JEL classification: G29, F19, K49
Keywords: banking sector development, institutions, trade openness, size of government, panel data analysis

Institutions, Policy and Banking Sector Development: A Reassessment

Ioannis FILIPPIDIS (filioan@yahoo.com), *corresponding author*
Constantinos KATRAKILIDIS
both: Department of Economics, Aristotle University of Thessaloniki, Greece

Abstract
This paper investigates the links between institutional quality and government policy in banking sector development, using data from 80 low-, middle- and high-income economies during 1985–2007. In order to investigate the effect of economic, political and social institutions on bank-based development, we employ dynamic panel techniques and, more specifically, the system-GMM estimator, which controls for endogeneity among variables. The results demonstrate that: i) economic institutional quality, and especially the legal dimension, is the main determinant for banking sector development; ii) social institutions have a greater impact for low- and middle-income countries, while political institutions have a greater impact for high-income countries; and iii) government policy, in terms of government size, is crucial regardless of the stage of economic development.

1. Introduction

The relationship between finance and economic development has been the subject of increasing attention in recent years. Historically, the role of banks has been to translate household savings into enterprise investment, monitor investments and allocate funds, and to price and spread risk. Although the channels and even the direction of causality have not been fully clarified, the argument that financial institutions might maximize economic growth is supported empirically by many researches in the financial development literature, from cross-country comparisons (King and Levine, 1993; Levine and Zervos, 1998), firm-level studies (Demirguç-Kunt and Maksimovic, 1998), research based on industry level-data (Rajan and Zingales, 1998), time-series research (Rousseau and Wachtel, 2000), and econometric investigations that use panel techniques (Apergis *et. al.,* 2007).

In order to design effective policies that encourage financial development and thus facilitate growth, researchers went a step further, investigating the sources of financial (banking and stock market) development. The main findings for the investigation of financial sector determinants can be summarized as follows: first, the degree of a country's openness, such as capital account openness (Chinn and Ito, 2002) and trade openness (Rajan and Zingales, 2003), helps the development of the financial sector. Second, a country's economic and political institutions, formed by a country's legal origin (La Porta *et al*., 1997, 1998) or by a country's initial endowment (Acemoglu, Johnson and Robinson, 2001), affects both creditor rights and private credit, and the extent of creditor rights protection has an independent effect on financial sector development. Third, macroeconomic factors, such as the level of inflation, impact financial sector development (Boyd, Levine and Smith, 2001).

In recent years, there has been growing emphasis on the institutional factors in the literature. The importance of institutions was emphasized in the work of Douglas

North (1990). Institutions are the rules of the game which a society lays down for itself and which determine the incentives people face and thus the choices they make in interpersonal interactions. Another way of looking at institutions is through their impact on the transaction costs of contract enforcement. Well-defined rules and their smooth enforcement greatly reduce the transaction costs that economic agents face and thus lead to more efficient outcomes.

Although the existing literature in some way explains why some countries are more financially developed than others, it is still not able to clarify why some countries remain financially underdeveloped. With regard to this motivation, we try to provide a more comprehensive assessment especially of the finance-institutions link by presenting two extensions. First, we decompose institutions into economic, political and social in order to quantify the effect of institutions on financial development and to check which dimension of institutions matters more for financial development.

It is important to distinguish between these dimensions since they have different initial hypotheses and different structural characteristics. Political institutions include the type of government and the power allocated to and constraints imposed on politicians and the political elite. Economic institutions, on the other hand, shape the economic environment in which economic agents act. Important economic institutions include property rights, the presence and quality of markets, regulatory structures, etc. Finally, social institutions are those that enact the general principles of the social security, education and health systems.

The second extension of this study focuses on economic institutional quality, which is decomposed into *quality of government* and *quality of the legal system* in order to identify which dimension has a greater impact on financial development. We make this distinction in order to proxy the two different hypotheses of institutional quality: the "*law and finance*" theory (La Porta *et al.*, 1997) and the "*initial endowment*/*economic institutions*" hypothesis (Acemoglu *et al.*, 2001, 2004). According to the first theory, countries have different institutions due to different legal structures, while the second hypothesis supports the idea that countries have different institutions due to different initial functioning of the economic/political system. Although significant research tried to test these theories in the past by separately testing on legal origin or settler mortality variables, new tools and indexes provide more complete measures of legal institutions and government efficiency, and thus a more precise view of their causal relations.

To investigate these extensions, we employ dynamic panel techniques that allow us to avoid the known problems of heterogeneity and endogeneity of the traditional techniques. Static panel estimates omit dynamics causing the problem of dynamic panel bias and as such do not allow us to study the dynamics of adjustment (Baltagi, 2008). Omitted dynamics mean that such models are misspecified, because they omit the entire history of the right-hand-side variables. An underlying advantage of the dynamic GMM estimation is that all variables from the regression that are not correlated with the error term (including lagged and differenced variables) can be potentially used as valid instruments. More specifically, we employ the system-GMM estimator developed by Arellano and Bover (1995) and Blundell and Bond (1998), which generally produces efficient estimates by improving precision and reducing the finite sample bias (Baltagi, 2008).

Our empirical results support the following results: first, economic institutional quality is of fundamental importance for banking sector development, especially for middle-income countries. Second, the legal dimension of economic institutions better explains international differences in the level of banking sector development. Third, political institutional quality (democracy) is statistically significant in high-income countries, while social institutional quality (education) is significant in low- and middle-income countries. Finally, government policy impacts banking sector development regardless of the stage of economic development.

The rest of the paper is structured as follows: in the next section, there is a brief presentation of the related financial development literature; Section 3 describes the variables and the methodology used; in Section 4 we present the empirical results; and the last section provides a summary and relative conclusions.

2. Literature Review

In the financial literature there are three major elements that can explain the differences between financial development among different countries: liberalization (price and market liberalization); institutional reforms (redefining the role of the state, market and business sector); and macroeconomic stabilization (control of inflation and budget deficits).

First of all, opening in the financial market and/or in the goods market is a positive factor for financial markets. Trade openness promotes financial development in two explicit ways: first, by increasing the efficiency of technology (through knowledge spillovers) and, second, by increasing competition. On the other hand, freeing the financial system from government intervention allows more efficient allocation of resources by various economic agents. As such, the liberalization process reduces inefficiency, improves transparency and fosters a competitive environment which is conducive for the economy as a whole.

