (more information).
[35] This index varies from 0 (less protection) to 10 (more protection).
[36] This index varies from 0 (less protection) to 10 (more protection).

market, the size of capital markets (and to test the hypothesis of the market-based), or the level of domestic credit (and to test the hypothesis of the bank-market- oriented) in each countries.

3.2. Principal Component Analysis

In the first time we realize Principal Component Analysis (PCA).This empirical method allows the synthetic representation, mostly graphical, of large data tables. The basic principle is to reduce the number of dimensions of a table so as to obtain pertinent information. This compression of data is carried out without much loss of information. Factorial analysis methods consist in searching a low dimension subspace as the best proxy for the initial scatter of points (multidimensional). Proximities within the factorial space are analysed to understand links between variables, and the similarities among statistical units. To complete analysis three categorical variables describing the geographical localization, the HDI level and the socio-economic situation of each country have been added as supplementary variables in the analysis[37]. With this categorical variables we can note that our sample of countries includes 31,58% of emerging countries (appendix 2).

The results of PCA are summarized in table 1 and figure 2, 3. The number of components to retain depends on (i) the proportion of total variance explained by each component, (ii) the absolute variance explained by each component (the Eigenvalue of each component retained should excess one) and (iii) the ability of each component to be interpreted meaningfully. By examining the results of PCA, we can extract four principal components, accounting for more than 62 percent of the total variance.

Table 1 below shows PCA Eigen values[38], active variables correlation and supplementary variable coordinates. We choose to examine the two first principal components because, if four components have Eigenvalues superior to 1 (Kaiser's criterion of factor extraction), there is a break after the second component in the screeplot. The first axis explains 33.54% of the total variance and the second 11.68%. In consequence, we capture 45.21% of the complete information of the dataset only on the first plan.

The first component explains about 35 percent of total variance. The contributions of variables show that F1 captures mostly negative correlations between M3, DF (liquidity, market size), CIA (credit information), INV-REST (restriction on FDI), INT_CONT. Consequently, countries with a deep financial market are those which have a good credit information, a deregulate bank system, low internal controls on banks and low restriction on capital movements. Not surprisingly, correlations of supplementary variables with this component show that LDC, with low HDI, mostly of Sub-Saharan Africa or South Asia, have poor financial systems and that industrialized or emerging countries, with high or very high HDI, form OECD or Europe and Central Asia, have the most developed financial systems. (Table 1) . As an illustration, United Kingdom (or Honk-Kong) which is a big financial place with high INV-REST index, a deregulate system and where FDI represents 7% of GDP (Graph 2).

[37] Note that these variables do not affect the construction of principal factors..

[38] The 'factorability' of the database was verified: The Bartlett's test of sphericity shows that the correlation matrix is statistically different from an identity matrix (p=0.000) and the Kaiser-Meyer-Olkin measure of sampling adequacy is 0.8 which is close to 1 (>0.6) indicating that patterns of correlation are relatively compact. Therefore, factor analysis is appropriate.

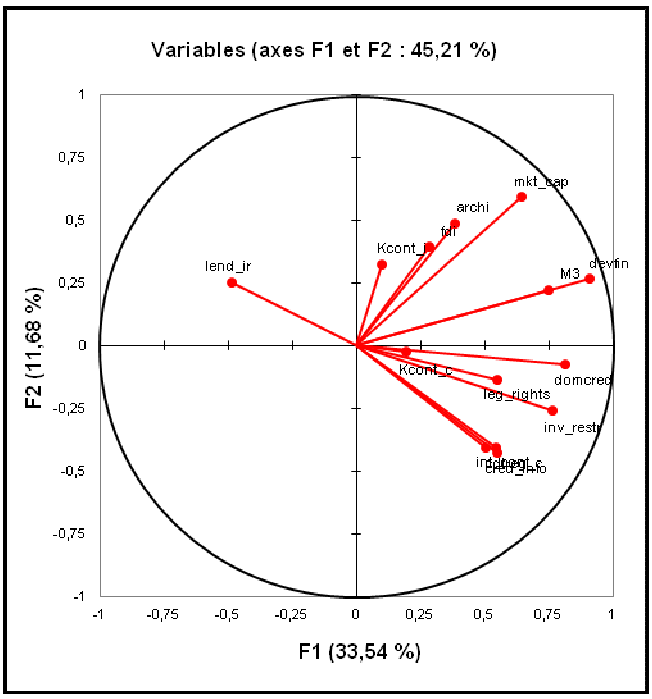
Table 1. PCA Eigen values – active variable-axes correlations[1] and supplementary variable coordinates

