

Bureaucracy and Financial Markets

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Abstract

Recent research on financial market development has focused on the nature of the legal system. The law-and-finance literature, however, exclusively focuses on the abuse of management power as a major cause of shareholder expropriation. The role of the regulatory capability of the state in providing and guaranteeing the institutional foundations for securities development is thereby overlooked. The characteristic feature of bureaucracy is predictable, calculable and methodical performance. Our analysis of the linkage between bureaucratic quality and financial market development confirms our hypothesis that arm's length finance not only needs a reliable legal environment, but also bureaucratic effectiveness (1) We provide evidence that state bureaucratic performance plays a crucial role in determining financial market development; (2) We find that legal origin plays an indirect role, as it affects the financial market development through the bureaucratic channel, but it does not exert a direct and independent effect.

Bureaucracy and Financial Markets

Modern economic growth is driven by large-scale corporate enterprises with the capacity for self-sustaining investments in technological innovation and factor productivity. In spite of the central role of corporations in the global economy, conditions of corporate and financial market development are not yet well understood. Why do some industrialized countries such as Switzerland have market capitalization rates of more than 200% of GDP, while other industrial economies such as Italy stagnate at less than 40%? And why are some of the newly industrialized countries able to rely so heavily on external funding, while so many developing countries are unable to institute financial markets?

Recent economic explanation of financial market and corporate development has focused on the incentive structure of shareholders and creditors. This principal-agent approach interprets the problem facing financial market development as arising from incomplete contracts between shareholders and management. The core dilemma is that monitoring of managers would involve considerable agency costs. As the risk of shareholder expropriation cannot be resolved through corporate governance structures internal to the firm (Hart 1995), law and finance scholars argue that corporations and financial market development depend on effective legal protection of shareholders and creditors (Shleifer and Vishny 1997).

The underlying logic of the law and finance literature is as straight-forward as appealing: Corporate laws provide shareholder protection against insider expropriation and thereby reduce agency costs that are naturally connected with a separation of

ownership and control. In essence, appropriate minority shareholder protection is a precondition of ownership separation and enables the development of securities markets. Scope and effectiveness of legal protection of investments in corporations by shareholders indeed varies considerably across countries (Levy 1983; Rydquist 1987; Mayer 1990; Edwards and Fischer 1994; Boycko, Shleifer, Vishny 1993). In their seminal paper, La Porta et al. (1997) find that shareholder protection across these four broad families of law—French civil-law, English common-law, German- and Scandinavian civil law—differ widely and have a significant effect on the ability of businesses to fund investments through external sources. Comparative studies of corporate law extended the view that legal system origin is closely correlated with the extent of shareholder protection in empirical analyses of financial markets (Demirguc-Kunt and Maksimovic 1998).

However appealing the law-and-finance perspective may be, the theory did not remain without criticism. Most importantly, the historical development of national stock markets does not conform well to the claim that increasing shareholder protection drives financial market development. Market capitalization of the US stock market for instance, already reached 80% of GDP in the late 1920s, when security regulation was almost absent. In spite of a wave of new securities laws and amendments specifying rules on voting rights, proxy contests (Holding Company Act 1935), and insider trading (section 14 of the 1934 Securities Exchange Act), the market remained within its earlier high of 80% of GDP until the mid 1970s. Similarly, development of legal protection is not in line with the pattern of historical security market developments worldwide. In Amsterdam, home of the world's first stock market and stock company (the East India

Company founded in 1602), formal shareholder rights were largely absent and much of the financial transactions were even prohibited by law. Securities trading relied on self-interest and self-enforcement (Stringham 2003). By the 1630s the Netherlands was already “a highly commercialized country with well-developed and innovative financial markets and a large population of sophisticated traders” (Garber 2001:23). Nonetheless, the Amsterdam Stock Exchange Association was not founded before 1851 to organize and regulate share trading. Similarly, the London Stock Exchange, did not receive its first codified rule book before 1812, while organized securities trading had started as early as 1698 and Brussels stock exchange worked for more than 100 years up to 1935 with minimal regulation.

