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What matters for financial development? Capital controls, institutions, and interactions

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Abstract

We investigate whether financial openness leads to financial development after controlling for the level of legal development using a panel encompassing 108 countries over the period 1980 to 2000. We also examine the issue of the optimal sequence of liberalization in both goods and financial markets. Our findings suggest that a higher level of financial openness spurs equity market development only if a threshold level of legal development has been attained. On the issue of sequencing, we find that trade openness is a prerequisite for capital account liberalization while banking system development is a precondition for equity market development.

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1. Introduction

Recent years have witnessed a surge of interest in issues surrounding globalization, including financial globalization. A series of financial crises in the 1990s rekindled the debates on the effects of removing capital controls, which led many observers to reconsider

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gains and pains of financial liberalization (Kaminsky and Schmukler, 2001a,b, 2002; Schmukler, 2003).[1]

Many studies have argued capital account liberalization can affect economic development through financial development; liberalized financial markets may contribute to developing financial markets that provide funds to borrowers who may have productive investment opportunities.[2] Theory suggests that capital account liberalization can lead to development of financial systems through several channels. First, financial liberalization may mitigate financial repression in protected financial markets, allowing the (real) interest rate to rise to its competitive market equilibrium (McKinnon, 1973; Shaw, 1973). Second, removing capital controls allows domestic and foreign investors to engage in more portfolio diversification. These two points can be summarized as that financial liberalization may reduce the cost of capital and increasing its availability for the borrowers. Stultz (1999) shows that financial globalization reduces the cost of equity capital because of the reduction in the expected returns to compensate risk as well as in agency costs (also, Henry, 2000; Bekaert et al., 2000, 2001). Third, not least, the liberalization process usually increases the efficiency level of the financial system by weeding out inefficient financial institutions and creating greater pressure for a reform of the financial infrastructure (Claessens et al., 2001; Stultz, 1999; Stiglitz, 2000). Such an improvement in financial infrastructure may alleviate information asymmetry, decreasing adverse selection and moral hazard, and further raising the availability of credit.

The link between financial liberalization and financial development is not unequivocal, however. It is often argued that to benefit from more open cross-border financial transactions, financial systems need to be equipped with reasonable legal and institutional infrastructure.

In economies where the legal system does not clearly define property rights or guarantee the enforcement of contracts, the incentives for loan activities can be limited. Legal protections for creditors and the level of credibility and transparency of accounting rules are also likely to affect economic agents' financial decisions.[3] Levine et al. (2000) investigate whether the level of legal and regulatory determinants of financial development influences the development financial intermediary sector. La Porta, Lopez-de-Silanes, Shleifer, and Vishny (hereafter La Porta et al., 1997, 1998) argue that the national legal origin (whether English, French, German, or Scandinavian) strongly affects the legal and regulatory environment in financial transactions and explains cross-country differences in financial development. La Porta et al. (1997, 1998) and Levine (1998, 2002) show that low levels of shareholder rights are associated with poorly developed equity markets (especially in French civil law countries). In contrast, Common law

[1] In this study, we do not discuss the merits of capital controls in the context of financial crises. For a review, see Aizenman (2002). Kletzer and Mody (2000) survey the debate in the context of "self-protection policies" for emerging markets. Ito (2004) investigates the correlation between financial liberalization and the output performance of crisis-hit economies.

[2] See, for instance, Leahy et al. (2001) for OECD-specific results. Klein and Olivei (2001) document the linkage between financial development and economic growth for developed countries, and its absence for less developed countries, while Spiegel (2001) examines an APEC sample. Arteta et al. (2001) and Klein (2005) document the presence of nonlinearities in growth effects of capital account liberalizations. IMF (2001, Chapter 4) surveys both the growth and finance, and finance and liberalization literatures. For the most recent review on finance and growth, refer to Quinn et al. (2002).

[3] For the analysis of legal development on financial development, see Beck and Levine (2004), Claessens et al. (2002a), Caprio et al. (2004), and Johnson et al. (2002). For a general discussion on the importance of legal and institutional foundations for financial development, see Beim and Calomiris (2001) and Stultz (1999).

countries have high levels of shareholder rights with correspondingly high levels of equity market development (Claessens et al., 2002a; Caprio et al., 2004), and that greater creditor rights are positively associated with financial intermediary development.[4]

Clearly, the link between financial liberalization and financial development is of great importance to emerging market policymakers, and naturally, one needs to examine the effect of liberalizing cross-border financial transactions in the context the institutional setting. However, very little investigation has been made to shed light on the link in such a context. This is the topic of our study.

In this article, we extend our work (Chinn and Ito, 2002) focusing on the links between capital account liberalization, legal and institutional development, and financial development. Since our study is motivated by the development of equity markets through financial liberalization and its contribution to economic development among emerging market countries in the 1990s, our focus is on the effect of capital account liberalization on the development of equity markets among less developed and emerging market countries. We conduct a panel data analysis encompassing 108 countries (including 21 industrialized countries and 31 emerging market countries) and 20 years ranging from 1980 to 2000. In addition to searching for the effects of each set of factors, we examine the oft-discussed issue of the sequence of liberalization. It has been often argued that countries need to liberalize their goods market prior to liberalizing financial sector (McKinnon, 1991). Also, in order for financial systems to reap the benefit of financial liberalization, the systems themselves need to be developed up to a certain level, suggesting the importance of a sequence of liberalization within the financial sector (Martell and Stulz, 2003). To test these claims, we examine whether the opening of the goods sector is a precondition for financial opening and, furthermore, investigate whether a well-developed banking sector is a precondition for financial liberalization to lead to equity market development. Additionally, we explore whether bank and equity market development complements or substitutes.

Our empirical results suggest that a higher level of financial openness contributes both directly and in an interactive manner with legal and institutional development to the development of equity markets, but only if a country is equipped with a reasonable level of legal and institutional development, which is more prevalent among emerging market countries than developing countries. A higher level of bureaucratic quality and law and order, as well as the lower levels of corruption, may enhance the effect of financial opening in fostering the development of equity markets. We also find that, among emerging market countries, the overall level of finance-related legal/institutional development increases stock market trading volumes and enhances the effect of financial openness. However, the finance-related legal/institutional variables do not exhibit as strong an effect as the general legal/institutional variables. In examining the issue of the sequencing, we find that the liberalization in cross-border goods transactions is a precondition for capital account liberalization, in a result similar to that obtained by Aizenman and Noy (2004). Our findings also indicate that the development in the banking sector is a precondition for equity market development, and that the developments in these two types of financial markets have interactive effects.

[4] Rajan and Zingales (2003), on the other hand, question the link between legal origins and cross-country difference in financial development, and instead stress the important role of political forces in shaping policies toward financial markets and their development.

2. An econometric analysis of openness, institutions and financial development

The link between capital account openness, financial development, and legal/institutional environment has been investigated by Chinn and Ito (2002). In this study, we demonstrated that financial systems with a higher degree of legal/institutional development on average benefit more from financial liberalization than those with a lower one. Furthermore, the positive effect of legal/institutional development seems to flow primarily from the degree of shareholder protection and accounting standards. In what follows, we extend our previous study by employing updated data and also exploring more questions related to the link between capital account openness and financial development. More specifically, we will investigate the issues relevant to the sequence of liberalization between financial and goods cross-border flows and the sequence of development in banking and equity markets.

2.1. The empirical specification

First, we reexamine the long-term effect of capital account openness on financial development in a model that controls for the level of legal and institutional development. The model is specified as:

$$\begin{aligned}\mathrm{FD}_t^i - \mathrm{FD}_{t-5}^i = {} & \gamma_0 + \rho \mathrm{FD}_{t-5}^i + \gamma_1 \mathrm{KAOPEN}_{t-5}^i + \gamma_2 L^i + \gamma_3 \left(L^i \times \mathrm{KAOPEN}_{t-5}^i\right) \\ & + \boldsymbol{X}_{t-5}^i \Gamma + u_t^i, \end{aligned} \tag{1}$$

where FD is a measure of financial development; KAOPEN is a measure of financial openness; $\boldsymbol{X}$ is a vector of economic control variables; and L^i refers to a measure of legal or institutional development.

For the capital openness variable, we use the Chinn–Ito index which is described in greater detail in a later section. The vector $\boldsymbol{X}$ contains macroeconomic control variables that include log per capita income in PPP terms, the inflation rate, and trade openness, measured as the ratio of the sum of exports and imports to GDP. In this analysis, the set is kept fairly small so as to retain some interpretability of the correlations. Log per capita income is included as there is a long literature ascribing financial deepening, aside from the role of regulation, to the increasing complexity of economic structures associated with rising income. The inflation rate–which might proxy for inflation variability–is included because it may distort decision-making. In particular, moderate to high inflation may discourage financial intermediation, and encourage saving in real assets. Finally, trade openness is included as an ad hoc control; many empirical studies find a correlation of trade openness with any number of economic variables. The relationship between trade openness and financial openness will be investigated more thoroughly in a later section.

A series of regressions is conducted for each of the financial development variables (FD), which include private credit creation (PCGDP), stock market capitalization (SMKC), stock market total value (SMTV), all measured as a ratio of GDP, and stock market turnover (SMTO). Also, for the series of regressions with different financial development measures, we also include each of the nine legal/institutional variables and its interactive term with the capital account openness index. The nine legal/institutional variables include those which are pertaining to the general development of legal systems or institutions as well as those pertaining particularly to financial transactions. Further discussions about the legal/institutional variables are presented in the data section.

In order to avoid problems of endogeneity associated with short-term cyclical effects, we specify our model as a growth rate on levels regression, akin to a panel error–correction model with non-overlapping data. That is, we only sample data every 5 years between 1980 and 2000, and use the 5-year average growth of the level of financial development as the dependent variable and the "initial conditions" for time-variant explanatory variables, including the initial level of the financial development indicator, for each 5-year panel.[5]

2.2. The data

The data are drawn from a number of sources, primarily the World Bank's *World Development Indicators*, the IMF's *International Financial Statistics*, and the databases associated with Beck et al. (2000). The analysis is based upon data originally recorded at an annual frequency, over the 1970–2000 period, covering 108 countries.[6]

2.2.1. Financial development measures

The measures of financial development are extracted from the data set of Beck et al. (2000). PCGDP, the ratio of private credit from deposit money banks to the private sector, represents the overall development in private banking markets.[7] While this variable is examined for purposes of comparison, our focus is primarily on the development of equity markets development, for which we use three variables as the measures: SMKC (stock market capitalization), SMTV (total value of stocks traded), and SMTO (stock market turnover ratio). We can consider SMKC as the measure of the size of equity markets and SMTV and SMTO as the measure of the activeness of equity markets.