	PC1	PC2	PC3	PC4	PC5
Eigen values	**4.6951**	**1.6350**	**1.2664**	**1.1002**	.9194
% of variance	33.54	11.68	9.05	7.86	6.57
Cumulative %	33.54	45.21	54.26	62.12	68.69
Domestic credit	-0.81	-0.08	0.33	-0.14	-0.28
M3	-0.75	0.22	0.15	-0.24	-0.30
Market capitalization	-0.64	0.60	0.10	-0.09	0.08
Financial development	-0.91	0.27	0.19	-0.14	-0.7
Financial architecture	-0.38	0.48	-0.23	-0.20	0.63
Legal-right	-0.55	-0.13	-0.12	0.25	0.7
CIA	-0.55	-0.43	0.2	0.18	-0.3
Lend-ir	0.49	0.25	0.27	0.17	-0.27
Investment restrictions	-0.76	-0.26	-0.50	0.20	0.10
FDI	-0.28	0.39	-0.28	0.43	-0.25
Kcontrol1	-0.19	-0.3	0.47	0.68	0.34
Kcontrol2	-0.10	0.32	-0.56	0.42	-0.23
Interest control	-0.50	-0.41	-0.49	-0.17	-0.09
Credit regulation	-0.54	-0.41	-0.20	0.18	0.13
OECD	**-2.43**	**-0.63**	**0.49**	-0.16	0.11
East Asia and Pacific	**-2.19**	**0.80**	-0.43	0.23	-0.34
Europe and Central Asia	0.23	**-0.57**	**-0.56**	**0.69**	0.22
Latin America and the Caribbeans	0.62	-0.28	0.16	-0.09	**0.13**
Middle-East and North Africa	-0.46	**1.06**	-0.13	**-1.03**	-0.22
Sub-Saharan Africa	**1.80**	**0.36**	0.15	0.7	-0.12
South Asia	0.58	-0.45	-0.16	-0.67	0.16
Low HDI	**2.00**	**0.52**	0.15	-0.7	0.4
Middle HDI	0.44	-0.08	-0.25	-0.11	**-0.45**
High HDI	-0.15	-0.23	-0.08	0.20	**0.47**
Very high HDI	**-2.26***	-0.32	0.14	0.03	0.07
Industrialized countries	**-1.43**	**-0.64**	0.19	0.20	0.07
Emerging countries[2]	**-0.80**	0.00	**-0.30***	**-0.28**	-0.05
Developing countries	**-0.60***	0.37	-0.22	0.19	0.00
Less developed countries	**2.23**	**0.51***	**0.44**	-0.05	-0.01

Notes: (1) for supplementary variables, significant correlations at a 5 % level are shown in bold characters; (2) emerging countries are those that have been considered as such by at least one of the following institutions: Boston Consulting Group, BNP Paribas, IMF or Standard and Poor's

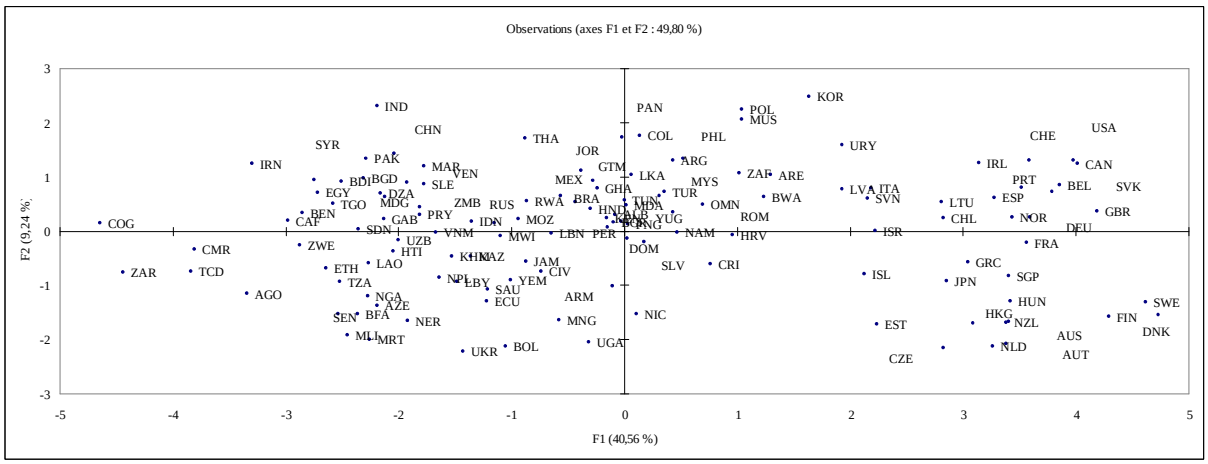
The first factor also captures positive correlation between these variables and the LIR (lending interest rate). Therefore, the localisation of countries regarding this first component can be interpreted in terms of financial development depth (or not) but also in terms of access facilities to funds.