The link between openness and financial development was best demonstrated by the influential work of Rajan and Zingales (2003). The authors argue that opening of both the trade and capital accounts holds the key to successful financial development, mainly because it weakens the opposition role of interest groups and especially of the incumbent industrial firms and the domestic financial sector. Recent work has supported the view that liberalization policies that encourage openness to external trade tend to boost financial development (Do and Levchenko, 2004; Beck *et. al.*, 2001, 2003; Huang and Temple, 2005), while Levine and Zervos (1998), Chinn and Ito (2002, 2005) and Demirguç-Kunt and Detragiache (1998) highlighted the positive effect of capital account liberalization.

The second major factor of financial development is institutions. The importance of institutions was emphasized in the work of Douglas North (1990): institutions are "the rules of the game in a society or, more formally, the humanly devised constraints that shape human interaction". They consist of both informal constraints (customs, traditions, trust, social capital) and formal rules (constitutions, laws, property rights). North (1990) argued that institutions are a primary cause of economic development since institutions determine the fundamental structure of human exchange, whether such exchange is political, social or economic. Better institutional quality, i.e. well-defined rules and their smooth enforcement, greatly reduces the transaction costs that economic agents face and thus leads to more efficient outcomes.

Either under the scope of the "*law and finance*" theory (La Porta *et al.*, 1997; 1998) or the "*initial endowment hypothesis*" (Acemoglu *et al.*, 2001), the financial development literature provides evidence on the relative importance of both hypotheses. The quality of institutions and the legal framework are likely to affect financial development through the ability of the financial sector to channel resources to finance productive activities.

The empirical evidence shows that reinforcing the rights of creditors and contract enforcement tend to deepen financial markets (Levine *et al.*, 2000; Demirguç-Kunt *et al.*, 2004; Law and Azman-Saini, 2008). The availability of information on borrowers also improves the availability of credit and enhances the efficiency of financial institutions (Demirguc-Kunt *et al.*, 2004; Detragiache *et al.*, 2005). Djankov *et al.* (2008a and 2008b) found that both creditor protection through the legal system and information sharing institutions are associated with higher ratios of private credit to GDP and that legal origins are an important determinant of both factors. Comparing the two hypotheses, Beck *et al.* (2003) provide evidence that initial endowments are more robustly associated with financial intermediary development than with legal origins. Still today, economists are focusing attention on the relationship between institutional factors and financial system development, bringing to the fore the importance of institutions in explaining a large part of the variation in financial development across countries and over time (Hasan *et al.*, 2009; Huang, 2010; Minea and Villieu, 2010).

The last group of factors of financial development comprises macroeconomic conditions and particularly inflation. Recent theories demonstrate how increases in the rate of inflation have negative repercussions for financial sector performance. The common feature of these theories is that there are informational asymmetries in credit markets. Thus, as inflation rises, the real rate of return on money (and on assets in general) falls, credit market frictions worsen and credit rationing consequently becomes more severe. As a result, the financial sector makes fewer loans, resource allocation is less efficient, and intermediary activity diminishes with adverse implications for capital investment.

According to Boyd, Levine and Smith (2001), the inflation-finance correlation emerges independently of the time period considered, the empirical procedure employed, or the set of variables that appear as additional explanatory variables in various regressions. It is also not sensitive to the inclusion or exclusion of countries that have experienced very high rates of inflation. Moreover, there is evidence of threshold effects. For countries with inflation rates below some "critical level", inflation and financial market performance exhibit a strongly negative correlation. For inflation rates above the threshold, inflation and finance seem essentially uncorrelated.

3. Variables and Methodology

3.1 Data and Variables

The data set consists of a panel of observations for a group of 80 countries for the period 1985–2007. The sample countries are divided into different income groups based on the World Bank classification. The present study differs from much of the empirical literature in that it seeks to address the three dimensions of the insti-

tutions (political, economic and social) and the possible effects of different aspects of economic institutions.

Banking sector development measures: The three underlying variables for the financial index are the ratio of liquid liabilities to GDP, based on the liquid liabilities of the financial system (LL); the ratio to GDP of credit issued to the private sector by banks and other financial intermediaries (PC); and the ratio of commercial bank assets to the sum of commercial bank assets and central bank assets (DBA). The overall banking sector development is obtained by the arithmetic average of the normalized values of these three variables.[1]

Economic institutions measures: Most studies on financial development find that legal institutions and effective governance are important factors that improve the development of financial systems. In this work we will focus on these two dimensions of institutions, as they take shape in these two areas:

a) the quality of government (approached by the indicators of bureaucracy, corruption, legislative capacity and accountability of the government, taken from the International Country Risk Guide Database) in order to proxy the "endowment theory" hypothesis;

b) the quality of the legal system (approached by the "Legal Structure and Security of Property Rights" index, taken from the Economic Freedom of the World: 2009 Annual Report[2]) in order to proxy the "law and finance" view. An important feature of the index is that it does not simply reflect laws on the books, but rather the overall legal environment as it relates to the protection of property rights and the overall quality of legal institutions. It is constructed from five key elements: judicial independence, impartial courts, protection of intellectual property, military interference in the rule of law and integrity of the legal system.

The overall economic institutions indicator is obtained by multiplying the ICRG index and the legal indicator. The multiplication implies that the resulting index treats both legal quality and government quality as complements.[3]

Political institutions measure: Following Haber and Perotti (2008), who suggested that a political system with more democratic accountability on the part of policymakers can achieve a higher level of financial development, we employ the *Polity* index.[4] The *Polity* variable was designed to record the regime's institutionalized authority characteristics. The database records a *democracy score* and an *autocracy score* (ranging from 0 to 10), and subtracting the autocracy score from the democracy score of a country creates the *Polity2* variable. Higher scores of *Polity2* therefore indicate a higher degree of democracy.

Social institutions measure: There are different indicators for the measurement of social capital, such as the average number of years of schooling, literacy rate,

[1] In order to normalize our variables, we subtract each value from the series minimum and divide this by the series range (maximum minus minimum value), which yields values between 0 and 1. An advantage of such transformation is that it allows our reform series to be measured over the same scale.

[2] http://www.freetheworld.com/download.html

[3] Alternative measures for the quality of government were used to test for the robustness of the results (including other indicators from the International Country Risk Guide, such as government stability, regulatory quality and religious/ethnic pressures). The estimates are similar and are available on request.