Regarding the measurement issues surrounding financial development, we make two observations. First, in this study, we do not investigate the role of offshore markets in the process of financial development, and therefore, focus merely on the development of domestic equity markets. Although we have witnessed through the Asian financial crisis that some emerging market countries such as Korea and Thailand complemented their domestic markets by developing offshore markets and allowing foreign investors–mostly hedge funds–to actively engage, the literature regarding these issues has remained largely undeveloped, owing mainly to the recentness of the development of hedge funds and offshore markets.[8] Furthermore, with the exception of Kim and Wei (2002), the relationship between onshore and offshore funds has not been rigorously investigated, largely due to data unavailability.[9] Hence, we do not attempt to link offshore funds to domestic equity markets.

Secondly, our analysis does not consider the effect of capital account liberalization on the overseas listings by international firms. Several authors have discussed the process of emerging market companies migrating to mature markets by listing their shares and trading in New York

[5] Time fixed effects are also included in the model to control for possible time-specific exogenous shocks.

[6] More details on the data can be found in Appendix 1 of the working paper version of this paper.

[7] While many researchers use M2 or liquidity liabilities (M2Y and LLY in our data set), we only report results for PCGDP as our focus is on equity market development, and also because the correlation between M2Y or LLY and PCGDP is quite high (84.9% and 81.9%, respectively).

[8] The exceptions include Fung and Hseih (2001), their other works, Brown and Goetzmann (2001), and Brown et al. (1998).

[9] Kim and Wei study the behavior of the Korean offshore market, and find that the Korean offshore funds trade more aggressively than onshore markets; but they do not engage in positive feedback trading unlike their onshore counterparts; and that they do herd, but not so much as the onshore funds in the U.S. or U.K. which tends to herd more during a crisis.

Table 1
Growth rates of PCGDP, SMKC, SMTV, and SMTO 1970–2000 and decades

	Growth rates of			
	Private credit creation (PCGDP) (%)	Stock market capitalization (SMKC) (%)	Stock market total value (SMTV) (%)	Stock market turnover (SMTO) (%)
1970–2000				
Full	0.87	1.93	1.87	2.47
IDC	1.74	2.96	3.67	3.45
LDC	0.61	1.32	0.84	1.87
EMG	0.91	1.49	1.09	2.49
1970–1979				
Full	0.62	0.47	0.18	0.35
IDC	0.77	−0.22	0.25	−0.35
LDC	0.57	1.70	0.11	1.85
EMG	0.70	1.29	0.09	1.55
1980–1989				
Full	0.68	1.52	1.33	1.98
IDC	1.99	2.89	2.25	3.61
LDC	0.30	0.53	0.70	0.78
EMG	0.49	0.70	0.82	1.16
1990–2000				
Full	1.08	3.33	3.72	3.81
IDC	1.95	5.59	7.51	4.40
LDC	0.85	2.27	1.99	3.53
EMG	1.35	2.66	3.00	5.14
1995–2000				
Full	1.59	3.03	4.81	5.08
IDC	3.10	9.50	12.06	6.52
LDC	1.19	0.25	1.66	4.45
EMG	1.78	−0.39	2.83	7.30

or other major stock markets. Claessens et al. (2002b) and Levine and Schmukler (2003) provide evidence that migration of trading from domestic to international markets allows firms to reap from international portfolio diversification gains, while contributing to the shrinkage of local markets. In contrast, Karolyi (2004) demonstrates that cross-listings in the form of American Depository Receipts (ADRs) neither facilitate nor hinder local market development, but that it "may be an outcome of the declining market conditions and not a cause of them".[10] While it would be desirable to investigate this hypothesis, we are–given the wide cross section of countries we examine–constrained by the limitations of data availability. Hence, we focus on the development of domestic equity markets.

Table 1 reports the growth rates of financial development measured in the variables used in this study. Inspection of the table reveals that during the 1990s, all subsample groups experienced the most rapid development in equity markets, measured along several dimensions,

[10] Sarkissian and Schill (2002) show that internationalization of trading is constrained by geographical and institutional/cultural familiarity, making the gains from international portfolio diversification small. Their analysis shows that overseas listings are not conducted to "overcome investor home bias", but "reflect the bias".

including size (SMKC) and transactions activity (SMTV and SMTO). This is true despite the retrenchment in the equity markets of less developed and emerging market countries during the second half of the decade. Hence, the development of equity markets has progressed–albeit in a halting fashion–for the last three decades.

2.2.2. Capital openness index—the Chinn–Ito index

It is well known that it is extremely difficult to measure the extent of openness in capital account transactions (e.g., Eichengreen, 2002; Edison et al., 2002). Although many measures exist to describe the extent and intensity of capital account controls, the consensus is that such measures fail to fully capture the complexity of real-world capital controls for a number of reasons.[11]

First, conventional measures of quantifying capital controls (or financial openness) sometimes fail to account for the intensity of capital controls. The most prominent example of such measures include binary variables based upon the IMF's categorical enumeration reported in *Annual Report on Exchange Arrangements and Exchange Restrictions* (AREAER).[12] Second, IMF-based variables are too aggregated to depict the intricacy of actual capital controls. Capital controls can differ depending on the direction of capital flows (i.e., inflows or outflows) as well as the type of financial transactions targeted.[13] Thirdly, it is almost impossible to distinguish between de jure and de facto controls on capital transactions. Capital control policies are often implemented without explicit policy goals to control the volume and/or type of capital flows. Conversely, as Edwards (1999) discusses, it is often the case that the private sector circumvents capital account restrictions, nullifying the expected effect of regulatory capital controls. Therefore, researchers often refer to financial integration among countries and interpret it as de facto restrictions on capital transactions (see De Gregorio, 1998; Rajan, 2003).

In this study, we rely upon the capital account openness index, KAOPEN developed by Chinn and Ito (2002).[14] This index is the first principle component of the four IMF binary variables discussed above.[15] One of the merits of the KAOPEN index is that it attempts to measure the intensity of capital controls, insofar as the intensity is correlated with the existence of other restrictions on international transactions. By the nature of its construction, one may argue that

[11] See Edison and Warnock (2001), Edwards (2001), and Edison et al. (2002) for discussions and comparisons of various measures on capital restrictions. Dooley (1996) provides an extensive literature review and Neely (1999) presents a descriptive overview of capital controls.

[12] There are binary variables created based on a set of "on–off" clarification, which includes an indicator variable for the existence of multiple exchange rates (k_1); restrictions on current account (k_2); capital account transactions (k_3); and a variable indicating the requirement of the surrender of export proceeds (k_4). k_3 is the one often used for capital controls. In 1996, the classification method in the AREAER changed and these four categories became more disaggregated as an effort to reflect the complexity of capital controls policies.

[13] This issue is somewhat alleviated by the recent disaggregation in the AREAER of the k_3 category into 13 subcategories. Johnston and Tamirisa (1998) created the time series of capital controls based on the new 13 disaggregated components in the AREAER. However, their data series are not sufficiently long; it only covers years after 1996. Most recently, Miniane (2004) constructed a set of indices to measure the intensity of capital controls, based on an approach akin to Johnston et al., but extending the data back to 1983 for 34 countries.

[14] For the extension of the four binary classifications after 1996, we followed Mody and Murshid (2005).

[15] More strictly speaking, KAOPEN is the first standardized principal component of k_1, k_2 SHAREk_3, k_4 where SHAREk_3 stands for the share of a 5-year window that capital controls (k_3) were not in effect. More detailed explanation on the construction of KAOPEN can be found in Appendix 2 of the working paper version of this paper. The first eigenvector for KAOPEN was found to be (SHAREk_3, k_1, k_2, k_4)′=(0.573, 0.273, 0.521, 0.571)′, indicating that the variability of KAOPEN is not merely driven by the SHAREk_3 series.

the KAOPEN index measures the extensity of capital controls because it may not directly refer to the stringency of restrictions on cross-border transactions, but to the existence of different types of restrictions. However, measuring the extensity of capital controls may be a good proxy to the measure of intensity of capital controls.[16] This point can be made more concrete by considering a country with an open capital account. It may still restrict the flow of capital by limiting transactions on the current account restrictions or other systems such as multiple exchange rates and requirements to surrender export proceeds. Alternatively, countries that already have closed capital accounts might try to increase the stringency of those controls by imposing other types of restrictions (such as restrictions on current account and requirements for surrender of trade proceeds) so that the private sector cannot circumvent the capital account restrictions. Another merit of this index is its wide coverage (more than 100 countries) for a long time period (1970–2000).[17,18]

2.2.3. Measures of legal/institutional development

The legal/institutional variables can be categorized into two groups. The first group contains the measures related to the general development of legal systems and institutions, namely, LEGAL1, Corrupt, LAO, and BQ. LEGAL1 is the first principal component of the other three variables, and we treat this variable as a representative measure of the general level of legal/institutional development.[19] Corrupt, LAO, and BQ measure the level of corruption, law and order, and the quality of the bureaucratic system, respectively. All of these data series included in LEGAL1 are obtained from the ICRG database. In these indexes, higher values indicate better conditions. The data series are available for the period of 1984–1997, but are included as the period-average in order to maintain comparability with the LEGAL2 variables.

The second group of legal variables–CREDITOR, ENFORCE, SHRIGHTS, and ACCOUNT–pertain specifically to financial transactions, and are obtained from La Porta et al. (1998). CREDITOR refers to the level of creditor protection, while ENFORCE is an index of the effectiveness of the legal system in enforcing contracts. SHRIGHTS is a measure of shareholder protection, and ACCOUNT is an index of the comprehensiveness of company reports. LEGAL2 is the first standardized principal component of the four variables and therefore depicts the overall development of the legal system governing financial transactions.

Before discussing the results, we make the following two observations. First, although we use panel data specifications in the following analyses, the data on legal/institutional development are cross-sectional in nature, i.e., they are time-invariant. However, the inclusion of these time-

[16] One might think of the Quinn (1997) index as the measure of the intensity of capital controls. The Quinn index is a composite measure of financial regulation that ranges from 0 to 14, with 14 representing the least regulated and most open regime. The bulk of the index is based upon Quinn's coding of the qualitative information contained in the AREAER pertaining to k_2 and k_3, augmented by information regarding whether the country in question has entered into international agreements with international organizations such as the OECD and EU. A complete tabulation for the OECD members exists, but the coverage for the less developed countries is much less extensive. The correlation between the Quinn index and the Chinn–Ito index is found to be 83.9%, suggesting that KAOPEN is proxying the intensity of capital controls. The correlation between the aforementioned index by Miniane (2004), which is based on more disaggregated AREAER information on capital controls, and the Chinn–Ito index is found to be 80.2%.