Graph 1. Projection of active variables on the first factorial plan



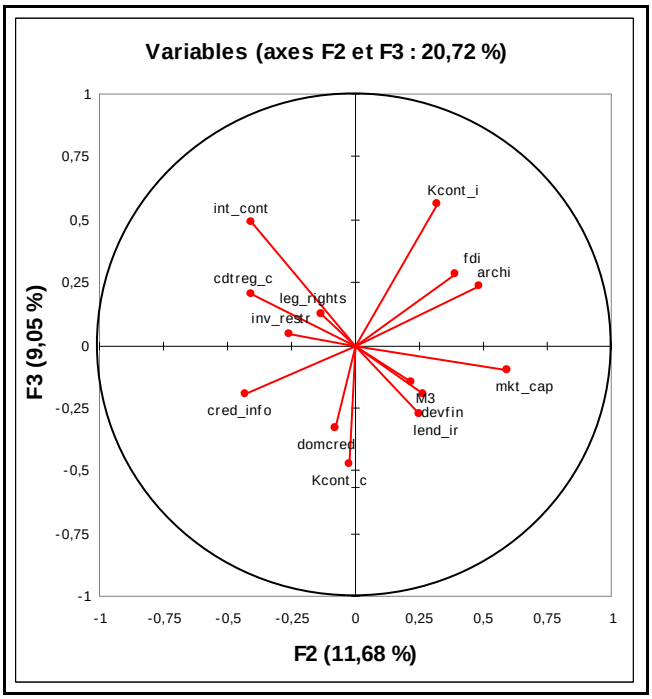
This first component distinguishes so countries according to their level financial development. Poor systems are localised on the left of the first plan while very sophisticated and complete systems are on the right. For example, on the projection of the individuals on the first plan (cf. graph 2), we can see on the right of the plan countries like, USA, Canada, United Kingdom, Germany, France, New Zealand or Denmark. Countries where financial markets are mature. On the other side, in Ethiopia, Sierra-Leone, Mozambique, Guinea or Niger but in also China, Brazil, India accessibility to the capital markets remains difficult.

Graph 2. Projection of countries on the first factorial plan



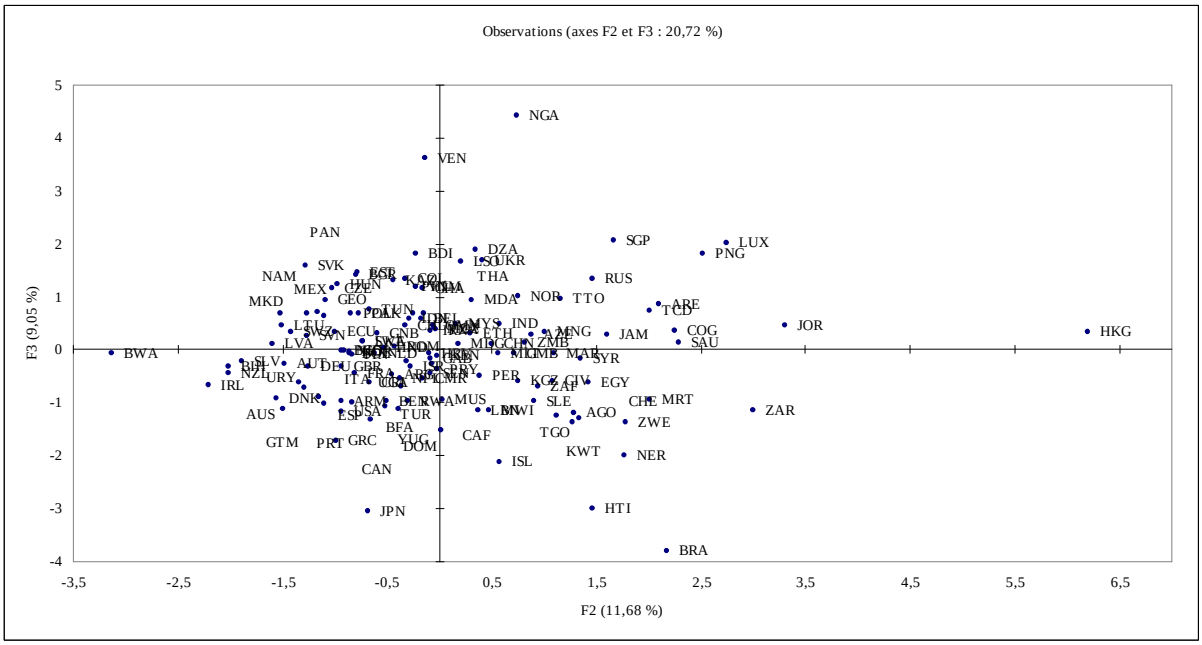
Most of the variance explained by component F2 comes from the variable FDI and Market capitalization, CAPCONTC and finally by ARCHI. Consequently, this second factor captures, for capital movements, the degree of country's international openness, level of deregulation systems but also the fact of countries are market based. In our empirical study countries which accept international capital movements, which are also market-oriented, accept a high level of deregulation (top of graph 2). Countries which are more bank-oriented are also more regulate (bottom of Graph.2)