[4] http://www.systemicpeace.org/polity/polity4.htm

government spending on education and the percentage of the population with secondary education, which is the standard indicator in economic research. However, secondary education may not be an ideal index for measuring human capital, since secondary education can partly empower social skills and knowledge needed for conscious (financial) decisions. In this paper, we use the percentage of the population with tertiary education, which is a more direct measure of the level of specialized education of a country's population.

Trade Openness Variable: A volume-based measure of trade openness is constructed as

$$TO = (IMP+EXP)/GDP$$

where *IMP* (*EXP*) denotes the sum of imports (exports) of goods and services.

Financial openness variable: Financial openness is measured using the data on foreign assets and liabilities from Lane and Milesi-Ferretti (2007). A volume-based measure of international financial integration is constructed as

$$FO = (PE_A+PE_L+FD_A+FD_L+D_A+D_L+FDI_A+FDI_L)/GDP$$

where PE_A, FD_A, D_A and FDI_A (PE_L, FD_L, D_L and FDI_L) denote the stock of portfolio equity, financial derivatives, debt and foreign direct investment assets (liabilities), respectively.

Macroeconomic variables: a) inflation, aimed at capturing the consistency of monetary policy; and b) GDP growth, which has been commonly employed in the literature as a standard measure of a country's development.

Policy variable: In order to investigate the impact of government policy (as approximated by public investment, public consumption, government subsidies and tax policy), we use the corresponding "Size of Government" sub-index of Gwartney and Lawson (2006).[5] This index reflects in a direct and indirect way how socialist or liberal a state is and the extent of privatization that takes place in the economy. La Porta *et al.* (1999) find that the quality of government institutions is positively associated with the size of government; however, it is possible that the government's dominance over the economy could crowd out private financial exchange.

Banking crisis measure: Finally, our research will include a banking crisis dummy in order to account for the frequency of banking crises, their resolution and their real effects, and allow us to understand at a higher level the operation of the financial—and especially the banking—system.

3.2 Methodology

To assess the relationship between institutions and banking sector development, the following model is estimated:

$$BSD_{it} = \alpha_{0i} + \gamma BSD_{it-1} + \beta_1 INS_{it} + \beta_2 FO_{it} + \beta_3 TO_{it} + \beta_4 X_{it} + u_{it}$$

where *BSD* is banking sector development, *INS* is institutions (economic, political and social), *FO* is financial openness, *TO* is trade openness and *X* is a vector of

[5] Countries with a smaller proportion of government expenditures and government investment, smaller transfer sectors and fewer government enterprises received higher ratings.

variables including inflation (*INFL*), GDP growth (*GDP*), government policy (*POL*) and a banking crisis dummy (*CRI*). The subscripts *i* and *t* represent country and time period, respectively.

In order to estimate the above equation, we employ dynamic panel techniques that allow us to avoid the known problems of heterogeneity and endogeneity of the traditional techniques. To obtain more efficient estimates, the system-GMM estimation procedure (Blundell and Bond, 1998) stacks the equation in levels with those in first-differences and estimates the system with lagged differences of the time-varying variables as additional instruments for the equation in levels. The system-GMM estimator thus enables us to control for simultaneity, reverse causality and unobservable heterogeneity.[6]

Comparing the quantitative impact of institutions with that of other variables raises also the problem of unit measurement. To address this problem, we use beta coefficient analysis. This analysis avoids the problem of unit measurement by standardizing regressors, since the beta coefficients measure the impact of a one-standard-deviation change in a given regressor on the dependent variable. This approach allows us to directly compare the impact of different variables on financial development in quantitative terms.

4. Estimation Results

Table 1 reports the regression results from the system-GMM for the period 1985–2007 for our sample of 80 countries. The dependent variable is Banking Sector Development and the explanatory variables are Economic Institutions, Political Institutions, Social Institutions, Financial Openness, Trade Openness, Inflation, GDP Growth and Government Policy. We estimate three different models, with the LEGAL index, the ICRG index and the overall economic institutions indicator. In *Tables 2, 3, 4* and *5* we present the regression results for different groups of countries according to their level of economic development.

As shown in *Table 1*, where the whole sample of countries is estimated, economic institutions heavily affect financial development (0.0716) with the dimension of legal structure to be displayed as more important at a rate close to 0.0804 (model 1). Legal and judicial reform has become a core component of countries' governance portfolio, which is primarily motivated by their concerns over regulation of economic activity and private sector development. Therefore, their priority is to ensure the stability of the legal framework, secure property rights and enforce contracts. Regarding the other variables in question, openness in the goods market (rather that in financial markets) and social institutions (rather than democracy) have statistically significant coefficients. As shown in model 3, GDP growth is considered as the main determinant of banking sector development (0.0824), followed by government policy (0.0559) and inflation (-0.0007).

To obtain some insights into the economic significance of the effects, the standardized regression coefficients are presented in the next three columns of

[6] Although the system-GMM can generate an enormous number of potentially "weak" instruments that can cause biased estimates, our empirical approach uses system-GMM based on the xtabond2 command developed by Roodman (2006, 2007) for use with STATA, with observation weights, automatic Hansen testing and the ability to "collapse" instruments to limit instrument proliferation.

Table 1 Institutions and Banking Sector Development

Dependent variable: Banking Sector Development (BSD)
Period: 1985–2007
Countries: 80

Estimation Model:

$$BSD_{it} = \beta_{0i} + \gamma BSD_{it-1} + \beta_1 INS_{it} + \beta_2 FO_{it} + \beta_3 TO_{it} + \beta_4 INFL_{it} + \\ + \beta_5 GDP_{it} + \beta_6 POL_{it} + \beta_7 CRI_{it} + \varepsilon_{it}$$

	GMM coefficients			Standardised coefficients		
	Model 1	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**
BSD_{-1}	0.8207*** (0.0505)	0.8266*** (0.0505)	0.8283*** (0.0335)	0.8130	0.8200	0.8210
LEGAL	0.0804*** (0.0233)			0.1100		
GOV		0.0667*** (0.0207)			0.1060	
ECON			0.0716*** (0.0151)			0.1300
DEMO	0.0056 (0.0050)	0.0035 (0.0049)	0.0054 (0.0054)	0.0129	0.0081	0.0123
EDUC	0.0005** (0.0002)	0.0005** (0.0002)	0.0003 (0.0002)	0.0332	0.0342	0.0187
FO	0.0007 (0.0007)	0.0008 (0.0007)	0.0006 (0.0006)	0.0146	0.0174	0.0133
TO	0.0034 (0.0033)	0.0061* (0.0036)	0.0033 (0.0032)	0.0094	0.0171	0.0093
INFL	-0.0006** (0.0003)	-0.0008*** (0.0002)	-0.0007*** (0.0003)	-0.0289	-0.0356	-0.0323
GDP	0.0738* (0.0444)	0.0599 (0.0426)	0.0824* (0.0493)	0.0239	0.0194	0.0266
POL	0.0287*** (0.0082)	0.0300*** (0.0085)	0.0559*** (0.0108)	0.0307	0.0321	0.0599
CRI	-0.0075*** (0.0026)	-0.0088*** (0.0027)	-0.0076*** (0.0027)	-0.0154	-0.0182	-0.0157
Observations	1840	1840	1840			
	Arellano-Bond test for serial correlation					
AR(1)	0.004	0.004	0.003			
AR(2)	0.923	0.924	0.936			
	Tests of overid. restrictions					
Sargan	0.821	0.903	0.937			
Hansen	0.734	0.774	0.842			