[17] The Quinn index is available for the OECD members between 1958 and 1997, but the coverage for the less developed countries is limited to certain years (1958, 1973, 1982, 1988, and 1997).

[18] See the working paper version of this paper for more detailed discussions on the evolution of KAOPEN among countries.

[19] The first eigenvector for Legal1 was estimated as $(\text{Corrupt, LAO, BQ})' = (0.574, 0.580, 0.578)'$, indicating that the variability of LEGAL1 is not merely driven by any particular series.

invariant factors do not pose a substantial problem for our analysis, since these characteristics represented by the legal/institutional variables are likely to change only very slowly.[20] Moreover, we focus mainly on the effect of financial openness on financial development, but not the effect of legal/institutional development per se. In other words, rather than shedding light on how the development of institutions and legal systems affects financial development, we examine how the effect of financial openness changes depending upon the "environment" of institutions and legal systems. Therefore, time variation of the legal/institutional variables is not critical to our study.

The second issue is sample size. While the original panel encompasses 108 countries, the data set based on LLSV spans less than 50 countries. There is minimal impact on the coverage of the industrialized countries, but the size of the LDC sample is substantially reduced. Consequently, our LDC sample in this portion of the analysis essentially becomes the emerging market group previously defined. Hence, for the regressions with the first group of legal/institutional variables (i.e., LEGAL1, Corrupt, LAO, and BQ), we will present results for the full sample and the subsamples for less developed countries (LDC) and emerging market countries (EMG) whereas for those with the second group of legal variables, we report results for the full sample and a subset titled the "LDC/EMG" category, which is mainly composed of EMG countries.

2.3. Empirical results

The regression results for the model specified in Eq. (1) are reported in Tables 2-1–2-4. We focus on the coefficients of KAOPEN_{t-5} (first row), the legal variable (second row), and the interactive term between the legal variable and KAOPEN_{t-5} (third row). Our observations will mainly focus on the regressions with equity market development measures and especially those of less developed and emerging market countries.[21]

Table 2-1 reports the regression results for the models with LEGAL1. We can see that when the regressions are controlled for the general development of legal systems and institutions (LEGAL1), financial openness (KAOPEN_{t-5}) contributes to financial development in equity markets, measured by stock market total values, in both LDC and EMG subsamples. In these models, the interactive effect between financial openness and legal development is also detected. Significant coefficients for the interactive term are also found in the models with other measures of equity market development for both LDC and EMG subsamples. However, we must be careful about how to interpret the overall effect of capital account openness because it depends on the level of legal development.[22] That is, given Eq. (1), the total effect of financial openness can be shown as

$$\text{Total effect of KA openness}^i = \left(\gamma_1 + \gamma_3 \overline{L}\right) KAOPEN^i_{t-5},$$

[20] Stultz (1999) and Stiglitz (2000) argue that financial globalization puts pressure on governments to improve legal systems and infrastructure for financial markets. However, to our knowledge, there is no empirical evidence for the causality. Also, as previously mentioned, the ICRG legal variables are available since 1984, which also creates practical data constraints for us to use time-varying variables for legal and institutional development.

[21] The definition of emerging market countries relies upon the International Financial Corporation's (IFC) indices. The group of emerging market countries in this study refers to the countries which were included in either IFC's Global, Investible, or Frontier Index as of 1995. By this definition, there are 31 EMG countries in our sample.

[22] In case of the regressions with LEGAL1, the fact that the variable can be negative for a lower value also contributes to the complexity in the interpretation.

Table 2-1
Financial development, financial openness, and legal/institutional development (LEGAL1: General Legal/Institutional Development) FULL, LDC, and EMG: 5-year panels, 1980–2000

	Pred sign	FULL				LDC				EMG			
		Private credit	Stock market capitalization	Stock market total value	Stock market turnover	Private credit	Stock market capitalization	Stock market total value	Stock market turnover	Private credit	Stock market capitalization	Stock market total value	Stock market turnover
		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
Legal/inst. variable: LEGAL1													
Financial openness	(+)	0.0027	−0.0009	−0.0036	−0.0041	0.0004	0.0050	0.0070	0.0096	0.0028	0.0097	0.0081	0.0013
[$t-5$]		[0.0011]**	[0.0041]	[0.0031]	[0.0097]	[0.0013]	[0.0078]	[0.0042]*	[0.0123]	[0.0024]	[0.0070]	[0.0044]*	[0.0179]
LEVEL: LEGAL1	(+)	0.0014	−0.0025	−0.004	−0.0047	0.0011	0.0126	0.0091	0.0046	0.0077	0.0177	0.0117	0.0098
		[0.0010]	[0.0057]	[0.0051]	[0.0127]	[0.0014]	[0.0081]$^{12\%}$	[0.0053]*	[0.0186]	[0.0032]**	[0.0098]*	[0.0082]	[0.0277]
INTERACTION:	(+)	0.0005	0.0035	0.0037	0.0045	−0.0009	0.0037	0.0103	0.0212	0.0024	0.0072	0.0118	0.0190
LEGAL1 ×		[0.0005]	[0.0019]*	[0.0015]**	[0.0039]	[0.0010]	[0.0043]	[0.0035]***	[0.0109]**	[0.0025]	[0.0042]*	[0.0033]***	[0.0102]*
Fin. open. [$t-5$]													
Financial deepening	(−)	−0.017	−0.0335	0.1445	−0.0358	0.0001	−0.0493	0.0795	−0.0033	−0.0117	−0.0349	0.0926	0.0014
[t−5]		[0.0085]**	[0.0307]	[0.0936]	[0.0344]	[0.0119]	[0.0380]	[0.1187]	[0.0536]	[0.0139]	[0.0382]	[0.1208]	[0.0683]
Per capita income	(+)	0.0037	0.0164	0.016	0.0053	0.0031	0.0187	0.0128	−0.0023	−0.0031	0.0018	0.0049	−0.0134
[$t-5$]		[0.0015]**	[0.0106]	[0.0104]	[0.0227]	[0.0015]**	[0.0126]	[0.0123]	[0.0273]	[0.0030]	[0.0125]	[0.0159]	[0.0448]
Inflation [$t-5$]	(−)	−0.0112	−0.0548	−0.0318	−0.0561	−0.0047	−0.0497	−0.0221	−0.0815	−0.0248	−0.0334	−0.0164	−0.1095
		[0.0074]	[0.0208]***	[0.0266]	[0.0919]	[0.0074]	[0.0303]*	[0.0317]	[0.1166]	[0.0104]**	[0.0293]	[0.0414]	[0.1863]
Trade openness	(+)	0.0000	0.0002	−0.0001	−0.0003	0.0000	0.0001	−0.0003	−0.0006	0.0000	0.0000	−0.0003	−0.0006
[$t-5$]		[0.0000]*	[0.0001]**	[0.0001]	[0.0001]**	[0.0000]	[0.0001]	[0.0002]*	[0.0003]*	[0.0001]	[0.0001]	[0.0002]**	[0.0003]**
N		408	175	206	172	289	101	115	98	138	87	97	85
Adjusted R^2		0.15	0.11	0.28	0.03	0.09	0.2	0.16	−0.01	0.16	0.19	0.18	0.01

Point estimates from OLS, heteroskedasticity robust standard errors in parentheses. Dependent variable is the average annual growth rate over a 5-year period. Financial openness is measured by the Chinn–Ito index (KAOPEN). Regressions include fixed time effects (estimates not reported). Observations of inflation rates in excess of 100% are dropped from the sample. *, **, and *** indicate marginal significance at the 10%, 5%, and 1% level.

where $\bar{L}$ is the mean of a measure of legal development. For example, when we examine the regression specifications for the financial development measured in stock market total value for LDC and EMG groups in Table 2-1 (columns [7] and [11]), the total effect of a one-unit increase in KAOPEN is calculated to be −0.0006 for less developed countries and 0.005 for emerging market countries if we use each subsample's average of LEGAL1, −0.74 for the former group and −0.28 for the latter. Thus, although the estimated coefficients for *KAOPEN* and the interaction terms are not significantly different between LDC and EMG groups, the difference in the general level of legal and institutional development makes the effect of KAOPEN on equity market development quite different between the subsample groups; while opening capital accounts, on average, leads to a lower rate of development in equity markets among less developed countries, it leads to a more rapid rate of equity market development for emerging market countries. As another example, Peru, an emerging market country in our sample, increased its financial openness level from −1.84 to 2.27 between 1990 and 1995. Given its LEGAL1 level of −1.65, the increase in financial openness would reduce the growth rate of stock market total value by 4.1% point annually. Argentina, another EMG country, experienced a smaller increase of 3.15 in its KAOPEN variable (from −1.16 to 2.00), but because its LEGAL1 level is −0.175, higher than Peru's, its SMTV is predicted to grow at an additional 1.9% annually. Given that SMTV grew at 3.00% annually for emerging market countries during the 1990s (Table 1), this acceleration in the growth rate is significant. Thus, opening capital accounts can be effective for financial development only if a country has attained a threshold level of legal and institutional development.

Table 3 makes this point clear. In this table, row [A] shows the total effect of a one-unit increase in *KAOPEN* calculated using the estimates from the regression model with stock market total value for the subsample of less developed countries, evaluated at the average values of the legal variable for LDC and EMG (shown in row [B]). Row [C] shows the threshold level of the legal variable, above which a one-unit increase in capital account openness has a positive impact on equity market development. Thus, we can conclude that, in order for capital account openness to contribute to the development of equity markets, countries must be possessed of a level of legal/institutional development greater than LEGAL1 = −0.68. Hence, emerging market countries (whose average value of LEGAL1 −0.28 exceeds the −0.68 threshold), will on average benefit from opening their capital accounts. On the other hand, less developed countries will hamper their equity market development by opening capital accounts. In our data set, Tunisia has a value of LEGAL1 closest to the threshold level (its value is −0.683). The countries marginally above the threshold level include India and Morocco (−0.561 and −0.566, respectively) among others, while those closely below include Mexico and Iran (−0.793 and −0.738, respectively) among others.