Graph 3. Projection of active variables on the second factorial plan



The contributions of variables show that F3 captures negative correlations between, Capital control, interest control, investment restriction, banking sector regulation. Consequently, countries with poor financial market but bank-based there are also countries with deregulate system (in the graph the southeast part F1-F2). F3 indicating that we can oppose countries with large deregulate system and countries with weak but system strongly regulate.

Graph 4. Projection of countries on the second factorial plan



As a result of PCA, countries can be classified regarding the degree of financial development, the degree of international openness and banking sector controls level.

In order to back up PCA results, twenty-five bootstrap replications of the initial sample have been implemented in order to provide confidence intervals for the projected variables coordinates.. This method indicates a real stability of our results because only some isolated points of replication cross two axes. Then we can establish our comments on all the variables retained without any fear .

The last analyse supports the idea of a four group classification so as to identify models of financial development deep or not, bank-based or not, regulate or not As we can on the right side in graph2 the projection of countries on the first factorial plan, there are mainly industrialized countries, and the former and "old" emerging countries (Hong-Kong, Korea, and Thailand). On the left side, there are only less developed countries. But the situation of all these countries does not seem homogeneous regarding F2.

If PCA helps suggesting a classification, it cannot identify precisely the composition and the characteristics of different categories. The construction of typologies is the main objective of cluster analysis methods.

3.3. Three models of financial development

In a second step, we use cluster analysis in order to construct a typology of financial models. Cluster analysis is a statistical method that classifies objects (i.e. countries) into clusters according to the characteristics of the objects (that have been identified with PCA). Objects in the same cluster share significant homogeneity whereas there is significant heterogeneity among objects in different clusters. In this study, we run k-means cluster analysis which is a non-hierarchical cluster method that fits well for a set of continuous variables. It produces only one solution for a predetermined number of clusters.

A k-means cluster analysis has been implemented on the basis of the 14 variables of PCA in order to classify 133 countries into three may be fuzzy because some countries may have a financial system profile that is in fact not really distinct from the average one. It's the reason why we create a fourth category by selecting the 10 percent of countries whose Euclidean distance to the average observation is the weakest (indistinct group). In order to define the groups that cluster analysis has generated, the means of classification and characterization variables for each cluster are reported in table 2. The composition of each group is shown in table 3.

Table 3 : Composition of the clusters

Indistinct *G0*	*embryonic financial system* *G1*	*Intermediate Financial system* *bank-Oriented* *G2*	*Financial system in maturity* *Market-Oriented* *G3*
France	Algeria	Austria	Australia
Gabon	Angola	Argentina	Canada
Honduras	Armenia	Belgium	Denmark
Croatia	Azerbaijan	Bangladesch	Finland
Indonesia	Benin	Bolivia	Germany
Sri Lanka	Brazil	Bosnia and Herzegovina	Hong Kong, China
Macedonia	Botswana	Bulgaria	Iceland
Nicaragua	Burkina Faso	Chile	Ireland
Oman	Burundi	China	Israel
Philippines	Cameroon	Colombia	Japan
Poland	Central African Republic	Costa Rica	Jordan
Romania	Chad	Czech Republic	Korea, Rep.
Slovenia	Congo, Dem. Rep.	Dominican Republic	Lebanon
Serbia and Montenegro	Congo, Rep.	Ecuador	Luxembourg
	Cote d'Ivoire	Egypt, Arab Rep.	Malaysia
	Ethiopia	El Salvador	Netherlands
	Gambia,	Estonia	New Zealand
	Haiti	Finlan	Singapore
	Kenya	Georgia	South Africa
	Kyrgyz Republic	Ghana	Spain
	Lesotho	Guninea Bissau	Sweden
	Madagascar	Greece	Switzerland
	Malawi	Guatemala	United Kingdom
	Mali	Honduras	United States
	Mauritania	Croatia	
	Moldova	Hungary	
	Mongolia	India	
	Morocco	Iran	
	Mozambique	Italy	
	Myanmar	Jamaica	
	Niger	Kazakhstan	
	Nigeria	Kuwait	
	Paraguay	Latvia	
	Ruwanda	Lithuania	
	Senegal	Mauritius	
	Sierra Leone	Mexico	
	Syrian Arab Republic	Namibia	
	Tanzania	Nepal	
	Togo	Norway	
	Uganda	Pakistan	
	Venezuela, RB	Panama	
	Zambia	Peru	
	Zimbabwe	Papua New Guinea	
		Portugall	
		Russia	
		Saudi Arabia	
		El Salvador	
		Slovak R.	
		Swaziland	
		Thailand	
		Trinidad and Tobago	
		Tunisia	
		Turkey	
		Ukraine	
		Uruguay	
		United Arab Emirates	
		Vietnam	