The observed pattern is widespread: the inception of securities markets worldwide was usually not accompanied or even preceded by respective formal rules protecting shareholder rights. Company stocks were traded informally and transactions were treated as gentlemen agreements, often conducted in local coffee houses or open market places. For the 20th century, Rajan and Zingales (2003) confirm for a panel of 24 countries that in spite of a general increase of legal shareholder protection most countries were financially more developed in 1913 than in 1980. Moreover, they find that common-law countries were financially not more developed than civil law countries. In 1913, for instance, France’s stock market was far more developed than the US stock market (0.78 market capitalization vs. 0.39). Evidently the law-and-finance model provides a strong but only partial answer on cross-country variation of financial market development.

Our approach builds on the fact that development of modern corporations and arm’s length finance requires an institutional environment in which trust is not dependent

on strength of personal ties, but more importantly on confidence of economic actors—individuals and firms—in the credible commitment of government in enforcing contracts, protecting property rights and facilitating markets (North 1981; Olson 2000). As Weber (1978) observed, predictable and methodical organizational action underlies complex transactions in markets and large-scale production in modern capitalist economies: “Today, it is primarily the capitalist market economy which demands that the official business of public administration be discharged precisely, unambiguously, continuously, and with as much speed as possible” (p.974). In modern capitalism, not only the legal system but also the bureaucracy enable ex ante predictability and calculability of decisions (Weber 1988:321).

Methodical and predictable bureaucratic performance in support of markets facilitates capital accounting and calculable risk-taking and hence, the development of large-scale capitalist enterprises. In this sense, the state plays a crucial role in providing and guaranteeing the institutional environment for securities development and the separation of ownership and control (Fligstein 1990). Country case studies of the 20th century indeed confirm that securities markets and owner separation typically develop when the state-firm interface is characterized by routinely performed, calculable, impersonal and rule-based transactions; in contrast, owner-management and family-owned firms prevail in the context of highly personalized and relationship-based state structures (Whitley 1999). Also, the historical account of stock trading seems to support a crucial role of the state. Whether the old commodities markets of Bruges, Venice, Genoa, or Pisa, or the early stock markets in Amsterdam, Brussels or London, they all developed in an atmosphere of reliable and supportive public governance, which was trusted by

merchants, traders and investors (North and Thomas 1973; Landes 1998; Gelderblom and Junker 2004; Prak 2005; Greif 2006).

To examine the association between state bureaucratic performance and corporate development, we first explain why bureaucratic quality strengthens the state's effectiveness in establishing an institutional environment favorable to the development of modern corporations. Following, we use a global sample of 56 national financial markets to test the Weberian hypothesis positing a positive connection between state bureaucratic performance and capitalist economic development.

Bureaucracy and Financial Market Development

Our model extends earlier studies supporting the crucial role of state bureaucratic performance for economic growth and development. Several studies have confirmed a linkage between various measures of government quality and economic growth (Wade 1990; Mauro 1999; Knack and Keefer 1995). Others have – inspired by Weber's analysis of bureaucracy - more closely explored the relations between distinct organizational features of public administration and economic development (Evans and Rauch 1999). Some have assumed that the transmission mechanism between institutional qualities and economic development lies in the emergence of financial markets (Olson et al. 2000), but a direct analysis of linkages between bureaucratic quality and financial market development has not been undertaken.

The essential feature of bureaucracy is that, as a formal, rationally organized institutional arrangement, its pattern of activity is integrated to the purpose and mission of the organization (Merton 1940). As a rule-governed hierarchy, bureaucracy is

structured according to offices and a status system in which authority and obligations are specified and limited by formal rules. Accordingly, the bureaucrat's power to control resides in the office, and not in the person charged with performing the role. A bureaucrat's actions are perceived as legitimate if they occur within the framework of the formal rules governing the bureaucracy. This lends a quality of formality to the bureaucrat's behavior, which facilitates the smooth operation of a hierarchy in which formal rules integrate bureaucratic action to maximize ready calculability of mutual expectations and behavior. Because the bureaucrat's authority is defined and limited by the formal rules of the organization, subordinates gain a degree of autonomy from superiors. Moreover, formal rules contribute to administrative objectivity and hence restrain arbitrary and impulsive action.