Fig. 1 depicts this clear difference in the correlation between capital account openness and equity market development. The upper scatter diagram (a) shows the relationship between the 5-year change in the KAOPEN level 5 years prior to the time period (i.e., change between $t-10$ and $t-5$) and the level change in SMTV between $t-5$ and the contemporary time period (t) for the countries whose LEGAL1 value is above the threshold level, while diagram (b) is for those with lower LEGAL1 variables than the threshold. Not surprisingly, we can observe that, for the countries with above-threshold levels of general legal or institutional development, KAOPEN and SMTV have a positive relationship. For the countries with below-threshold levels of legal development, there is no discernable relationship between capital account opening and equity market development. Also, in these countries, equity markets appear to be far from active regardless of the degree of financial liberalization.

Table 2-2 summarizes the results from the regressions that are run with each of the components of LEGAL1 (i.e., Corrupt, LAO, and BQ) included individually and interactively. For the sake of brevity, the table shows only the coefficients of the financial openness

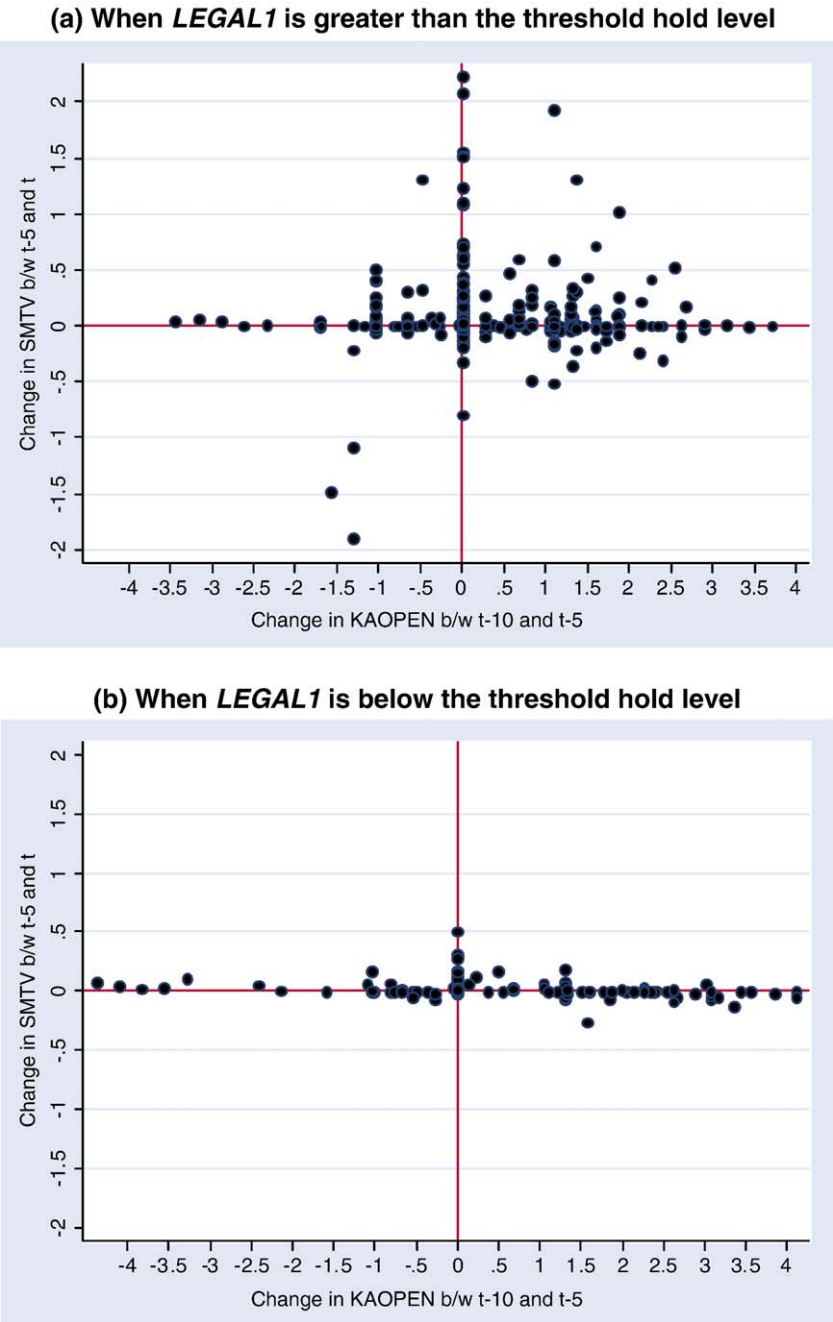

Fig. 1. Correlation between the Change in KAOPEN and the change in SMTV (with a 5-year lag).

variable, the legal/institutional variable, and the interaction term. Across the different models with different measures of financial development, the significance of the estimated coefficients appears to be qualitatively the same as those of the regressions with LEGAL1. Table 3, again, helps our interpretation of the overall effect of KAOPEN for the models with SMTV. Generally, we can surmise that liberalizing capital accounts may lead to development in equity markets only when the measures against corruption or law and order are higher than the threshold levels (52.2 and 54.5, respectively). In other words, their measures need to be as well-established as in emerging market countries in order to reap the benefit of capital account liberalization. When we control for the level of bureaucratic quality, financial openness seems to leads to financial development among both less developed and emerging market countries (because of both subsample groups' higher average values than the threshold level), but its effect is higher for the latter group. Interestingly, we can observe that the coefficient of KAOPEN_{t-5} alone has a negative sign wherever the interactive term has a significant coefficient, suggesting that opening financial markets alone may lead to underdevelopment of equity markets, but it can be avoided only if the countries are equipped with a reasonable level of legal/institutional development.

When we focus on the effect of legal development relating particularly to financial transactions (LEGAL2 and La Porta et al. variables), the findings are not as decisive as in the previous cases (results shown in Tables 2-3 and 2-4).[23] Using LEGAL2 as the legal/institutional variable (Table 2-3) in the LDC/EMG subgroup, its interactive effect with LEGAL2, and the LEGAL2 level term are significant in the determination of the development in stock market total value. Table 3 shows that the total effect of financial openness is positive on average in the LDC/EMG subgroup (i.e., the subgroup's average level of legal development is higher than the threshold level). In other models for the LDC/EMG subgroup, however, neither financial openness nor its interactive term seems to affect banking or equity market development in a significant fashion.

Among the components of the financial legal development variable (LEGAL2), shown in Table 2-4 (which again only shows the coefficients of interest), the level of creditor protection seems to be an important factor for financial development in both banking and equity sectors while no interactive effect is detected. When contract enforcement is used as the legal/institutional variable, in all models with equity market development, we can detect a positive interactive effect and a negative solo effect of the level of financial openness. Among the models with shareholder protection, the level of shareholder protection seems to matter for stock market capitalization while the level of financial openness contributes to stock market turnover. The models using accounting standards as the legal/institutional measure do not indicate any effect of financial openness on financial development.

Our findings suggest that in order for financial openness to help develop equity markets, the level of legal and institutional development is crucial. If a country tries to develop its equity markets while it is not equipped with well-developed legal systems or institutions, opening capital accounts may even harm the development of equity markets. Also, we find that it is the development of general legal systems and institutions, not of those specific to financial transactions, that is crucial for a country to benefit from opening its financial markets.

[23] As previously discussed, due to the data availability of the LLSV variables, there is only one subsample for non-industrialized countries, which we call LDC/EMG.

Table 2-2
Financial development, financial openness, and legal/institutional development (Components of LEGAL1: Corruption, Law and Order, and Bureaucracy Quality) FULL, LDC, and EMG: 5-year panels, 1980–2000

	Pred sign	FULL				LDC				EMG			
		Private credit	Stock market capitalization	Stock market total value	Stock market turnover	Private credit	Stock market capitalization	Stock market total value	Stock market turnover	Private credit	Stock market capitalization	Stock market total value	Stock market turnover
		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
Legal/inst. variable: Corrupt (Corruption)													
Financial openness $[t-5]$	(+)	−0.0009	−0.0129	−0.0195	−0.0309	0.0009	−0.0112	−0.0313	−0.0610	−0.006	−0.0193	−0.0362	−0.0634
		[0.0027]	[0.0099]	[0.0071]***	[0.0261]	[0.0038]	[0.0134]	[0.0110]***	[0.0409]	[0.0091]	[0.0146]	[0.0124]***	[0.0460]
LEVEL: CORRUPT	(+)	0.0001	0.0003	−0.0002	−0.0012	0.0000	0.0014	0.0004	−0.0012	0.0004	0.0016	0.0005	−0.0012
		[0.0001]	[0.0005]	[0.0003]	[0.0008]	[0.0001]	[0.0007]**	[0.0004]	[0.0011]	[0.0002]*	[0.0007]**	[0.0006]	[0.0016]
INTERACTION: Corrupt ×	(+)	0.0001	0.0002	0.0003	0.0004	0.0000	0.0003	0.0006	0.001	0.0001	0.0005	0.0007	0.0009
Fin. opn. $[t-5]$		[0.0000]	[0.0001]	[0.0001]**	[0.0003]	[0.0001]	[0.0003]	[0.0002]***	[0.0006]*	[0.0002]	[0.0003]*	[0.0002]***	[0.0006]*
N		408	175	206	172	289	101	115	98	138	87	97	85
Adjusted R^2		0.15	0.12	0.28	0.03	0.09	0.23	0.16	−0.01	0.14	0.24	0.18	0.00
Legal/inst. variable: LAO (Law and order)													
Financial Openness $[t-5]$	(+)	−0.0003	−0.0172	−0.0172	−0.0204	0.0040	−0.0217	−0.0218	−0.0627	−0.0078	−0.0278	−0.0239	−0.0536
		[0.0025]	[0.0097]*	[0.0083]**	[0.0229]	[0.0029]	[0.0125]*	[0.0119]*	[0.0443]	[0.0076]	[0.0107]**	[0.0105]**	[0.0385]
LEVEL: LAO	(+)	0.0001	−0.0003	−0.0001	0.0001	0.0001	0.0004	0.0003	0.0005	0.0004	0.0005	0.0003	0.0008
		[0.0001]	[0.0004]	[0.0003]	[0.0007]	[0.0001]	[0.0004]	[0.0003]	[0.0009]	[0.0002]**	[0.0004]	[0.0004]	[0.0011]
INTERACTION: LAO ×	(+)	0.0000	0.0003	0.0002	0.0003	−0.0001	0.0004	0.0004	0.0011	0.0001	0.0006	0.0004	0.0008
Fin. Opn. $[t-5]$		[0.0000]	[0.0001]**	[0.0001]**	[0.0003]	[0.0001]	[0.0003]	[0.0002]*	[0.0007]$^{12\%}$	[0.0001]	[0.0002]**	[0.0002]**	[0.0005]$^{11\%}$
N		408	175	206	172	289	101	115	98	138	87	97	85
Adjusted R^2		0.15	0.12	0.28	0.03	0.09	0.20	0.12	−0.02	0.14	0.19	0.12	−0.01
Legal/inst. variable: BQ (Bureaucracy Quality)													
Financial openness $[t-5]$	(+)	0.002	−0.0070	−0.0119	−0.0101	0.0048	0.0057	−0.0268	−0.0562	−0.0035	0.009	−0.0334	−0.0749
		[0.0024]	[0.0102]	[0.0070]*	[0.0205]	[0.0032]	[0.0107]	[0.0129]**	[0.0333]*	[0.0079]	[0.0136]	[0.0165]**	[0.0471]$^{12\%}$
LEVEL: BQ	(+)	0.0001	0.0000	−0.0001	0.0004	0.0001	0.0003	0.0007	0.0014	0.0002	0.0004	0.0009	0.0019
		[0.0001]*	[0.0004]	[0.0002]	[0.0007]	[0.0001]	[0.0005]	[0.0004]*	[0.0010]	[0.0002]	[0.0006]	[0.0005]*	[0.0014]
INTERACTION: BQ ×	(+)	0.0000	0.0001	0.0002	0.0001	−0.0001	−0.0001	0.0006	0.0011	0.0001	−0.0001	0.0007	0.0014
Fin. opn. $[t-5]$		[0.0000]	[0.0001]	[0.0001]$^{12\%}$	[0.0002]	[0.0001]	[0.0002]	[0.0003]**	[0.0006]**	[0.0001]	[0.0003]	[0.0003]**	[0.0007]**
N		408	175	206	172	289	101	115	98	138	87	97	85
Adjusted R^2		0.15	0.10	0.27	0.02	0.10	0.18	0.17	0.00	0.11	0.15	0.17	0.02