Table 2a - Compared means of active, supplementary

	Indistinct group	*embryonic financial system*	*Intermediate Financial system bank-Oriented*	*Financial system in maturity Market-Oriented*	**All**
Domestic credit	49,06	**21.90**	57.55	**160.09**	64.09
M3	45,09	**30.66**	52.20	**118.85**	53.88
Market capitalization	**31,38**	***21.71***	50.25	**145.35**	66.91
Financial development	73,50	**29.50**	**103.76**	*305.72*	114.01
Financial architecture	0,49	**0.08**	1.04	**1.02**	0.68
Legal-right	4,46	**4.21**	**4.61**	**7.18**	4.90
CIA	3,07	**1.52**	**3.88**	**5.04**	3.24
Lend-ir	**11,34**	**23.99**	**11.20**	**6.06**	14.35
Investment restrictions	**6,57**	**4.37**	6.57	**7.93**	6.10
FDI	*3,47*	3.23	3.71	**17.44**	6.00
KcontrolC	**10**	**9.69**	9.94	**10**	9.88
KcontrolI	5,35	5.46	5.84	5.58	5.62
Interest control	9,57	**8.22**	**9.71**	**9.95**	9.27
Credit regulation	8,41	**7.38**	8.37	**0.06**	8.18
GDP per capita	1.096e+04	2.3704e+03	1.2484e+04	3.0238e+04	1.2200e+04
HDI	*2.3*	3.6	2.3	1.22	2.5
Gini capita (current US$ 2006)	8255	1122	9874	33611	11066

Notes: (1) emerging countries are those that have been considered as such by at least one of the following institutions: Boston Consulting Group, BNP Paribas, IMF or Standard and Poor's (2) The values that significantly differ from those of all other countries at a 5% level (independent samples t-test) are in bold; those at a 10% level are in bold and italics.

Table 2.b - and informative variables by cluster

	Indistinct group	*embryonic financial system*	*Intermediate Financial system bank-Oriented*	*Financial system in maturity Market-Oriented*
OECD	7	**0**	13	65.2
East Asia and Pacific	14	**2.4**	7.4	21.7
Europe and Central Asia	42	9.5	24.1	0
Latin America and the Caribbeans	14	95	27.8	0
Middle-East and North Africa	7	7.1	11.1	8.7
Sub-Saharan Africa	7	71.4	**9.3**	4.3
South Asia	7	0	**7.4**	0
TOTAL	100	100	**100**	100
Low HDI	0	71.4	**13**	0
Medium HDI	42.9	26.2	25.9	8.7
High HDI	35.7	**2.4**	40.7	4.3
Very high HDI	14.3	**0**	20.4	82.7
TOTAL	100	**100**	100	95(4.3%mising)
Industrialized countries	21.4	**9.5**	27.8	65.2
Emerging countries[1]	57.1	14.3	24.1	21.7
Developing countries	31.24	21.4	24.1	13
Less developed countries	0	54.8	**5.6**	0
TOTAL	100	100	**100**	100

Notes: (1) emerging countries are those that have been considered as such by at least one of the following institutions: Boston Consulting Group, BNP Paribas, IMF or Standard and Poor's (2) The values that significantly differ from those of all other countries at a 5% level (independent samples t-test) are in bold; those at a 10% level are in bold and italics.

The first group describes a *financial system in maturity*: deep; market-based and deregulate (low internal and external regulation). This group, in each case, has highest means for all variables. This category is quite representative of *liberal system market oriented*. Three developed countries which are typical of this liberal model (United States, United Kingdom, and Canada).

When we consider means of variables it seems more easily to compare the first group with the third group which has in lot of cases lowest means. The third group has a weak system, investors and creditors are badly protected, banking regulation is strong and it is difficult to obtain the capital. level of regulation on international flows is also very high The third group describes an *embryonic financial system.* In this category we find mainly countries of sub-Saharan Africa.