Key institutional elements which contribute to predictability and calculability of bureaucracies are: Being rule-governed, such bureaucracy entails transparency in division of administrative duties which are inherent to the particular office. Each office is assigned a differentiated set of general rules specifying control and sanctions. The recruitment of bureaucrats is not by election, but by appointment according to technical qualifications which are metered by formal, impersonal procedures, generally by examinations. Reliance on formal education and civil service examinations in the recruitment and promotion of bureaucrats makes for more competent civil servants. Bureaucratic office usually involves life-long tenure to maximize security of employment. Reliance on merit-based procedures for promotion, incremental salaries, life-long tenure, and pensions helps ensure that the bureaucrat is committed to performance of official duties with minimal interference from extraneous pressures. Predictable and rewarding long-term careers

enhance the quality of the bureaucracy in providing a structure of incentives that strengthens the corporate coherence of bureaucratic office-holding and reinforces the internalization of norms of professionalism. Merit-based promotions and conformity with norms of professionalism provide disincentives to corruption and incentives for honest behavior (Evans and Rauch 1999). These institutional elements account for bureaucracy's technical efficiency, especially the premium placed on precision, speed, expert control, continuity, discretion and optimal returns on input.

The pressure for methodical, prudent and rule-governed action in bureaucracies gives rise to an unusual degree of conformity among bureaucrats (Merton 1940; Stinchcombe 1965; Wilson 1989) and, according to Weber (1978), provides the basis for the most important feature of bureaucracy: the impersonal application of general rules. Incentive theory sheds light on how rigid compliance to the rule-book and pressure for conformity solve problems of adverse selection, moral hazards and incomplete contracting in government agencies. In this view, officials are motivated not so much by monetary incentives, but by interest in building reputation with the view to future promotion and career mobility. High ability officials demonstrate their ability through bureaucratic performance that emits visible signals of the official's capabilities. This in turn reinforces conformity to norms of professionalism since "lower ability officials are then forced to do the same in order not to reveal they are low ability, while they still have a chance of being perceived as having high ability if they are lucky in the mission" (Tirole 1994:13). The reliability of long-term commitments arising from such pressure for conformity to norms of professionalism among bureaucrats contributes to the quality

of bureaucracy in reducing uncertainty and therein the institutional environment facilitating the calculability of risk-taking.

To highlight the linkage between bureaucratic quality and financial market development, let us consider in which way the two central bureaucratic tasks – (1) public good provision and (2) rule enforcement constitute preconditions of corporate development and arm's length finance (Rajan and Zingales 2003).

A central role of government in providing an institutional foundation for modern capitalism is to provide in a routine and reliable manner essential public goods in return for tax revenue (North 1981; Wilson 1989; Barro 1991; Nee 2000; Rodrik et al. 2004). The quality of government bureaucracy can be readily inferred by examining its ability to deliver public goods. Rauch (1995) for instance confirmed a linkage between bureaucratic qualities and infrastructure provision for U.S. cities during the first two decades of the 20th century. The lack of routine public good provision would cause a high degree of insecurity. Bargaining costs accrue if firm representatives try to secure a minimum provision of public infrastructure and services through lobbying and personalized transactions with state representatives. Long-term-planning is impeded and expected agency costs of securities investments increase. While arm's length finance becomes unattractive due to high agency costs, family-owned firms often flourish within such business environments. In developing economies, entrepreneurs overcome deficiencies in public good provision through their personal networks. For example, network ties between firms and political actors gained particular fungibility in the early stages of China's market transition, where *guanxi* with government officials became a critical factor for business success (Xin and Pearce 1996). At the same time, however,

investor trust in owning securities remained minimal due to the strong and often unpredictable state-firm relations.