Notes: Regressions use the system-GMM estimator. Standard errors are reported in brackets. The instruments used are Economic Institutions (ECON = LEGAL*GOV), Political Institutions (DEMO), Social Institutions (EDUC), Financial Openness (FO), Trade Openness (TO), Inflation (INFL), GDP Growth (GDP), Government Policy (POL) and Banking Crisis (CRI): for the difference equations, all in lagged levels and, for the level equation, in first difference. *** , **, and * denote significance at the 1%, 5% and 10% levels, respectively. Arellano test for serial correlation and Sargan/Hansen over-identifying restrictions test report *p*-value.

the table. The standardized coefficients show that a one-standard-deviation increase in overall economic institutional quality raises the financial sector by 0.1300 standard deviations (model 3). Model 3 also indicates that the impact of government policy on

Table 2 Institutions and Banking Sector Development

Dependent variable: Banking Sector Development (BSD)
Period: 1985–2007
Countries: 16 low-income countries

Estimation Model:
$$BSD_{it} = \beta_{0i} + \gamma BSD_{it-1} + \beta_1 INS_{it} + \beta_2 FO_{it} + \beta_3 TO_{it} + \beta_4 INFL_{it} + \\ + \beta_5 GDP_{it} + \beta_6 POL_{it} + \beta_7 CRI_{it} + \varepsilon_{it}$$

	GMM coefficients			Standardised coefficients		
	Model 1	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**
BSD_{-1}	0.8882*** (0.0304)	0.8888*** (0.0285)	0.8966*** (0.0247)	0.8910	0.8910	0.8990
LEGAL	0.0045 (0.0209)			0.0056		
GOV		0.0035 (0.0156)			0.0057	
ECON			-0.0001 (0.0220)			-0.0001
DEMO	0.0020 (0.0029)	0.0015 (0.0029)	0.0017 (0.0029)	0.0076	0.0058	0.0064
EDUC	0.0004* (0.0002)	0.0004 (0.0003)	0.0004 (0.0002)	0.0187	0.0197	0.0178
FO	0.0043 (0.0040)	0.0047 (0.0038)	0.0051 (0.0036)	0.0305	0.0332	0.0361
TO	0.0093*** (0.0031)	0.0099*** (0.0029)	0.0096*** (0.0033)	0.0461	0.0488	0.0475
INFL	-0.0008*** (0.0002)	-0.0008*** (0.0002)	-0.0008*** (0.0002)	-0.0991	-0.101	-0.0998
GDP	0.0408 (0.0303)	0.0386 (0.0326)	0.0488 (0.0327)	0.0282	0.0267	0.0337
POL	0.0253** (0.0099)	0.0244** (0.0114)	0.0232* (0.0128)	0.0451	0.0435	0.0414
CRI	-0.0036 (0.0026)	-0.0035 (0.0026)	-0.0037 (0.0026)	-0.0137	-0.0135	-0.0142
Observations	575	575	575			
	Arellano-Bond test for serial correlation					
AR(1)	0.072	0.070	0.070			
AR(2)	0.570	0.570	0.562			
	Tests of overid. restrictions					
Sargan	0.593	0.599	0.604			
Hansen	0.845	0.843	0.856			

Notes: See notes below *Table 1*.

financial development (0.0599) is greater than the impact of inflation (-0.0323) and the impact of GDP growth (0.0266). The findings seem to suggest that improving institutional quality and reducing government intervention are as good as or even better than all other policy options available to policymakers.

In the case where low-income countries are examined (*Table 2*), the policy implications are obvious: trade openness, macroeconomic stability (inflation) and policy orientation are the three key elements for the development of the financial

Table 3 Institutions and Banking Sector Development

Dependent variable: Banking Sector Development (BSD)
Period: 1985–2007
Countries: 39 low- and lower-middle income countries

Estimation Model:

$$BSD_{it} = \beta_{0i} + \gamma BSD_{it-1} + \beta_1 INS_{it} + \beta_2 FO_{it} + \beta_3 TO_{it} + \beta_4 INFL_{it} + \\ + \beta_5 GDP_{it} + \beta_6 POL_{it} + \beta_7 CRI_{it} + \varepsilon_{it}$$

	GMM coefficients			Standardised coefficients		
	Model 1	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**
BSD-1	0.8405*** (0.0326)	0.8564*** (0.0378)	0.8599*** (0.0281)	0.8390	0.8540	0.8580
LEGAL	0.0701* (0.0297)			0.0725		
GOV		0.0444* (0.0235)			0.0529	
ECON			0.0759** (0.0307)			0.0676
DEMO	0.0018 (0.0041)	-0.0020 (0.0059)	-0.0008 (0.0047)	0.0051	-0.0059	-0.0023
EDUC	0.0009*** (0.0003)	0.0006*** (0.0002)	0.0006*** (0.0002)	0.0440	0.0314	0.0309
FO	-0.0001 (0.0059)	0.0005 (0.0061)	0.0007 (0.0060)	-0.0004	0.0026	0.0033
TO	0.0065*** (0.0025)	0.0081*** (0.0025)	0.0059*** (0.0023)	0.0259	0.0327	0.0238
INFL	-0.0003** (0.0002)	-0.0004** (0.0002)	-0.0004** (0.0002)	-0.0280	-0.0313	-0.0336
GDP	-0.0083 (0.0563)	0.0226 (0.0514)	0.0112 (0.0544)	-0.0040	0.0109	0.0054
POL	0.0221** (0.0086)	0.0300** (0.0123)	0.0377*** (0.0146)	0.0290	0.0393	0.0495
CRI	-0.0063*** (0.0021)	-0.0064*** (0.0021)	-0.0060*** (0.0022)	-0.0179	-0.0181	-0.0171
Observations	897	897	897			
	Arellano-Bond test for serial correlation					
AR(1)	0.042	0.038	0.039			
AR(2)	0.638	0.582	0.605			
	Tests of overid. restrictions					
Sargan	0.777	0.769	0.813			
Hansen	0.905	0.928	0.888			

Notes: See notes below *Table 1*.

sector. In the presence of structural obstacles, countries that wish to overcome their financial difficulties have to focus on changing their macroeconomic environment and their closed economic system. Trade openness exhibits a strong positive effect (average coefficient 0.0096), demonstrating the importance of trade in fostering the formation of active financial markets by increasing the efficiency of technology (through knowledge spillovers).