Point estimates from OLS, heteroskedasticity robust standard errors in parentheses. Dependent variable is the average annual growth rate over a 5-year period. Financial openness is measured by the Chinn–Ito index (KAOPEN). Regressions include fixed time effects (estimates not reported). Observations of inflation rates in excess of 100% are dropped from the sample. *, **, and *** indicate marginal significance at the 10%, 5%, and 1% level.

Table 2-3
Financial development, financial openness, and legal/institutional development (LEGAL2: Legal development pertaining to financial transactions) FULL, LDC, and EMG: 5-year panels, 1980–2000

	Pred sign	FULL				LDC/EMG			
		Private credit	Stock market capitalization	Stock market total value	Stock market turnover	Private credit	Stock market capitalization	Stock market total value	Stock market turnover
		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Legal/inst. variable: LEGAL2									
Financial openness [$t-5$]	(+)	0.0036	0.0020	0.0018	0.0053	0.0000	0.0072	0.0111	0.0195
		[0.0016]**	[0.0053]	[0.0037]	[0.0092]	[0.0020]	[0.0136]	[0.0062]*	[0.0187]
LEVEL: LEGAL2	(+)	−0.0001	0.0086	0.0027	0.0126	0.001	0.0175	0.0141	0.0288
		[0.0022]	[0.0066]	[0.0057]	[0.0177]	[0.0033]	[0.0115]	[0.0087]*	[0.0261]
INTERACTION:	(+)	0.0000	0.0055	0.0036	−0.0028	−0.0013	0.0029	0.0077	0.0113
LEGAL2 × Fin. Open. [$t-5$]		[0.0013]	[0.0030]*	[0.0031]	[0.0049]	[0.0017]	[0.0070]	[0.0041]*	[0.0110]
Financial deepening [$t-5$]	(−)	−0.0275	−0.0465	0.0997	−0.0637	−0.0106	−0.0532	0.0212	−0.0467
		[0.0109]**	[0.0367]	[0.1083]	[0.0434]	[0.0173]	[0.0454]	[0.1442]	[0.0684]
Per capita income [$t-5$]	(+)	0.0025	0.0004	0.0047	−0.0125	0.0034	0.0161	0.012	−0.0039
		[0.0026]	[0.0097]	[0.0084]	[0.0244]	[0.0033]	[0.0112]	[0.0112]	[0.0314]
Inflation [$t-5$]	(−)	−0.0237	−0.0423	−0.0203	0.005	−0.0206	−0.0404	−0.0016	0.0108
		[0.0140]*	[0.0262]	[0.0345]	[0.1032]	[0.0149]	[0.0305]	[0.0381]	[0.1350]
Trade openness [$t-5$]	(+)	0.0000	0.0002	−0.0001	−0.0002	0.0000	0.0001	−0.0003	−0.0007
		[0.0000]	[0.0001]	[0.0001]	[0.0001]*	[0.0000]	[0.0003]	[0.0002]	[0.0005]
N		188	124	148	123	93	60	68	59
Adjusted R^2		0.11	0.10	0.29	0.05	0.17	0.14	0.12	−0.05

Point estimates from OLS, heteroskedasticity robust standard errors in parentheses. Dependent variable is the average annual growth rate over a 5-year period. Financial openness is measured by the Chinn–Ito index (KAOPEN). Regressions include fixed time effects (estimates not reported). Observations of inflation rates in excess of 100% are dropped from the sample. *, **, and *** indicate marginal significance at the 10%, 5%, and 1% level. Due to the data availability of the LLSV variables, there is only one subsample for non-industrialized countries, which we call LDC/EMG.

Table 2-4
Financial development, financial openness, and legal/institutional development (Creditor protection, contract enforcement, shareholder protection, and accounting standards) FULL, LDC, and EMG: 5-year panels, 1980–2000

	Pred sign	FULL				LDC/EMG			
		Private credit	Stock market capitalization	Stock market total value	Stock market turnover	Private credit	Stock market capitalization	Stock market total value	Stock market turnover
		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Legal/inst. variable: CREDITOR (Creditor protection)									
Financial openness $[t-5]$	(+)	0.0003	0.0031	0.0036	0.0032	0.0011	−0.0013	−0.0021	−0.0058
		[0.0022]	[0.0060]	[0.0055]	[0.0105]	[0.0038]	[0.0050]	[0.0049]	[0.0205]
LEVEL: CREDITOR	(+)	0.0029	−0.0020	0.0012	0.0169	0.0030	0.0027	0.009	0.0202
		[0.0016]*	[0.0038]	[0.0035]	[0.0089]*	[0.0018]*	[0.0035]	[0.0045]**	[0.0118]*
INTERACTION:	(+)	0.0012	−0.0003	−0.0014	−0.0018	−0.0001	0.0014	0.0017	0.0006
CREDITOR × Fin. opn. $[t-5]$		[0.0010]	[0.0023]	[0.0021]	[0.0034]	[0.0014]	[0.0023]	[0.0017]	[0.0048]
N		230	145	169	143	129	80	88	78
Adjusted R^2		0.14	0.07	0.27	0.05	0.15	0.19	0.12	−0.01
Legal/inst. variable: ENFORCE (Contract enforcement)									
Financial Openness $[t-5]$	(+)	−0.0044	−0.0342	−0.0211	−0.0246	−0.0080	−0.0531	−0.0587	−0.1509
		[0.0057]	[0.0160]**	[0.0125]*	[0.0427]	[0.0131]	[0.0231]**	[0.0203]***	[0.0974]
LEVEL: ENFORCE	(+)	0.0020	−0.0068	−0.0030	0.0002	0.0059	0.0037	0.0097	0.0077
		[0.0014]	[0.0070]	[0.0058]	[0.0219]	[0.0028]**	[0.0080]	[0.0079]	[0.0342]
INTERACTION:	(+)	0.0009	0.0051	0.003	0.0034	0.0015	0.0093	0.0100	0.0243
ENFORCE × Fin. opn. $[t-5]$		[0.0007]	[0.0021]**	[0.0017]*	[0.0054]	[0.0021]	[0.0042]**	[0.0033]***	[0.0144]*
N		240	151	178	149	139	86	97	84
Adjusted R^2		0.12	0.11	0.28	0.04	0.16	0.23	0.18	0.03

Legal/inst. variable: SHRIGHTS (Shareholder protection)									
Financial openness [$t-5$]	(+)	0.0031	0.0039	0.0021	0.0237	−0.0032	0.0002	0.0026	0.0353
		[0.0022]	[0.0047]	[0.0042]	[0.0148][11%]	[0.0043]	[0.0065]	[0.0060]	[0.0205]*
LEVEL: SHRIGHTS	(+)	0.0007	0.0105	0.0015	0.0186	0.0011	0.0124	0.0033	0.0174
		[0.0010]	[0.0043]**	[0.0029]	[0.0173]	[0.0017]	[0.0055]**	[0.0050]	[0.0220]
INTERACTION:	(+)	0.0000	−0.0003	−0.0004	−0.0091	0.0019	0.0017	0.0001	−0.0155
SHRIGHTS × Fin. opn. [$t-5$]		[0.0007]	[0.0022]	[0.0017]	[0.0073]	[0.0013]	[0.0042]	[0.0030]	[0.0099][12%]
N		234	147	174	145	133	82	93	80
Adjusted R^2		0.11	0.11	0.27	0.07	0.13	0.21	0.11	0.03
Legal/inst. variable: ACCOUNT (Accounting standards)									
Financial openness [$t-5$]	(+)	0.0105	−0.0298	−0.0234	−0.0046	0.0137	0.0112	−0.0087	−0.0391
		[0.0076]	[0.0184][11%]	[0.0150][12%]	[0.0227]	[0.0111]	[0.0208]	[0.0147]	[0.0388]
LEVEL: ACCOUNT	(+)	−0.0012	0.0106	0.0030	0.0048	−0.0017	0.0084	0.0045	0.0113
		[0.0016]	[0.0052]**	[0.0033]	[0.0061]	[0.0026]	[0.0079]	[0.0047]	[0.0098]
INTERACTION:	(+)	−0.0011	0.0050	0.004	0.0016	−0.0023	−0.0015	0.0021	0.008
ACCOUNT × Fin. opn. [$t-5$]		[0.0012]	[0.0031][11%]	[0.0025][11%]	[0.0032]	[0.0018]	[0.0047]	[0.0027]	[0.0062]
N		200	130	157	129	105	66	77	65
Adjusted R^2		0.11	0.12	0.29	0.05	0.20	0.16	0.09	−0.06

Heteroskedasticity robust standard errors in parentheses. Dependent variable is the average annual growth rate over a 5-year period. Financial openness is measured by the Chinn–Ito index (KAOPEN). Regressions include fixed time effects (estimates not reported). Observations of inflation rates in excess of 100% are dropped from the sample. *, **, and *** indicate marginal significance at the 10%, 5%, and 1% level.