A second component of state bureaucratic performance is its technical capability for enforcement of rules governing market institutions (Rajan and Zingales 2003). This quality of a public administration enhances the effectiveness of bureaucracy and is reflected in the credibility of a state's commitment to long-term goals and policies, despite change in the composition of political leadership. Stable commitment to long-term goals and policies reduces uncertainty and increases calculability of government action. Commitment to rule-governed action maximizes social welfare by lowering the risk of state capture (Tirole 1994). In this sense, bureaucratic quality critically affects the management's ability to plan for new investments, reduces the need for clientelization of state-firm relations and eventually contains the risk for weak management decisions. As a consequence the inclination to invest increases and promotes the development of arm's length finance.

Several institutional mechanisms embedded in bureaucratic performance increase calculability and thereby facilitate long-term corporate planning and external finance:

Predictability and credibility of decision. The prevalence of predictable bureaucratic decisions is a core condition for medium and long-term corporate planning. In making plans regarding investment, innovation, expansion and so on, managers and shareholders need assurance that existing laws and regulations will be applied in a calculable and predictable manner. Extended leeway in bureaucratic decision-making, and personalized rather than impersonal power structures may easily result in unpredictable outcomes. What for example, if licenses for a newly developed drug are

not granted, although all formal requirements are fulfilled? What if marketing strategies are not approved, although they are in accordance with valid market regulations? What if imports of crucial input factors are suddenly forbidden or custom clearance is deferred or even denied? Quite obviously, insufficient calculability of rule enforcement incurs undue risks to firms and shareholders.

Timely delivery of bureaucratic decisions. Effective bureaucracies provide dependable guidelines for ready access to the responsible bureaucrats and decision-makers, standardized approval procedures and routine delivery of decisions. Empirical research confirms that timely delivery of bureaucratic decisions and lean bureaucratic procedures are critical features of a firm's business environment. Bureaucratic delays, for instance, essentially cause periods of insecure rights; such uncertainty can impose high costs on corporations. Typical examples are delays in applications for licenses, and for patents and property registration. Bureaucratic delays in these areas are by no means trivial and may turn into severe business impediments. A cross-country comparison reveals that bureaucratic standards indeed vary by a great margin. While for instance property registration takes just one day in Norway, it takes on average 965 days in Croatia (World Development Indicators 2004). Such delays can eventually impede investment projects, and critically affect a firm's market position. Similarly, delays in patent applications incur the risk of losing all development costs if a competitor is quicker to achieve patent protection. Foreign managers asked to assess recent improvements in the protection of intellectual property rights in China frequently raise concerns about the unusually long application period, in which innovations remain legally unprotected. Hence, delays in bureaucratic decisions pose relatively high external

risks which lower profit expectations and thereby may impede or at least hamper external fund-raising.

Fairness of bureaucratic decisions: Bureaucracy at its best assures equity and fair treatment of all actors without regard of the person. In this sense, the quality of a state's bureaucratic performance also extends to the quality of a market economy's regulatory structure. As an institutional innovation, rational-legal bureaucracy expanded the state's organizational capacity to uphold a broad and secure set of individual rights and maintain open markets through routine application of rationalized formal rules (Weber 1978). State bureaucracies' performance also directly affects the performance of market-based corporate governance mechanisms, such as the market for managers, the take-over market and the product market (Hart 1995). Without effective and fair regulation, competitive pressure can be reduced, leading to weak external corporate governance.

In sum, the crucial role of bureaucratic performance stems from its function to construct an institutional environment which affects the overall level of transaction costs evident in ease of calculability of risks in profit-making opportunities for economic actors. The lower the bureaucratic quality, the higher the level of uncertainty faced by economic actors and the less calculability in both short and long-term planning for risk-taking. Hence, *the institutional environment needed for the external finance of corporations depend on the quality of the state's bureaucracy* (hereafter, the bureaucratic quality hypothesis).