The standardized coefficients show that a one-standard-deviation increase in inflation leads to a 0.0998-standard-deviation decrease in banking sector development (model 3). At the same time, a one-standard-deviation increase in trade openness leads to a 0.0475-standard-deviation increase in banking sector development. The result implies that counter-inflationary and open economy policies are significant determinants for the low-income countries in order to achieve higher levels of finance.

When the lower-middle-income countries enter our sample (*Table 3*), economic and social institutions gain significant importance. Economic institutional quality (0.0759, model 3) and particularly the legal dimension (0.0701, model 1) are the leading determinants in the development of the financial sector, while policy (0.0377), inflation (-0.0004) and trade openness (0.0059) are again significant determinants of banking sector development. In terms of policy implications, the most important institutional developments for a developing economy are the emergence and legalization of the market economy, the establishment of secure property rights, fairness of the judicial system and the extent of allowance and tolerance of the local governments to the private sector.

Indeed, as shown in model 1 of beta coefficients, if we increase the legal quality of economic institutions by one standard deviation, financial development will increase by 0.0725 standard deviation. In terms of standard units, increasing the overall quality of economic institutions is more than twice as effective as increasing trade openness or decreasing inflation (model 3); in fact, increasing the overall quality of economic institutions is 0.0676/0.0238 = 2.84 and 0.0676/0.0336 = 2.01 times more effective, respectively.

With the inclusion of upper-middle-income countries (*Table 4*), the impact of economic institutions reaches its highest value (0.0962, model 3). Government policy has a significant effect on banking sector development, followed by trade openness, inflation and social institutions. An interesting implication that emerges from these results is that in the early stages of economic development, the formation of good economic institutions (approached either by the quality of government or by the quality of the legal system and protection of property rights) is fundamental for reaching a higher level of financial development.

In models 1 and 2 of beta coefficients, this is exactly the case: if we increase the legal quality of economic institutions by one standard deviation, financial development will increase by 0.0978 standard deviation, while increasing government quality by one standard deviation will result in an increase of 0.0848 standard deviation. The political factor is the second-best determinant, since an increase of government liberalization by one standard deviation leads to a 0.0763-standard-deviation increase in banking sector development.

A somewhat different analysis arises when the high-income countries are examined (*Table 5*): first, financial openness, and not trade openness, impacts banking sector development (0.0008); second, political institutions (democracy), and not social institutions (education), are an important determinant. Effective political institutions are inextricably linked to the existence of legitimate and representative parliamentary procedures, which are a constituent part of a democratic regime. Apart from economic institutions (0.0188), the main determinants for the development of

Table 4 Institutions and Banking Sector Development

Dependent variable: Banking Sector Development (BSD)
Period: 1985–2007
Countries: 52 low- and middle-income countries

Estimation Model:

$$BSD_{it} = \beta_{0i} + \gamma BSD_{it-1} + \beta_1 INS_{it} + \beta_2 FO_{it} + \beta_3 TO_{it} + \beta_4 INFL_{it} + \\ + \beta_5 GDP_{it} + \beta_6 POL_{it} + \beta_7 CRI_{it} + \varepsilon_{it}$$

	GMM coefficients			Standardised coefficients		
	Model 1	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**
BSD-1	0.7856*** (0.0361)	0.7977*** (0.0434)	0.8058*** (0.0357)	0.7840	0.7960	0.8040
LEGAL	0.0891*** (0.0216)			0.0978		
GOV		0.0665*** (0.0205)			0.0848	
ECON			0.0962*** (0.0249)			0.0977
DEMO	-0.0015 (0.0061)	-0.0056 (0.0062)	-0.0053 (0.0061)	-0.0045	-0.0164	-0.0157
EDUC	0.0008** (0.0003)	0.0007** (0.0003)	0.0005 (0.0003)	0.0417	0.0375	0.0267
FO	0.0011 (0.0013)	0.0017 (0.0017)	0.0021 (0.0014)	0.0076	0.0112	0.0142
TO	0.0065** (0.0032)	0.0083*** (0.0030)	0.0054* (0.0029)	0.0253	0.0326	0.0210
INFL	-0.0005* (0.0003)	-0.0005** (0.0003)	-0.0005* (0.0003)	-0.0341	-0.0358	-0.0345
GDP	0.0409 (0.0575)	0.0740 (0.0552)	0.0650 (0.0559)	0.0192	0.0347	0.0305
POL	0.0377*** (0.0111)	0.0439*** (0.0108)	0.0602*** (0.0132)	0.0477	0.0556	0.0763
CRI	-0.0091*** (0.0027)	-0.0096*** (0.0028)	-0.0092*** (0.0028)	-0.0270	-0.0287	-0.0274
Observations	1196	1196	1196			
	Arellano-Bond test for serial correlation					
AR(1)	0.011	0.010	0.010			
AR(2)	0.994	0.934	0.960			
	Tests of overid. restrictions					
Sargan	0.988	0.983	0.992			
Hansen	0.991	0.990	0.992			

Notes: See notes below *Table 1*.

the banking sector in high-income countries are considered to be government policy (0.0437), GDP growth (0.0410), inflation (-0.0273) and democracy (average coefficient 0.0267).