Table 3
Difference between LDCs and EMGs in terms of the total effect of a one-unit increase in KAOPEN when the dependent variable is SMTV

		LDC	EMG
[A]	Total effect of KA openness	−0.0006	0.0041
[B]	$\bar{L}$ (Legal1)	−0.74	−0.28
[C]	Threshold level of Legal1	−0.68	−0.68
[A]	Total effect of KA openness	−0.0017	0.0015
[B]	$\bar{L}$ (Corrupt)	49.27	54.73
[C]	Threshold level of Corrupt	52.2	52.2
[A]	Total effect of KA Openness	−0.0015	0.0005
[B]	$\bar{L}$ (LAO)	50.85	55.76
[C]	Threshold level of LAO	54.5	54.5
[A]	Total effect of KA openness	0.0024	0.0071
[B]	$\bar{L}$ (BQ)	48.66	56.44
[C]	Threshold level of BQ	44.7	44.7
[A]	Total effect of KA openness	0.0052	
[B]	$\bar{L}$ (Legal2)	−0.77	
[C]	Threshold level of Legal2	−1.44	

"Total Effect" [A] indicates the total effect of a one-unit increase in KAOPEN when the legal/institutional variable takes the value of the average in the subsample group ($\bar{L}$, shown in [B]). The estimation model is based on Eq. (1) using the data of the LDC subgroup for the regressions with LEGAL1 legal variables and of the LDC/EMG subgroup for the regressions with LEGAL2. Rows [C] show the threshold level of the legal variable above which the capital account openness has a positive impact on financial development. For the analysis with LEGAL2, there is no distinction between LDC and EMG due to data availability, but there is a subgroup LDC/EMG.

2.4. Robustness checks

Here, we examine whether our baseline results are sensitive to outliers. Concerns about the impact of outliers flows from two issues. First, in addition to the usual measurement error present in macroeconomic data, it is likely that the data for financial development is subject to even greater measurement errors. Second, these financial development indicators may unintentionally capture financial bubbles, although the use of 5-year changes may serve to mitigate this concern. As a point of reference, it is useful to note that in many studies of lending booms as financial crises indicators, changes in lending or stock market sizes over a shorter window of between 2 and 4 years are often used.[24] Nonetheless, we investigate whether the regression results are being distorted by data outliers. In order to conserve space, we merely summarize the results and our observations below.

First, using the original annual data, we exclude the observations of financial development variables if their annual growth rates are two standard deviations away from the mean in both directions, and re-estimate the same sets of regressions. The exclusion of outliers shrinks the observation size by a relatively small degree, about 0–11%.[25] Generally, in the re-estimated results (not reported), the magnitude of the estimated coefficients often becomes smaller, but so do the standard errors, especially for the models with stock market related measures for the LDC

[24] See Corsetti et al. (1998), Chinn et al. (1999), Kaminsky (2003), Kaminsky et al. (1998), Kaminsky and Schmukler (2001b), and Sachs et al. (1996).

[25] Exclusion of the outliers takes place more for the models with stock market total value and stock market turnover than those with private credit creation and stock market capitalization, which reflects that the former group are more subject to market volatility than the latter. The rate of exclusion is generally higher for the subgroup of emerging market countries for the same reason.

and EMG subgroups. Therefore, not only does the statistical significance of the coefficients remain qualitatively unchanged, but in addition, some of the coefficients which were previously insignificant become significant.

Interestingly, in many models the adjusted R^2 increases. This is most apparent in the models with LEGAL2 and ACCOUNT. In this analysis for the LDC/EMG group, the coefficient of LEGAL2 is now significant for the model with SMKC, and both the KAOPEN variable and the interactive term are statistically negative and positive, respectively, for the models with SMKC and SMTV. The same exercise is then repeated, but increasing the range of outlier exclusion by dropping the observations if their annual growth rates are larger than one and a half standard deviations away from the mean in both directions. This exclusion shrinks the sample size quite substantially (sometimes as much as 40%), although the results are largely unchanged. The fit and the significance of the coefficients even improves for the models for the LDC/EMG with LEGAL2 and ACCOUNT. Two conclusions flow from this exercise. First, the key findings of the analysis are not driven by outliers. Second, some of the findings related to the legal/institutional variables could have even been obscured by the effects of outliers.

2.5. Reverse causality?

One may reasonably ask if financial development is what allows countries to implement financial liberalization policy, rather than the reverse. While we have worked with non-overlapping, 5-year window panels in order to mitigate problems associated with simultaneity, it may still be worthwhile to investigate whether countries need to develop their financial systems before undertaking capital account liberalization. Conversely, if we can show that reverse causality is irrelevant, that will be evidence that countries can develop their financial markets by exogenously deciding to open their financial markets.

To explore the above question, we change the specification in Eq. (1) by exchanging the places of KAOPEN_{t-5} and financial development measures (PCGDP, SMKC, SMTV, and SMTO); the left-hand side variable is now the 5-year average growth in KAOPEN while the independent variables of our focus now becomes the financial development variable and the interactive terms between the legal/institutional variables and the financial development variables. We run regressions specified as follows, using non-overlapping data and including each of the legal/institutional variables:

$$\begin{aligned}\mathrm{KAOPEN}_t^i - \mathrm{KAOPEN}_{t-5}^i = {} & \phi_0 + \varphi \mathrm{KAOPEN}_{t-5}^i + \phi_1 \mathrm{FD}_{t-5}^i + \phi_2 L^i \\ & + \phi_3 \left(L^i \times \mathrm{FD}_{t-5}^i\right) + X_{t-5}^i \Phi + v_t^i. \end{aligned} \tag{2}$$

The coefficient of our interest is ϕ_1; A significantly positive ϕ_1 would indicate that the above OLS regression results entail simultaneous causality, i.e., financial development leads to financial openness. The regression results (not reported) show that across the regressions with different financial development measures as well as legal/institutional variables, the coefficients, ϕ_1's, are mostly statistically insignificant or significantly negative, either of which is against the null hypothesis that financial development leads to financial openness. The significantly negative ϕ_1's are found in the regressions that have the dependent variable of the equity market development measures. One of the possible explanations for the negative ϕ_1 may be that a rapid growth in equity markets, in terms of the size of the markets (SMKC) or the liquidity of the markets (SMTV or SMTO) is sometimes associated with financial crises, and that policy makers lower the degree of financial openness during periods of crisis (Ito, 2004). At the very least, we

can conclude that our estimation results are not subject to obvious simultaneity issues (as in Bekaert et al., 2000).

3. Investigating the sequence of liberalization

3.1. Trade and capital account liberalization

One suggestive result we must discuss is the frequent finding of statistically significant and positive coefficients on the trade openness variable in the above estimation results based on Eq. (2). To the extent that our trade openness variable reflects trade liberalization, our results are germane to the question if trade openness is a precondition for financial opening. This is the optimal sequence question, which has been raised by many, including McKinnon (1991). In fact, liberalization in goods markets is often claimed to be a precondition for financial liberalization policy (Tornell et al., 2004).

We empirically explore this hypothesis by employing a simple model that accounts for the determinants of financial openness or restrictions. As stated in Eq. (3), we model financial openness as the function of government budget surplus, international reserves, trade openness, and per capita GDP.[26]

$$\mathrm{KAOPEN}_t = \xi_0 + \xi_1 \mathrm{KAOPEN}_{t-5} + \xi_2 \mathrm{TradeOpen}_{t-5} + Z_{t-1|t-5}\Xi + v_t, \tag{3}$$

where $Z_{t-1}|_{t-5}$ is a vector of macroeconomic control variables, namely, government budget surplus, international reserves, and per capita GDP.[27] We select two variables–the government budget surplus and international reserves–since they are most commonly argued as the determinants of capital controls.[28,29] We also include per capita GDP to control for the level of development of the economic system. Since these variables are supposed to control for the general trend of macro-variables, they are included as the 5-year average prior to the time period t (as shown as $(t-1|t-5)$ in the regression results table).

With these macro-variables, we test whether trade openness is a precondition for financial opening by including a 5-year lagged variable for the trade openness measure. Although we used in the previous analyses, opn, the sum of exports and imports divided by GDP, as the trade openness variable, we use a different variable to measure openness in trade flows. By construction, the variable opn measures the openness in good transactions in terms of not only

[26] The empirical model also controls for regional differences by regional dummies. In Glick et al. (2004), an empirical model of capital account liberalization is proposed. Our set of explanatory variables overlaps, but does not match, theirs. In part the difference arises from their more empirically oriented motivation for model selection.

[27] The variable for gross international reserves is a proxy to the balance of payments situation of the countries and is measured by gross international reserves in months of imports. The lower gross reserves in months of imports, the higher prevalence of balance of payments concerns are. The data are extracted from the World Bank's *World Development Indicators*.

[28] Grilli and Milesi-Ferretti (1995) show that capital controls have strong fiscal implications, i.e., countries with a less developed tax system tend to implement capital controls as the source of government revenue as well as the remedy to capital flows caused by the inflation-driven distortions in the financial markets. Johnston and Tamirisa (1998) find that countries tend to implement capital controls, the more prevalent the balance of payments concerns are. For more discussion of the macroeconomic determinants of capital controls, refer to Leblang (1997).

[29] In addition to the above variables, we included variables that refer to the government engagement in seigniorage, such as the inflation rate or the reserve ratio. However, these measures of seigniorage can cause multicollinearity in regression analysis due to its correlation with the level of government budget surplus, the reverse of which is often the reason for seigniorage. Therefore, we decided not to include seigniorage-related variables in our regression model.