Finally the composition of the second cluster confirms is proximity with the liberal model of financial development (*financial system in maturity*). Mean variables show that several features of the liberal model exits in this group but financial system is less developed and his structure is bank oriented. In group 1, the mean of variable ARCHI is lower than 1, then direct finance is more important in the economy. In the group 2, variables ARCHI is superior to 1, the indirect finance dominates. We name this group: *Intermediate financial system bank oriented.*

4. Conclusion

We find standard results according to which there are two types of financial systems: market-oriented and bank-oriented. LDC countries are characterized by weakness of their system, a strong banking regulation and a difficult access to financing.

We find emerging countries in all groups of countries. However, they are relatively more numerous in the group 2. We cannot say without an econometric study if it is the financial development which accompanied the “take-off” or the opposite. However it seems that the financial development (rather of banking type and rather regulated) which characterizes numerous emerging countries

.

Appendix 1

Table A.1b corrélation Matrix (Pearson (n))

Variables	domcred	M3	mkt_cap	devfin	archi	leg_rights	cred_info	lend_ir	inv_restr	fdi	Kcont_c	Kcont_i	int_cont	cdtreg_c
domcred	**1**	**0,683**	**0,420**	**0,850**	0,084	**0,362**	**0,470**	**-0,304**	**0,570**	0,107	0,138	-0,081	**0,306**	**0,325**
M3	**0,683**	**1**	**0,531**	**0,733**	**0,220**	**0,294**	**0,289**	**-0,264**	**0,457**	**0,183**	0,085	0,131	**0,263**	**0,208**
mkt_cap	**0,420**	**0,531**	**1**	**0,789**	**0,469**	**0,256**	0,118	-0,157	**0,276**	**0,309**	0,105	0,100	0,084	0,166
devfin	**0,850**	**0,733**	**0,789**	**1**	**0,404**	**0,399**	**0,395**	**-0,314**	**0,579**	**0,243**	0,137	0,048	**0,286**	**0,328**
archi	0,084	**0,220**	**0,469**	**0,404**	**1**	0,118	0,015	**-0,192**	**0,268**	0,122	0,005	0,135	0,090	0,091
leg_rights	**0,362**	**0,294**	**0,256**	**0,399**	0,118	**1**	**0,188**	**-0,206**	**0,409**	0,110	0,127	0,096	**0,243**	**0,426**
cred_info	**0,470**	**0,289**	0,118	**0,395**	0,015	**0,188**	**1**	**-0,271**	**0,480**	0,022	**0,225**	-0,006	**0,277**	**0,376**
lend_ir	**-0,304**	**-0,264**	-0,157	**-0,314**	**-0,192**	**-0,206**	**-0,271**	**1**	**-0,346**	-0,068	-0,045	-0,020	**-0,391**	**-0,262**
inv_restr	**0,570**	**0,457**	**0,276**	**0,579**	**0,268**	**0,409**	**0,480**	**-0,346**	**1**	0,135	0,166	0,009	**0,484**	**0,441**
fdi	0,107	**0,183**	**0,309**	**0,243**	0,122	0,110	0,022	-0,068	0,135	**1**	0,073	**0,216**	0,087	0,113
Kcont_c	0,138	0,085	0,105	0,137	0,005	0,127	**0,225**	-0,045	0,166	0,073	**1**	-0,007	-0,111	0,076
Kcont_i	-0,081	0,131	0,100	0,048	0,135	0,096	-0,006	-0,020	0,009	**0,216**	-0,007	**1**	0,098	-0,006
int_cont	**0,306**	**0,263**	0,084	**0,286**	0,090	**0,243**	**0,277**	**-0,391**	**0,484**	0,087	-0,111	0,098	**1**	**0,382**
cdtreg_c	**0,325**	**0,208**	0,166	**0,328**	0,091	**0,426**	**0,376**	**-0,262**	**0,441**	0,113	0,076	-0,006	**0,382**	**1**

Les valeurs en gras sont significativement différentes de 0 à un niveau de signification alpha=0,05

Table A.1c Data summary statistics - Averages for 13 countries (standard deviation)