Looking at the beta coefficients of political institutions and financial openness, the results are surprising: changing democracy by one standard deviation will change the development of the banking sector by 0.0528 standard deviation, more than the change of legal quality (0.0386), and by 0.0379 standard deviation, more

Table 5 Institutions and Banking Sector Development

Dependent variable: Banking Sector Development (BSD)
Period: 1985–2007
Countries: 28 high-income countries

Estimation Model:

$$BSD_{it} = \beta_{0i} + \gamma BSD_{it-1} + \beta_1 INS_{it} + \beta_2 FO_{it} + \beta_3 TO_{it} + \beta_4 INFL_{it} + \\ + \beta_5 GDP_{it} + \beta_6 POL_{it} + \beta_7 CRI_{it} + \varepsilon_{it}$$

	GMM coefficients			Standardised coefficients		
	Model 1	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**
BSD$_{-1}$	0.8890*** (0.0489)	0.8510*** (0.0504)	0.8629*** (0.0514)	0.8840	0.8460	0.8580
LEGAL	0.0274** (0.0122)			0.0305		
GOV		0.0292*** (0.0087)			0.0386	
ECON			0.0188** (0.0064)			0.0331
DEMO	0.0223* (0.0125)	0.0310** (0.0144)	0.0375 (0.0160)	0.0379	0.0528	0.0639
EDUC	0.0001 (0.0001)	0.0001 (0.0002)	0.0001 (0.0002)	0.0043	0.0106	0.0075
FO	0.0005 (0.0004)	0.0007* (0.0004)	0.0008* (0.0005)	0.0194	0.0310	0.0339
TO	0.0043 (0.0050)	0.0043 (0.0053)	0.0037 (0.0055)	0.0121	0.0119	0.0103
INFL	-0.0314** (0.0141)	-0.0352** (0.0124)	-0.0273* (0.0144)	-0.0140	-0.0157	-0.0122
GDP	0.0434** (0.0211)	0.0416** (0.0194)	0.0410** (0.0204)	0.0123	0.0118	0.0116
POL	0.0311* (0.0171)	0.0426** (0.0182)	0.0437** (0.0187)	0.0382	0.0524	0.0537
CRI	-0.0064* (0.0038)	-0.0059 (0.0043)	-0.0052 (0.0041)	-0.0117	-0.0106	-0.0095
Observations	644	644	644			
Arellano-Bond test for serial correlation						
AR(1)	0.002	0.003	0.003			
AR(2)	0.200	0.198	0.193			
Tests of overid. restrictions						
Sargan	0.614	0.643	0.542			
Hansen	0.425	0.523	0.457			

Notes: See notes below *Table 1*.

than the change of government quality (0.0305). Similarly, in model 3, changing financial openness by one standard deviation will change the development of the banking sector by 0.0339 standard deviation, more than the change of economic institutions (0.0331). Thus we can conclude that in high-income countries a change in political institutions or in financial openness has a greater relative effect on financial development than does a change in economic institutions.

In terms of the real effects of banking crises, we find that financial development tends to be more responsive to systemic crises in upper-middle- (-0.0093, average coefficient in *Table 4*) and high-income economies (-0.0064, model 1 in *Table 5*) than in low- and lower-middle-income countries. This financial fragility in advanced economies is to some extent driven by deeper banking systems, which makes a banking crisis more disruptive. This result points to an interesting issue: while traditionally banking crises were associated with developing economies, more recent cases also involve advanced economies. This raises questions about whether there has been any systemic change that has led to increased fragility of banking systems in advanced economies that otherwise generally have deeper financial markets and higher-quality institutions.

Putting things together, there are two important conclusions to be drawn from the above analysis: first, the variables have different impacts on financial development according to different levels of income, whereas trade openness, macroeconomic stability, government policy and education are the elements for development of the financial sector in under-developed countries, while democracy, GDP growth and financial openness gain importance as countries gradually develop; second, economic institutional quality is of fundamental importance for banking sector development at all stages of development (especially in developing countries) and it is the legal dimension that better explains international differences in the level of banking sector development.

5. Conclusions

In this paper we construct the new data set on institutional indices for 80 low-, middle- and high-income economies in the period from 1985 to 2007. We go beyond the identification of the effects of an overall institutional index and try to provide a more comprehensive assessment of the links between financial development, institutions and policy by asking which dimension of institutions (economic, political or social) matters *vis-à-vis* financial development and whether the effects of economic institutions differ when different aspects are used (quality of government, integrity of the judiciary).

Our main finding from the regression analyses is a robust empirical relationship between institutions and financial development, a result consistent with most empirical studies. We argue that economic institutions are of fundamental importance for banking sector development at all stages of development (especially in developing countries), while political institutions are statistically significant only in high-income countries and social institutions in low- and middle-income countries. Especially for economic institutions, the legal dimension better explains international differences in the level of banking sector development in all groups of countries (the government dimension has a marginally better effect only in high-income countries).

Regarding the openness and finance link, we find that openness in both the goods and financial markets has a consistent, strong association with bank-based finance: trade openness has a strong and positive effect on financial development in early stages of economic development, while capital inflows have a strong and positive effect on financial development in late stages of economic development. The findings suggest that even though capital account openness provides significant

benefits to investors and economies, it can be risky for underdeveloped economies. This is because it could make the economies susceptible to financial vulnerability such as sudden reversal of capital inflows. In order to reduce the cost of openness to the greatest possible extent, some characteristics such as macroeconomic stability, credibility in government policies, strong domestic financial systems, reliable legal institutions and well-defined property rights should be fulfilled first before removing capital barriers.

Moreover, the inflation-finance correlation emerges independently of the inclusion or exclusion of countries with different levels of economic development and exhibits a large coefficient in high-income countries. Finally, government policy (as approximated by the existence of public organizations and enterprises, public investment, public consumption, government subsidies and tax policy) is a very significant determinant regardless of the stage of economic development, which shows that government dominance over the economy deteriorates private financial exchange and plays a greater and more crucial role than is recognized by economists in shaping the policies and institutions that underpin financial markets.

Given the vital role and the importance of financial development in the economy, the policy implications of our findings are straightforward: in order to promote financial development, countries must strengthen institutions and governance; upgrade law and order, the investment profile and democratic accountability; and reduce corruption and bureaucracy. Also, considering the positive effect of economic growth as well as the degree of trade openness and the negative effect of inflation, it is recommended that in order to promote the level of financial development, policymakers need to adopt policies aimed at increasing economic growth and trade openness and controlling inflation.