Table 4
Determinants of capital account and trade openness FULL, LDC, and EMG: 5-year panels, 1980–2000

Dependent variable	Pred. sign	Financial openness (t)			Trade openness (t)		
		(1)	(2)	(3)	(4)	(5)	(6)
		Full	LDC	EMG	Full	LDC	EMG
Financial openness	+	0.5939	0.5313	0.3499	−0.0001	0.0019	−0.0005
($t-5$)		[0.0580]*	[0.0794]*	[0.1176]*	[0.0015]	[0.0022]	[0.0028]
Trade openness	+	2.1763	2.0317	1.9427	0.5938	0.5633	0.5746
($t-5$)		[1.0279]**	[1.0586]**	[2.0338]	[0.0794]*	[0.0857]*	[0.0940]*
Avg. budget surplus	+	0.0402	0.0537	0.0618	0.0002	0.0002	0.0002
($t-1\|t-5$)		[0.0151]*	[0.0177]*	[0.0305]**	[0.0005]	[0.0007]	[0.0006]
Avg. total reserves	+	−0.0049	0.0043	0.0124			
($t-1\|t-5$)		[0.0245]	[0.0304]	[0.0413]			
Avg. GDP per capita	+	0.3034	0.1945	0.5135	0.0174	0.0196	0.0339
($t-1\|t-5$)		[0.0971]*	[0.1157]***	[0.2821]***	[0.0035]*	[0.0047]*	[0.0086]*
Number of observations		263	181	100	223	151	82
Adjusted R^2		0.59	0.42	0.35	0.75	0.63	0.70

Robust standard errors in brackets. Budget surplus, total reserves, and GDP per capita are included at the average over $t-1$ through $t-5$. Constant and regional dummies for Asia, Europe, Middle East, and Africa are also included in the regression, but their estimated coefficients are not reported. The regression estimations are conducted in non-overlapping manners with the observations excepted for 1980, 1985, 1990, 1995, and 2000 excluded.

* Significant at 1%.
** Significant at 5%.
*** Significant at 10%.

economic factors but also regulatory measures such as tariffs and quotas. As such, we use another variable TRADEOPEN which is a reciprocal of the duties imposed on both imports and exports.[30]

In order to minimize the possibility of two-way causality, we employ a non-overlapping panel data analysis as we did in previous analyses. While the macro-variables are included as the 5-year average, both KAOPEN and TRADEOPEN are included as the initial conditions of each 5-year panel. In the empirical analysis, we focus on the coefficient ξ_2 to see if the openness in goods trade can be a precondition for financial opening.

The first three columns of Table 4 report the regressions results. While the average budget surplus and GDP per capita enter significantly, but not international reserves, the trade openness variable seems to contribute to the level of financial openness in the full sample and the subsample for the less developed countries, indicating that the openness in goods transactions is a precondition for financial openness. Columns (4) through (6) of Table 4 show the results when we switch the places for KAOPEN and TRADEOPEN in the regression, in order to see whether the reverse causality also holds.[31] We can see that in both the full sample and the subsamples, the financial openness variable does not enter significantly. Hence, we can safely conclude that the more openness in goods transactions can lead to a more openness in capital account, but the reverse causality does not appear to be present, a result consistent with Tornell et al. (2004).

[30] Import and export duties as a ratio to imports and exports, respectively, are available from the World Bank's WDI. The weighted average of these variables is calculated using the share of imports and exports in total trade and then subtracted from 100 to show the openness. Hence, the higher (or close to 100) TRADEOPEN is, the less duties imposed on trade flows in both directions, i.e., the more open trade flows are by regulation. Note the variable is included in log form.

[31] The variable for international reserves is not retained because it lacks a theoretical motivation.

3.2. Endogeneity and the sequence of liberalization

Taking our cue from the results reported above, we implement two stage least squares (2SLS) estimation instrumenting the KAOPEN_{t-5} variable in Eq. (1) with the initial conditions of financial and trade openness 5 years prior to the variable (i.e., 10-year lagged), as well as government budget surplus and GDP per capita as the 5-year average prior to $t-5$ and regional dummies.[32] If we can detect the effect of financial openness on financial development, we can present evidence that financial opening which is preceded by trade opening leads to financial development in a model where the level of legal/institutional development is controlled for.

The results (not reported) of applying 2SLS to a model that controls for the general development level of legal systems and institutions (LEGAL1) suggest that, for the group of less developed countries, both the magnitude and the statistical significance of the estimated coefficients for the models with stock market capitalization (SMKC) and stock market total value (SMTV) increase. For the SMKC, the levels of both legal development and financial openness are significant contributors to equity market development. When financial development is measured by stock market total value, in addition to the level effects of both financial openness and legal development, the interactive effect between the two is also identified. Similar results are also found in the group of emerging market countries. Given these results, we may conclude that financial opening succeeding trading opening leads to equity market development especially when it takes place in an economy with a reasonably developed legal system.

4. Interactions of banks and equity markets

In this section, we investigate two questions. The first is whether the development of a banking sector a precondition for the development of an equity market. Second, does the development of one sector substitute or complement development in another?

4.1. Sequencing in financial development

We modify the basic regression model of Eq. (1) by adding a new term: the level of financial development in the alternative mode. For the regressions with equity market development, the initial level of banking development, private credit creation (PCGDP), in each 5-year panel is included in the regression model whereas the initial level of equity market development, measured as stock market capitalization (SMKC), is included in the regressions for banking development as a comparison. The new equation is now:

$$\mathrm{FD}_t^i - \mathrm{FD}_{t-5}^i = \gamma_0 + \rho \mathrm{FD}_{t-5}^i + \gamma_1 \mathrm{KAOPEN}_{t-5}^i + \gamma_2 L^i + \gamma_3 \left(L^i \times \mathrm{KAOPEN}_{t-5}^i\right) + \lambda_0 \mathrm{OtherFin}_{t-5} + X_{t-5}^i \Gamma + \varepsilon_t^i \tag{4}$$

where OtherFin refers to PCGDP for the regressions on equity market development and to SMKC for the regression with PCGDP. As with the basic model, the regression is repeated for each of the financial development measures as the dependent variable and using different legal/institutional variables. Given the results from the previous section, we will only use the legal/institutional variables from the LEGAL1 group.

The regression results are summarized in Table 5. This table contains only the estimated coefficients for $\mathrm{OtherFin}_{t-5}(\lambda_0)$. While SMKC_{t-5} never enters significantly for the models on

[32] The international reserves variable is not included because of its insignificance in the previous analysis.

Table 5
Order of financial liberalization (LEGAL1,corruption, law and order, and bureaucracy quality) FULL, LDC, and EMG: 5-year panels, 1980–2000

	Pred sign	FULL				LDC				EMG			
		Private credit	Stock market capitalization	Stock market total value	Stock market turnover	Private credit	Stock market capitalization	Stock market total value	Stock market turnover	Private credit	Stock market capitalization	Stock market total value	Stock market turnover
		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
Legal/inst. variable: LEGAL1 (General level of legal/institutional development)													
Other type of financial development ($t-5$)	+/−	0.0033	0.0282	−0.0028	0.0133	−0.0034	0.1306	0.1040	0.0624	0.0033	0.0701	0.0861	0.0454
		[0.0064]	[0.0286]	[0.0336]	[0.0307]	[0.0070]	[0.0646]**	[0.0499]**	[0.0554]	[0.0089]	[0.0710]	[0.0578]	[0.0660]
N		169	169	199	166	97	97	111	94	85	86	96	84
Adjusted R^2		0.12	0.11	0.27	0.02	0.07	0.27	0.22	−0.02	0.15	0.21	0.21	−0.01
Legal/inst. variable: CORRUPT (Corruption)													
Other type of financial development ($t-5$)	+/−	0.0025	0.0285	−0.0031	0.0189	−0.0046	0.1262	0.1008	0.0747	0.0014	0.0641	0.0872	0.0746
		[0.0067]	[0.0281]	[0.0333]	[0.0310]	[0.0078]	[0.0610]**	[0.0470]**	[0.0545]	[0.0099]	[0.0620]	[0.0514]*	[0.0622]
N		169	169	199	166	97	97	111	94	85	86	96	84
Adjusted R^2		0.12	0.11	0.27	0.02	0.07	0.30	0.21	−0.02	0.12	0.26	0.21	−0.01
Legal/inst. variable: LAO (Law and Order)													
Other type of financial development ($t-5$)	+/−	0.0039	0.0329	−0.0023	0.0136	−0.0008	0.142	0.1023	0.0484	0.0076	0.0988	0.0925	0.0332
		[0.0064]	[0.0291]	[0.0339]	[0.0309]	[0.0064]	[0.0640]**	[0.0499]**	[0.0548]	[0.0085]	[0.0708]	[0.0562]*	[0.0720]
N		169	169	199	166	97	97	111	94	85	86	96	84
Adjusted R^2		0.11	0.12	0.27	0.01	0.08	0.29	0.17	−0.04	0.12	0.23	0.16	−0.02
Legal/inst. variable: BQ (Bureaucracy Quality)													
Other type of financial development ($t-5$)	+/−	0.0026	0.0269	−0.0050	0.0102	−0.0025	0.1292	0.0982	0.0397	0.0032	0.0776	0.0684	0.0238
		[0.0066]	[0.0288]	[0.0337]	[0.0317]	[0.0070]	[0.0615]**	[0.0532]*	[0.0582]	[0.0103]	[0.0607]	[0.0572]	[0.0702]
N		169	169	199	166	97	97	111	94	85	86	96	84
Adjusted R^2		0.12	0.10	0.26	0.01	0.06	0.25	0.21	−0.02	0.08	0.17	0.19	0.01

Point estimates from OLS, heteroskedasticity robust standard errors in parentheses. Dependent variable is the average annual growth rate over a 5-year period. Financial openness is measured by the Chinn–Ito index (KAOPEN). Regressions include fixed time effects (estimates not reported). Observations of inflation rates in excess of 100% are dropped from the sample. *, **, and *** indicate marginal significance at the 10%, 5%, and 1% level.