We should emphasize that bureaucratic quality is not to be understood as a lean and non-interventionist government. Interventionist governments may still have high quality bureaucracies delivering timely and rule-based services, which provide beneficial

conditions for corporate development. For instance, several of the East Asian developmental states have clearly been interventionist, but interventions have been executed by reliable and rule-compliant bureaucracies. Evans (1995) underscores the positive effects of the state's direct involvement in corporate strategizing and decision-making in Japan. He calls attention to Japan's Ministry of International Trade and Industry (MITI) to illustrate how a highly disciplined elite state bureaucratic organization can motivate and guide firm development, with bureaucrats directly involved in the strategic decisions of firms.

Empirical Test

Data

To investigate the impact of bureaucratic quality, we use data from the *World Bank Governance Database* (Kaufman et al. 2005), which provides an aggregate indicator based on 17 different sources measuring bureaucratic quality for the period of 1996 to 2004. Additional variables stem from the *World Development Indicators Database* (World Bank). Overall we have complete data for 56 countries with national stock markets. We follow the common practice of not including transition economies since stock market development in these new market economies is only a recent phenomenon.

Dependent Variables

We use two different measures to assess the size of financial markets. Our main measure is the ratio of stock market capitalization to GDP (henceforth called market capitalization) to assess the breadth of stock markets. In order to soften short-term

variations due to price fluctuations, we apply a 3-year average of the years 2001-2003. In our sample, market capitalization ranges from a low of 2.68% for Bangladesh to 212.16% for Switzerland, with a mean value of 57% (Table 1). In addition, we use the number of listed firms relative to the country's population as an alternative indicator for cross-country comparisons of stock market development and market breadth (La Porta et al. 1997). In our sample, the total of domestic firms ranges from 1.21 per capita (million) for Ghana to 197.40 for Cyprus, with a mean value of 26.7 (Table 1). In order to assess the extent to which domestic firms are competitive in a global setting, we calculate the proportion of a country's total number of listed firms, which is listed in the Forbes 2000 index.

Independent Variable

We employ the indicator from the *Governance Database* of "government effectiveness" hereafter *bureaucratic quality* since it is in fact defined as "the quality of public services, the quality of the civil service and the degree of independence from political pressures, the quality of policy formulation, and the credibility of the government's commitment to such policies" (World Bank 2006). It thereby provides the closest measure of the Weberian concept of bureaucratic performance as being composed of (1) quality of public service provision and (2) competence of bureaucracy in terms of rule enforcement. Appendix 1 informs about data sources and information retrieved from each individual survey. Index values of bureaucratic quality range from -2.5 to 2.5, whereas higher values indicate higher quality. As an aggregate indicator estimated through an unobserved component model the index currently provides the least noisy

signal of the underlying notion of bureaucratic quality.¹ Correlation coefficients between individual survey indicators and the aggregate measure are above 0.70 (Kaufman et al. 2007); also it is well documented that the country rankings based on aggregate indicators are robust to alternative weighting schemes (Kaufman et al. 2006).

For our analysis, we constructed average values for an eight year time period from 1996 to 2004, as we assume that short-term changes in bureaucratic quality will not cause immediate adjustments of the financial market breadth and firm development. Instead, bureaucracies' reputation-building typically takes a considerable time. At the same time, we contain the risk of simultaneity bias. Theoretically, there is some reason to believe that institutional quality not only affects financial market development, but could also be driven by an increasing demand for good governance formulated by strong players in the financial market. This assumption, however, seems to enjoy diminishing support. Kaufman et al. (2005) provide evidence that there is no clear trend in global averages of institutional quality. If anything, there is rather evidence of a deterioration worldwide, which would suggest that there is no strong causal channel operating from wealth generation to the quality of institutions.