APPENDIX 1

Summary Statistics

Variable	Observations	Mean	Std. deviation	Minimum	Maximum
		All countries			
BSD	1840	0.410	0.139	0.034	0.969
ECON	1840	0.387	0.252	0.027	0.962
LEGAL	1840	0.567	0.190	0.143	0.962
GOV	1840	0.616	0.223	0.091	1.000
DEMO	1840	0.729	0.325	0.000	1.000
EDUC	1840	10.803	9.429	0.360	52.000
FO	1840	1.947	2.956	0.171	34.151
TO	1840	0.874	0.395	0.144	3.902
INFL	1840	0.487	6.744	-0.138	244.110
GDP	1840	0.019	0.045	-0.323	0.564
POL	1840	0.593	0.150	0.195	0.993
		Low-income countries			
BSD	575	0.282	0.081	0.034	0.479
ECON	575	0.192	0.089	0.027	0.420
LEGAL	575	0.417	0.101	0.160	0.650
GOV	575	0.441	0.134	0.091	0.727
DEMO	575	0.534	0.308	0.050	0.950
EDUC	575	3.466	3.829	0.360	16.500
FO	575	0.124	0.571	0.206	3.785
TO	575	0.954	0.412	0.179	3.154
INFL	575	0.833	11.293	-0.114	244.110
GDP	575	0.009	0.055	-0.323	0.564
POL	575	0.639	0.146	0.195	0.993
		Low- and lower-middle income countries			
BSD	897	0.333	0.108	0.034	0.677
ECON	897	0.209	0.097	0.027	0.473
LEGAL	897	0.433	0.113	0.160	0.742
GOV	897	0.460	0.130	0.091	0.769
DEMO	897	0.541	0.315	0.050	0.950
EDUC	897	5.097	5.294	0.360	28.640
FO	897	1.093	0.536	0.171	3.785
TO	897	0.937	0.442	0.145	3.902
INFL	897	0.702	9.448	-0.114	244.110
GDP	897	0.015	0.052	-0.323	0.564
POL	897	0.634	0.143	0.195	0.993

Variable	Observations	Mean	Std. deviation	Minimum	Maximum
Low- and middle-income countries					
BSD	1196	0.346	0.108	0.034	0.677
ECON	1196	0.236	0.110	0.027	0.586
LEGAL	1196	0.460	0.119	0.143	0.742
GOV	1196	0.489	0.140	0.091	0.864
DEMO	1196	0.611	0.321	0.050	1.000
EDUC	1196	6.546	5.627	0.360	28.64
FO	1196	1.188	0.771	0.171	10.330
TO	1196	0.909	0.431	0.144	3.902
INFL	1196	0.724	8.356	-0.117	244.110
GDP	1196	0.016	0.050	-0.323	0.564
POL	1196	0.637	0.138	0.195	0.993
High-income countries					
BSD	644	0.528	0.109	0.232	0.969
ECON	644	0.668	0.194	0.176	0.962
LEGAL	644	0.767	0.123	0.352	0.962
GOV	644	0.851	0.146	0.410	1.000
DEMO	644	0.949	0.190	0.000	1.000
EDUC	644	18.709	9.954	3.100	52.000
FO	644	3.358	4.563	0.330	34.152
TO	644	0.809	0.310	0.168	2.118
INFL	644	0.046	0.129	-0.138	3.046
GDP	644	0.025	0.032	-0.171	0.175
POL	644	0.510	0.134	0.256	0.797

APPENDIX 2

Variable Definitions and Sources

Variable	Unit measured	Database
BSD Banking sector development	Aggregate measure based on LL (ratio of liquid liabilities to GDP) PC (credit issued to the private sector to GDP) and DBA (ratio of the commercial bank assets to the sum of commercial bank assets and central bank assets)	World Bank World Development Indicators database: *http://data.worldbank.org/indicator*
ECON Economic Institutions	Aggregate measure based on LEGAL and GOV	i) International Country Risk Guide Database (ICRG): *http://www.prsgroup.com/CountryData.aspx* ii) Economic Freedom of the World: 2009 Annual Report: *http://www.freetheworld.com/download.html*
LEGAL Economic Institutions (legal-related)	Legal Structure and Security of Property Rights Index (independence of the judiciary, impartiality of the courts, protection of property rights and legal application of contracts)	Economic Freedom of the World: 2009 Annual Report: *http://www.freetheworld.com/download.html*
GOV Economic Institutions (government-related)	Government Quality Index (bureaucracy, corruption, accountability and legislative capacity of the government)	International Country Risk Guide Database (ICRG): *http://www.prsgroup.com/CountryData.aspx*
DEMO Political Institutions (Democracy)	Polity Score (the regime authority spectrum ranging from hereditary monarchy to consolidated democracy)	Polity IV Project: *http://www.systemicpeace.org/polity/polity4.htm*
EDUC Social Institutions (Education)	Percentage of population with tertiary education	World Bank World Development Indicators database: *http://data.worldbank.org/indicator*
FO Financial openness	Ratio of foreign assets and liabilities to GDP (portfolio equity, foreign direct investment, debt and financial derivatives assets and liabilities to GDP)	External Wealth of Nations Mark II Database as described in Lane and Milesi-Ferretti (2007)
TO Trade openness	Ratio of exports and imports to GDP	World Bank World Development Indicators database: *http://data.worldbank.org/indicator*
GDP GDP growth	GDP growth	World Bank World Development Indicators database: *http://data.worldbank.org/indicator*
INFL Inflation	Inflation	World Bank World Development Indicators database: *http://data.worldbank.org/indicator*
POL Government policy	Size of Government Enterprises and Investment Index (countries with more government enterprises and investment received lower ratings)	Economic Freedom of the World: 2009 Annual Report: *http://www.freetheworld.com/download.html*
CRI Banking Crisis Dummy	Systemic banking, currency, and sovereign debt crises	Systemic Banking Crises Database as described in Laeven and Valencia (2012)

APPENDIX 3

List of Countries

Low Income	Lower Middle Income	Upper Middle Income	High Income
Bangladesh	Algeria	Argentina	Australia
Cote d'Ivoire	Bolivia	Brazil	Austria
Ghana	Cameroon	Chile	Belgium
Haiti	China	Costa Rica	Bahrain
Kenya	Colombia	Gabon	Canada
Madagascar	Dominican Republic	Jamaica	Cyprus
Malawi	Ecuador	Malaysia	Denmark
Niger	Egypt, Arab Rep.	Panama	Finland
Nigeria	El Salvador	Poland	France
Pakistan	Guatemala	South Africa	Greece
Papua New Guinea	Honduras	Turkey	Germany
Senegal	India	Uruguay	Hungary
Togo	Indonesia	Venezuela	Iceland
Uganda	Iran		Ireland
Zambia	Jordan		Israel
Zimbabwe	Morocco		Italy
	Paraguay		Japan
	Peru		Malta
	Philippines		Netherlands
	Sri Lanka		New Zealand
	Syrian Arab Republic		Portugal
	Thailand		South Korea
	Tunisia		Spain
			Sweden
			Switzerland
			Trinidad&Tobago
			United Kingdom
			United States

REFERENCES

Acemoglu D, Johnson S, Robinson J (2001): Colonial Origins of Comparative Development: An Empirical Investigation. *American Economic Review*, 91(5):1369–1401.