Variables	All	OECD	East Asia and Pacific	Europe and Central Asia	Latin America and the Caribbeans	Middle-East and North Africa	Sub-Saharan Africa	South Asia
Domestic credit	64.09 (5.92e+01)	1.04e+02 (5.20e+01)	1.05e+02 (7.95e+01)	36.43 (2.11e+01)	43.22 (2.29e+01)	76.60 (7.72e+01)	26.60 (3.63e+01)	48.03 (8.26355)
M3	53.88 (4.13e+01)	92.15 (3.82e+01)	1.10e+02 (6.89e+01)	42.53 (1.62e+01)	40.89 (1.30e+01)	90.32 (5.64e+01)	30.80 (2.41e+01)	48.70 (1.06e+01)
Market capitalization	66.91 (7.97^{e}+01)	97.31 (5.21^{e}+01)	1.35^{e}+02 (1.59^{e}+02)	23.85 (1.61^{e}+01)	42.67 (4.38^{e}+01)	1.15^{e}+02 (1.00^{e}+02)	34.44 (6.26^{e}+01)	30.51 (2.53^{e}+01)
Financial development	1.14^{e}+02 (1.18^{e}+02)	2.38^{e}+02 (8.88^{e}+01)	2.17^{e}+02 (1.89^{e}+02)	60.18 (3.10^{e}+01)	75.73 (5.40^{e}+01)	1.83^{e}+02 (1.14^{e}+02)	40.12 (7.45^{e}+01)	82.92 (3.41^{e}+01)
Financial architecture	0.68 (1.16364)	0.94 (1.24359)	1.285 (1.52882)	0.58 (0.71856)	0.81 (1.15093)	1.44 (1.5249)	0.10 (0.9115)	0.68 (0.45364)
Legal-right	4.90 (1.92496)	6.45 (1.89554)	5.75 (2.34036)	5.63 (1.64882)	3.90 (1.22085)	3.5 (1.16775)	4.32 (1.70056)	4.60 (1.51658)
CIA	3.24 (2.04973)	4.95 (0.78542)	3.83 (1.74946)	3.36 (1.83991)	4.71 (1.90113)	2.41 (1.50504)	1.45 (1.55625)	2.8 (0.83666)
Lend-ir	14.35 (1.14e+01)	5.394 (2.61053)	8.99 (5.72725)	12.08 (6.28014)	17.44 (1.12e+01)	9.73 (3.26618)	22.63 (1.52e+01)	9.96 (3.1131)
Investment restrictions	6.10 (1.77327)	8.01 (0.57224)	6.82 (1.60496)	6.19 (1.70328)	5.85 (1.21328)	6.47 (0.7288)	4.62 (1.67727)	5.84 (0.91718)
FDI	6.00 (2.67e+01)	15.43 (6.25e+01)	5.35 (6.75121)	5.88 (4.8096)	3.65 (2.76362)	4.258 (4.67613)	2.74 (3.73003)	1.06 (0.71234)
Kcontrol1	9.88 (0.50593)	10 (0)	10 (0)	10 (22)	9.76 (0.80316)	9.58 (0.6675)	9.85 (0.61468)	9.81 (0.42485)
Kcontrol2	5.62 (2.31604)	4.53 ((1.7318)	8.41 (2.55789)	6.08 (2.09713)	5.01 (1.86653)	6.14 (1.48137)	5.43 (2.44731)	4.83 (2.06682)
Interest control	9.24 (1.24682)	9.86 (0.34435)	9.75 (0.62158)	9.43 (1.03687)	9.04 (1.49921)	9.5 (0.97183)	8.55 (1.56071)	10 (0)
Credit regulation	8.18 (1.19567)	8.93 (0.68742)	8.52 (0.83346)	8.74 (0.83814)	8.07 (1.03924)	7.09 (1.56648)	7.70 (1.30163)	7.32 (0.90913)
N	**131**	**23**	**12**	**22**	**21**	**12**	**36**	**5**

Table A.1d Data summary statistics - Averages for 13 countries (standard deviation)

Variables	All	Low HDI	Middle HDI	High HDI	Very high HDI
Domestic credit	63.14 (.5.85e+01))	20.90 (1.80e+01)	53.61 (4.17e+01)	53.76 (3.61e+01)	1.27e+01 (6.53e+01)
M3	52.38 (4.02e+01)	28.70 (1.43e+01)	54.46 (3.47e+01)	50.34 (2.88e+01)	96.64 (5.71e+01)
Market capitalization	67.37 (8.00^{e}+01)	25.89 (2.90^{e}+01)	51.73 (7.39^{e}+01)	53.22 (5.41^{e}+01)	1.07^{e}+02 (1.00e+02
Financial development	1.13^{e}+02 (1.19^{e}+02)	3015 (3.44^{e}+01)	89.17 (9.92^{e}+01)	1.06^{e}+02 (7.35^{e}+01)	2.34^{e}+02 (1.33^{e}+02)
Financial architecture	0.69 (1.167115)	0.34 (0.84926)	0.28 (1.03042)	1.16 (1.26571)	1.07 (1.27579)
Legal-right	4.92 (1.93089)	4.2432 (1.70629)	4.21 (1.34065)	4.85 (1.77877)	6.54 (1.9466)
CIA	3.24 (2.05027)	1.24 (1.25622)	3.42 (1.7326)	4 (2.09054)	4.77 (0.99028)
Lend-ir	14.46 (1.15e+01)	22.94 (1.56e+01)	14.55 (6.18255)	13.5819 (1.06e+01)	5.64 (2.36541)
Investment restrictions	6.10 (1.78028)	4.43 (1.62059)	5.787 (1.19933)	6.39 (1.14089)	8.00 (0.61892)
FDI	5.95 (2.69e+01)	2.52 (3.7277)	3.62 (3.45035)	4.33 (2.47642)	14.19 (5.47e+01)
Kcontrolc	9.88 (0.50783)	9.82 (0.62872)	9.73 (0.73681)	9.99 (0.03657)	10 (0)
Kcontroli	5.62 (2.32506)	5.26 (2.66056)	6.3636 (2.12401)	5.43 (1.88491)	5.42 (2.50279)
Interest control	9.26 (1.25007)	8.44 (1.67316)	9.45 (0.93845)	9.32 (1.15642)	9.90 (0.29614)
Credit regulation	8.18 (1.19923)	7.46 (1.18346)	7.87 (1.2836)	8.52 (0.98031)	8.95 (0.64525)
N	**128**	**35**	**32**	**28**	**32**