Across our 56 sample countries, average values for bureaucratic quality range from minus 1.144 for Nigeria to a maximum value of 2.426 for the Netherlands, with a

¹ First of all, the indicator is based on different data sources, including international organizations, government organizations, NGOs, universities and commercial consultancies. Secondly, the indicator builds on both objective and perceptions-based measures, thereby relying on the full range of assessments. Bureaucratic quality is therefore likely to capture the underlying concepts of rationalization of state bureaucracy and bureaucratic performance. In contrast, reliance on one or a few proxies would only capture one specific dimension of the underlying concept. And thirdly, the different data sources employ a variety of different respondents ranging from foreign experts and country analysts to individuals and national firms, thereby mitigating the risk of response and perceptual biases. The model estimates the observed data as a linear function of the unobserved common component, while a disturbance term captures perception errors and sampling variations. For a more detailed discussion of the estimation procedure refer to Kaufman et al. (2005).

mean value of 0.79. Table 1 presents country data arranged in country groups of common legal origin. Average values indicate that Scandinavian-origin countries score by far the highest, with mean values of bureaucratic quality as high as 1.97. Second follow German-origin countries, with 1.55. English-origin countries score slightly higher than French-origin countries, which score the worst with a mean value of 0.54. This suggests that bureaucratic quality is not simply a different signal of a specific legal-origin type. The correlation coefficient for bureaucratic quality and legal system origin is actually quite small, with -0.08 (see appendix 2).

Table 1 seems to provide some casual evidence for a close connection between bureaucratic quality and corporate development. Only 27 countries across the world are listed in Forbes 2000, and the mean value among these for bureaucratic quality (1.30) is significantly higher than in the total sample. Similarly, market capitalization and firms per population are on average larger among these countries than for the full sample (see Appendix 2). Also, the Netherlands as the number one performer in terms of bureaucratic quality ranks number one, with 18.03% of its firms also being represented in the Forbes 2000-index.

Bureaucratic quality is of course not a truly exogenous variable but is determined by some underlying, yet not well understood determinants. However, it is not the focus of our research to understand the deeper causes of bureaucratic quality, but to highlight the linkage between bureaucratic performance and financial market development.

Control Variables

To isolate the impact of bureaucratic quality on the development of financial markets, we further include a set of control variables. Following the law and finance literature, we include legal origin. La Porta et al. (1997, 1998) gave evidence that English-origin countries enjoy the highest level of shareholder protection against expropriation by insiders and thereby offer entrepreneurs better terms of external finance. Securities are valued higher and capital markets are broader in the sense of stronger demand for equity finance. To control for this legal-system effect we include a dummy variable controlling for English-origin legal systems.²

In addition, the size of the economy may have some impact on the development perspectives of domestic firms and financial markets. The theory is that economies of scale might actually drive the development of financial markets. To control for the size effect we include $\log(\text{GDP})$.³ Furthermore, we control for the country's geographical location, as earlier work suggests it may help to explain financial market development (Beck and Levine 2004). Latitude specifies in absolute terms the distance to the equator and serves as a proxy for the country's natural endowments and disease environments (Acemoglu et al. 2001).⁴

Insert table 1 about here

² We also ran all our regressions with three dummies indicating legal system origin (i.e. French-origin, German-origin, and Scandinavian-origin). All our results were confirmed.

³ Following La Porta et al. (1997), we also experimented with GDP growth over the last two decades as an additional control variable. However, neither the explanatory power of our model increases, nor are coefficient and significance of our bureaucracy performance indicators affected.

⁴ Furthermore we experimented with a whole set of additional controls including annual GDP growth, secondary schooling (Rauch & Evans 2000) and trade openness (Rajan & Zingales 2003). Estimates for bureaucratic performance remain significant, but the overall explanatory power of our model decreases.

Before we move on to our benchmark model, it is useful to first look at the simple bivariate relationships between bureaucratic quality and the three dependent variables measuring dimensions of financial market development. Figure 1 presents the scatterplots. Although the relationship between bureaucratic quality and the national proportion of firms listed in Forbes 2000 becomes quite loose, all plots show the expected positive relation between bureaucracy and financial market development.