Acemoglu D, Johnson S, Robinson J (2004): Institutions as the Fundamental Cause of Long-Run Growth. *NBER, Working Paper*, no. 10481.

Apergis N, Filippidis I, Economidou C (2007): Financial Deepening and Economic Growth Linkages: A Panel Data Analysis. *Review of World Economics*,143:179–198.

Arellano M, Bover O (1995): Another Look at the Instrumental-Variable Estimation of Error-Components Models. *Journal of Econometrics*, 68(1):29–52.

Baltagi B (2008): *Econometric Analysis of Panel Data*. John Wiley, Chichester, UK.

Baltagi B, Demetriades P, Law S (2008): Financial Development and Openness: Evidence from Panel Data. *Center for Policy Research, Working Paper*, no. 107.

Beck T, Demirguç-Kunt A, Levine R (2001): Law, Politics, and Finance. *World Bank, Policy Research Working Paper*, no. 2585.

Beck T, Demirguç-Kunt A, Levine R (2003): Law, Endowments, and Finance. *Journal of Financial Economics*, 70(2):137–181.

Blundell R, Bond S (1998): Initial Conditions and Moment Restrictions in Dynamic Panel Data Models. *Journal of Econometrics*, 87(1):115–143.

Boyd J, Levine R, Smith B (2001): The Impact of Inflation on Financial Sector Performance. *Journal of Monetary Economics*, 47(2):221–248.

Chinn M, Ito H (2002): Capital Account Liberalization, Institutions and Financial Development: Cross-country Evidence. *NBER, Working Paper*, no. 8967.

Chinn M, Ito H (2005): Current Account Balances, Financial Development and Institutions: Assaying the World 'Savings Glut'. *NBER, Working Paper*, no. 11761.

Demirguç-Kunt A, Detragiache E (1998): The Determinants of Banking Crises in Developed and Developing Countries. *IMF, Working Paper*, no. 106.

Demirguç-Kunt A, Maksimovic V (1998): Law, Finance, and Firm Growth. *Journal of Finance*, 53(6):2107–2137.

Demirguç-Kunt A, Laeven L, Levine R (2004): Regulations, Market Structure, Institutions, and the Cost of Financial Intermediation. *Journal of Money, Credit, and Banking*, 36(3):593–622.

Detragiache E, Gupta P, Tressel T (2005): Finance in Lower Income Countries: An Empirical Exploration. *IMF, Working Paper*, no. 05/167.

Djankov S, Hart O, McLiesh C, Shleifer A (2008): Debt enforcement around the world. *Journal of Political Economy*, 116(6):1105–1149.

Djankov S, McLiesh C, Shleifer A (2008): Private credit in 129 countries. *Journal of Financial Economics*, 84(2):299–329.

Do Q, Levchenko A (2004): Trade and Financial Development. *World Bank, Policy Research Working paper*, no. 3347.

Gwartney J, Lawson R (2006): *Economic Freedom of the World: 2006 Annual Report.* The Fraser Institute, Vancouver.

Haber S, Perotti E (2008): The Political Economy of Financial Systems. *Tinbergen Institute, Discussion Paper TI*, no. 2008-045/2.

Hasan I, Wachtel P, Zhou M (2009): Institutional development, financial deepening and economic growth: Evidence from China. *Journal of Banking and Finance*, 33:157–170.

Huang Y (2010): Political Institutions and Financial Development: An Empirical Study. *World Development*, 38(12):1667–1677.

Huang Y, Temple J (2005): Does External Trade Promote Financial Development? *University of Bristol, Discussion Paper*, no. 05/575.

King R, Levine R (1993): Finance and Growth: Schumpeter Might Be Right. *Quarterly Journal of Economics*, 108(3):717–737.

La Porta R, Lopez-de-Silanes F, Shleifer A, Vishny R (1997): Legal Determinants of External Finance. *Journal of Finance*, 52(3):1131–1150.

La Porta R, Lopez-de-Silanes F, Shleifer A, Vishny R (1998): Law and Finance. *Journal of Political Economy*, 106(6):1113–1155.

La Porta R, Lopez-de-Silanes F, Shleifer A, Vishny R (1999): The quality of government. *Journal of Law, Economics and Organization*, 15:222–279.

Laeven L, Valencia F (2012): Systemic Banking Crises Database: An Update. *IMF, Working Paper*, no. 12/1163.

Lane P, Milesi-Ferretti G (2007): The External Wealth of Nations Mark II: Revised and Extended Estimates of Foreign Assets and Liabilities. *Journal of International Economics*, 73(2):223–250.

Law SH, Azman-Saini WNW (2008): The Quality of Institutions and Financial Development. (Munich Personal RePEc Archive) *MPRA Paper*, no. 12107.

Levine R, Zervos S (1998): Stock Markets, Banks and Economic Growth. *American Economic Review*, 88(3):537–558.

Levine R, Loayza N, Beck T (2000): Financial intermediation and growth: Causality and causes. *Journal of Monetary Economics*, 46(1):31–77.

Minea A, Villieu P (2010): Financial development, institutional quality and maximizing growth trade-off in government finance. *Economic Modelling*, 27:324–335

North D (1990): *Institutions, Institutional Change and Economic Performance*. Cambridge University Press, Cambridge.

Rajan R, Zingales L (1998): Financial Dependence and Growth. *American Economic Review*, 88(3): 559–586.

Rajan R, Zingales L (2003): The Great Reversals: The Politics of Financial Development in the Twentieth Century. *Journal of Financial Economics*, 69(1):5–50.

Roodman D (2006): How to do xtabond2: An Introduction to 'Difference' and 'System' GMM in Stata. *Center for Global Development, Working Paper*, no. 103.

Roodman D (2007): A Short Note on the Theme of Too Many Instruments. *Center for Global Development, Working Paper*, no. 125.

Rousseau P, Wachtel P (2000): Equity Markets and Growth: Cross-country Evidence on Timing and Outcomes, 1980–1995. *Journal of Banking & Finance*, 24(12):1933–1957.