Table A.1e Data summary statistics - Averages for 13 countries (standard deviation)

Variables	All	Industrialized countries	Emerging countries*	Developing countries	Less developed countries
Domestic credit	64.093 (5.92e+01.)	1.09e+02 (7.62e+01)	18.20. (.1.30e+01)	49.33 (4.40+01)	18.20. (.1.30e+01)
M3	53.88 (4.31e+01)	63.64 (4.85+01)	27.17 (1.13+01)	62.64 (5.92+01)	27.17 (1.13+01)
Market capitalization	66.91 (7.97^{e}+01)	71.11 (5.80^{e}+01)	9.13 (4.83)	90.29 (1.35e+02)	9.13 (4.83)
Financial development	1.14e+02 (1.18^{e}+02)	1.75^{e}+0.2 (1.26^{e}+01)	19.18 (.1.39e+01)	1.10e+02 (1.43e+02)	19.18 (.1.39e+01)
Financial architecture	0.68 (1.16364)	0.70 (1.04661)	0.045 (0.14244)	0.81 (1.8329)	0.045 (0.14244)
Legal-right	4.90 (1.92496)	6.31 (1.76187)	3.96 (1.611)	5.071 (1.84448)	3.96 (1.611)
CIA	3.24 (2.04973)	4.37 (1.47699)	1.15 (1.00766)	3.10 (2.06091)	1.15 (1.00766)
Lend-ir	14.35 (1.14e+01)	9.31 (6.9376)	23.28 (1.40e+01)	14.24 (6.17269)	23.28 (1.40e+01)
Investment restrictions	6.10 (1.77327)	7.19 (1.66648)	4.180 (1.65158)	6.12 (1.5532)	4.180 (1.65158)
FDI	6.00 (2.67e+01)	11.99 (4.92e+01)	2.59 (365765)	4.95 (5.57741)	2.59 (3.65765)
Kcontrolc	9.88 (0.5059)	10 (0)	9.89 (0.51579)	9.90 (0.20809)	9.89 (0.51579)
Kcontroli	5.62 (2.31604)	493 (2.14145)	4.7569 (2.54166)	6.4223 (2.43249)	4.7569 (2.54166)
Interest control	9.27 (1.24682)	9.62 (0.8612)	8.32 (1.79629)	9.19 (0.84943)	8.32 (1.79629)
Credit regulation	8.18 (1.19567)	8.9654 (0.67751)	7.43 (1.26631)	8.07 (1.34232)	7.43 (1.26631)
N	**131**	**37**	**41**	**28**	**26**

* In that table, emerging countries are those that have been considered as such by at least one of the following institutions: Boston Consulting Group, BNP Paribas, IMF or Standard and Poor's

Appendix 2

Table A.1 a Elementary statistics about supplementary variables

Distributions of categorical variables		
Variables	Bases	
Countries groups	Absolu	%/ Total
LDC	28	21.5
Emerging countries	42	**31.58**
Developed countries	37	27.82
LDC	**26**	19.55
Missing	0	0
All	**133**	100
Distributions of categorical variables		
Variables	Bases	
HDI	Absolu	%/ Total
H.HDI	28	21.5
L.HDI	**37**	27.82
M.HDI	**33**	24.81
V.L.HDI	**32**	24.06
Missing	**2**	1.5
All	**133**	100
Distributions of categorical variables		
Variables	Bases	
Regional Groups	Absolu	%/ Total
East Asia and Pacific	12	9.02
Europe and Central Asia	23	17.29
Latin America and the Caribbeans	21	15.79
Middle-East and North Africa	12	9.02
OCDE	23	17.23
South Asia	**5**	3.76
Sub-Saharan Africa	**37**	27.82
Missing	**0**	0
All	**133**	100

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