Insert figure 1 about here

Regression Analysis

For purpose of comparison, we essentially follow the regression technique and model-specification chosen in the seminal contributions on law and finance. Following La Porta et al. (1997) we apply a cross-section OLS-analysis, which is also consonant with the Weberian origin of our bureaucratic quality hypothesis. Weber posited causal interdependence of bureaucracy and modern capitalism. Rational-legal bureaucracy was a key institutional precondition in Weber's theory of the rise of rational capitalism in the West (Collins 1980), but once established, the capital accounting of large-scale capitalist enterprises needs calculability of the functioning of public administration and the legal order (Weber 1978). In other words, the development of rationalized bureaucracy and large-scale capitalist enterprise was an interconnected causal process. The Weberian claim posits that causality moves in both directions (DiMaggio and Powell 1983); hence a cross-sectional design is suitable to test the bureaucratic quality hypothesis. Table 2

presents a series of OLS-regressions on our measures of financial market development on various controls and bureaucratic quality. For purpose of comparison, we also estimate the base model without bureaucratic quality measures.

Models I and II present the effects on market capitalization to GDP. The result of Model II is consistent with our hypothesis that bureaucratic quality is an important determinant of financial market development. State bureaucratic quality is not only positive and significant at the 1-percent level; the slope coefficient also indicates a particularly strong influence on the degree of market capitalization. A one standard deviation change of bureaucratic quality corresponds to a 0.78 standard deviation change of market capitalization. Bangladesh, the country with the lowest market capitalization in our sample, for instance, could – everything else being equal – increase its market capitalization rate from 2.68% to 37.62%, with an increase of bureaucratic quality by one standard deviation (from -0.558 to 0.432). Overall, bureaucratic quality explains as much as 27% of the cross country variation in market capitalization (the adjusted R^2 jumps from 18% for the base model to 45%).

Regressions on listed firms in relation to the total population confirm our findings on market capitalization. In model IV, bureaucratic quality again turns out to significantly (at the 1% level) influence the number of listed firms. A one standard deviation increase of bureaucratic quality is connected with a 0.66 standard deviation increase of listed firms relative to population. That is, all things being equal, if Ghana could increase bureaucratic quality from -0.056 to 0.934, the number of listed firms relative to population would increase from 1.21 to 25.92. Again, the explanatory power of the model

including bureaucratic quality surpasses the benchmark law and finance model by a great margin, with adjusted R^2 of 32% as compared to 14%.

Insert table 2 about here

Finally, our estimates on the national representation in the Forbes-2000 index (model VI) support the hypothesis that high bureaucratic quality provides fertile grounds for globally competitive firms. State bureaucratic quality exerts a significant positive but smaller influence (at the 5%-level). A one standard deviation increase in bureaucratic quality increases the Forbes-representation only by 0.23, lifting for instance 0.01% of Bangladesh's listed firms into the Forbes-Index, if bureaucratic quality increases from 0.558 to 0.432. The overall explanatory power of our model, however, still increases slightly compared with the base model.

As to the control variables of our model, the estimated effects of legal-system origin deserve particular attention. In contrast to the common notion that English-system origin supports financial market development, it loses its significantly positive impact once bureaucratic quality is included in the model. In one case, our estimates even show a significant negative impact of legal-system origin (model VI). From this one might infer that agency costs due to management malfeasance (and the respective legal protection) are indeed a lesser concern of shareholders, while state bureaucratic performance plays a stronger role in containing agency costs of ownership separation. At this point we could only hypothesize possible explanations. We will, however, come back to this point in our robustness checks (see table 6).

A comparison of the explanatory power of our base models and models including bureaucratic quality suggests that the crucial effect of bureaucratic performance lies in the support of overall financial market deepening, which may subsequently provide the conditions to develop into globally competitive corporations.