Table 6
Relationship between different types of financial development (controlled for LEGAL1,Corruption, Law and order, and Bureaucracy quality) FULL, LDC, and EMG: 5-year panels, 1980–2000

	Pred sign	FULL				LDC				EMG			
		Private credit	Stock market capitalization	Stock market total value	Stock market turnover	Private credit	Stock market capitalization	Stock market total value	Stock market turnover	Private credit	Stock market capitalization	Stock market total value	Stock market turnover
		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
Legal/inst. variable: LEGAL1 (General level of legal/institutional development)													
Other type of financial	+/−	0.0410	0.1769	0.0443	−0.1059	0.0910	0.7073	0.5069	−0.1026	0.0609	0.4044	0.3362	−0.2559
development ($t\|t-5$)		[0.0504]	[0.2149]	[0.1745]	[0.2432]	[0.0402]**	[0.2446]***	[0.3314]$^{12\%}$	[0.6457]	[0.0440]	[0.2111]*	[0.3061]	[0.7226]
N		165	165	195	162	93	93	107	90	84	84	94	82
Adjusted R^2		0.12	0.10	0.27	0.02	0.13	0.24	0.18	−0.03	0.17	0.2	0.18	−0.01
Legal/inst. variable: Corrupt (Corruption)													
Other type of financial	+/−	0.0385	0.1614	0.0403	−0.0887	0.0893	0.6745	0.4858	−0.1425	0.0559	0.3538	0.3605	−0.0175
development ($t\|t-5$)		[0.0502]	[0.2186]	[0.1758]	[0.2468]	[0.0405]**	[0.2572]**	[0.3346]	[0.6512]	[0.0453]	[0.2225]$^{12\%}$	[0.3242]	[0.6922]
N		165	165	195	162	93	93	107	90	84	84	94	82
Adjusted R^2		0.13	0.10	0.27	0.02	0.12	0.26	0.17	−0.03	0.14	0.24	0.18	−0.02
Legal/inst. variable: LAO (Law and Order)													
Other type of financial	+/−	0.0403	0.1701	0.0394	−0.1102	0.0934	0.7617	0.5088	−0.0498	0.0630	0.4332	0.4339	−0.1560
development ($t\|t-5$)		[0.0499]	[0.2135]	[0.1743]	[0.2397]	[0.0411]**	[0.2352]***	[0.3244]$^{12\%}$	[0.5951]	[0.0443]	[0.2055]**	[0.3160]	[0.7124]
N		165	165	195	162	93	93	107	90	84	84	94	82
Adjusted R^2		0.12	0.11	0.27	0.01	0.14	0.25	0.13	−0.04	0.15	0.20	0.14	−0.03
Legal/inst. variable: BQ (Bureaucracy Quality)													
Other type of financial development	+/−	0.0427	0.1862	0.0525	−0.1068	0.0872	0.7163	0.4693	−0.1257	0.0856	0.5783	0.4021	−0.1157
($t\|t-5$)		[0.0501]	[0.2133]	[0.1724]	[0.2384]	[0.0414]**	[0.2353]***	[0.3267]	[0.6790]	[0.0515]*	[0.1907]***	[0.2379]*	[0.5846]
N		165	165	195	162	93	93	107	90	84	84	94	82
Adjusted R^2		0.12	0.09	0.26	0.01	0.12	0.22	0.18	−0.03	0.12	0.18	0.18	0.01

Point estimates from OLS, heteroskedasticity robust standard errors in parentheses. Dependent variable is the average annual growth rate over a 5-year period. Financial openness is measured by the Chinn–Ito index (KAOPEN). Regressions include fixed time effects (estimates not reported). Observations of inflation rates in excess of 100% are dropped from the sample. *, **, and *** indicate marginal significance at the 10%, 5%, and 1% level.

banking development in both the full sample and the subsamples, the coefficient for PCGDP_{t-5} is always significantly positive in the models with SMKC and SMTV for the LDC subsample with all the legal/institutional variables. These results suggest that banking development is an important precondition for the development in equity markets among less developed countries, while, as expected, the development in equity markets does not seem to be a precondition for banking development in any countries.

4.2. Complements or substitutes?

We now investigate the question of whether banking and equity markets are complements or substitutes. To do so, we make only one modification to the previous empirical model. Instead of the initial level of a different type of financial development, we include a new variable ($\mathrm{OtherFD}_t^i - \mathrm{OtherFD}_{t-5}^i$) which is the 5-year average growth of financial development in another sector.

$$\mathrm{FD}_t^i - \mathrm{FD}_{t-5}^i = \gamma_0 + \rho \mathrm{FD}_{t-5}^i + \gamma_1 \mathrm{KAOPEN}_{t-5}^i + \gamma_2 L^i + \gamma_3 \left(L^i \times \mathrm{KAOPEN}_{t-5}^i\right) + \tau_0 \left(\mathrm{OtherFD}_t^i - \mathrm{OtherFD}_{t-5}^i\right) + X_{t-5}^i \Gamma + \varepsilon_t^i \tag{5}$$

As in the previous analysis, the regressions on equity market development includes the 5-year average growth of PCGDP as ($\mathrm{OtherFD}_t^i - \mathrm{OtherFD}_{t-5}^i$) and those with PCGDP includes the 5-year average growth of SMKC. The estimator of our focus is now τ_0; a significantly positive (negative) coefficient estimate indicates that developments in equity and banking sectors are complements (substitutes).

Table 6 displays the estimated coefficients for ($\mathrm{OtherFD}_t^i - \mathrm{OtherFD}_{t-5}^i$). Interestingly, in the LDC group with all the legal/institutional variables, both ($\mathrm{PCGDP}_t^i - \mathrm{PCGDP}_{t-5}^i$) in the SMKC model and ($\mathrm{SMKC}_t^i - \mathrm{SMKC}_{t-5}^i$) in the PCGDP model are significantly positive. This means that for the group of less developed countries, the development in banking sector and that in equity markets are complementary to each other. Given the results in the previous section, while less developed countries may well be able to develop their financial markets by opening capital account if it is equipped with a reasonable level of legal/institutional development, banking development and equity market development seem to have synergistic effects.

5. Concluding remarks

We began our empirical investigation by examining the nexus between capital account liberalization and financial development. Our key empirical results suggest that financial openness does contribute to equity market development, but only when a threshold level of general development of legal systems and institutions has been attained. Financial development–measured as activity of the stock market–appears to depend upon capital account openness both individually and in interaction with the level of legal development.[33]

Interestingly, finance-specific legal institutions do not seem to fulfill the same role. Hence, we conclude that the general level of legal development matters more than the level of finance-specific legal/institutional development. These results are robust to the presence of outliers in the data and simultaneity.

[33] This finding is in part consistent with Klein's (2005) finding that the impact of capital account liberalization on economic growth is not monotonic, and depends upon the level of institutional quality. However, he demonstrates that the relationship between institutional quality and the responsiveness of economic growth to capital account liberalization is inverted-U shaped; countries with better (but not the best) institutions exhibit a statistically significant effect of capital account openness on economic growth.

We also obtain a series of other results. First, we find that the opening of goods markets is a precondition for financial opening. When the financial openness variable is instrumented with trade openness, the contribution of the general level of legal development still remains significant. This finding could be interpreted as evidence that an increase in trade openness is a prolog to financial openness, and thence to financial development.

Second, using a specification that controls for the level of legal and institutional development, we show that the development in the banking sector is a precondition for the development in equity markets. Finally, developments in less developed country banking and equity markets have interactive effects working in both directions.

Country list (108 countries)			
1	612	DZA	Algeria
2	213	ARG	Argentina[e]
3	193	AUS	Australia[i]
4	122	AUT	Austria[i]
5	313	BHS	Bahamas, The
6	419	BHR	Bahrain, Kingdom of[e]
7	513	BGD	Bangladesh[e]
8	316	BRB	Barbados
9	124	BEL	Belgium[i]
10	339	BLZ	Belize
11	638	BEN	Benin
12	218	BOL	Bolivia
13	616	BWA	Botswana[e]
14	223	BRA	Brazil[e]
15	748	BFA	Burkina Faso
16	618	BDI	Burundi
17	622	CMR	Cameroon
18	156	CAN	Canada[i]
19	626	CAF	Central African Rep.
20	628	TCD	Chad
21	228	CHL	Chile[e]
22	924	CHN	China[e]
23	233	COL	Colombia[e]
24	634	COG	Congo, Republic of
25	238	CRI	Costa Rica
26	662	CIV	Cote d'Ivoire[e]
27	423	CYP	Cyprus
28	128	DNK	Denmark[i]
29	243	DOM	Dominican Republic
30	248	ECU	Ecuador[e]
31	469	EGY	Egypt[e]
32	253	SLV	El Salvador
33	819	FJI	Fiji
34	172	FIN	Finland[i]
35	132	FRA	France[i]
36	646	GAB	Gabon
37	648	GMB	Gambia, The
38	134	DEU	Germany[i]
39	652	GHA	Ghana[e]
40	174	GRC	Greece[i, e]
41	258	GTM	Guatemala
42	263	HTI	Haiti

43	268	HND	Honduras
44	532	HKG	Hong Kong[e]
45	176	ISL	Iceland[i]
46	534	IND	India[e]
47	536	IDN	Indonesia[e]
48	429	IRN	Iran, Islamic Rep. of
49	178	IRL	Ireland[i]
50	436	ISR	Israel[e]
51	136	ITA	Italy[i]
52	343	JAM	Jamaica[e]
53	158	JPN	Japan[i]
54	439	JOR	Jordan[e]
55	664	KEN	Kenya[e]
56	542	KOR	Korea[e]
57	443	KWT	Kuwait
58	666	LSO	Lesotho
59	674	MDG	Madagascar
60	676	MWI	Malawi
61	548	MYS	Malaysia[e]
62	678	MLI	Mali
63	181	MLT	Malta
64	682	MRT	Mauritania
65	684	MUS	Mauritius[e]
66	273	MEX	Mexico[e]
67	686	MAR	Morocco[e]
68	558	NPL	Nepal
69	138	NLD	Netherlands[i]
70	196	NZL	New Zealand[i]
71	278	NIC	Nicaragua
72	692	NER	Niger
73	694	NGA	Nigeria[e]
74	142	NOR	Norway[i]
75	449	OMN	Oman[e]
76	564	PAK	Pakistan[e]
77	283	PAN	Panama
78	853	PNG	Papua New Guinea
79	288	PRY	Paraguay
80	293	PER	Peru[e]
81	566	PHL	Philippines[e]
82	182	PRT	Portugal[i, e]
83	714	RWA	Rwanda
84	456	SAU	Saudi Arabia[e]
85	722	SEN	Senegal
86	718	SYC	Seychelles
87	724	SLE	Sierra Leone
88	576	SGP	Singapore[e]
89	199	ZAF	South Africa[e]
90	184	ESP	Spain[i]
91	524	LKA	Sri Lanka[e]
92	734	SWZ	Swaziland
93	144	SWE	Sweden[i]
94	146	CHE	Switzerland[i]
95	463	SYR	Syrian Arab Republic
96	738	TZA	Tanzania
97	578	THA	Thailand[e]
98	742	TGO	Togo

99	369	TTO	Trinidad and Tobago[e]
100	744	TUN	Tunisia[e]
101	186	TUR	Turkey[e]
102	746	UGA	Uganda
103	112	GBR	United Kingdom[i]
104	111	USA	United States[i]
105	298	URY	Uruguay
106	299	VEN	Venezuela, Rep. Bol.[e]
107	754	ZMB	Zambia
108	698	ZWE	Zimbabwe[e]

i–industrialized countries (IDC), 22 countries.
e–emerging market countries (EMG),
31 countries (Standard and Poor (2000)).

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