Robustness Checks

We perform checks on the robustness of our findings along five dimensions. First of all, we respond to potential criticism against the chosen measure of bureaucratic quality and employ alternative indicators of bureaucracy. Then, we investigate whether the results of our benchmark model are caused by outliers. Furthermore, we explore the impact of country development; in addition we experiment with a different model specification to separate the underlying concept of bureaucratic quality from possibly related, but not identical concepts. Finally we employ instruments in order to deal with the potential (though limited) risk of reverse causality.

Measuring bureaucratic quality is necessarily a highly disputable endeavor, as “the government suffers from not having any clearcut measure of efficiency like accounting” (Tullock [1965]2005: 348). It follows that any measurement concept will be disputable and reflects to some extent political or ideological positions. While most indicators still show significant overlap in their coverage and are indeed highly correlated, they could still cause critical variations of our regression results.

In order to respond to possible criticism against the use of principal component scores, we re-estimate our benchmark-model with three alternative bureaucracy indicators. First of all, we use the bureaucracy index provided by the International

Country Risk Guide (ICRG), which is a widely accepted indicator in the institutional growth literature (Knack and Keefer 1995; Rauch and Evans 2000; Olson et al. 2000). Then we include the Bureaucracy-index compiled by the International Management Institute for the World Competitiveness Yearbook (IMD), which mainly relies on expert opinions delivered from CEOs.⁵ In order to further explore the appropriateness of the underlying concept of bureaucracy we employ the Weberianness' indicator constructed by Evans and Rauch (1999), which is – in contrast to other indicators – exclusively based on distinct organizational features of state bureaucracies (i.e. meritocracy based recruitment and predictable career paths), but does not include the “quality of production” of public administrations. It will therefore help to determine whether securities market development is mainly connected with distinct organizational features of the state bureaucracy, or is actually associated with the provision of specific state services. Due to varying data availability the sample size varies accordingly.

Regression results presented in table 3 allow two major findings. First of all, findings of our benchmark model are clearly confirmed for ICRG- and IMD-indices. A second point worthwhile noting is the weak explanatory power of the Weberianness-scale. Weberianness only is statistically significant in one case (column VI), while the Weberianness-model consistently yields a weaker explanatory power than the other measures. This finding suggests, consistent with our hypotheses, that it is actually the quality of bureaucratic output and performance that helps to contain agency costs and

⁵ It is worthwhile noting that both indices were criticized for validity problems, as expert opinions on bureaucratic quality might be easily tainted by economic performance (Evans and Rauch 1999). Hence, good bureaucratic ratings might be expected for high-performing countries, while bad ratings might be suspected for low-performing countries. To assess such a risk we have calculated the correlation coefficients between ICRG, IMD and annual growth rates of gross domestic product, but found negative correlation coefficients (ICRG: -0.47; IMD: -0.22). We can therefore rule out that ICRG and IMD are simply reflections of an optimistic business outlook.

supports financial market development. However, as the Weberianness index only incorporates two distinct features of state organizations (meritocracy based recruitment and long-term career paths), we cannot rule out, that other structural components could promote financial market development.

Insert table 3 about here

Our scatterplots have illustrated that all financial outcome variables include a couple of extreme values, which could possibly distort our overall estimation results. We have therefore re-estimated all regressions excluding extreme outliers. That is, for our regression on market capitalization we excluded Switzerland; for the regression on listed firms in relation to population we excluded Cyprus and Iceland, and for our estimates on the determinants of firm representation in the Forbes 2000 index we excluded the Netherlands and Italy. All our regressions confirmed the findings in our benchmark model presented in table 2. The level of significance was maintained in each of the cases and only the values of the estimated slope coefficients varied slightly. We can therefore rule out that the results of our benchmark model are driven by outlier values (regression results are available from the authors).

Due to the heterogeneity of our sample countries, one might suspect that significant positive effects of bureaucratic quality result from the rather strong variation between developed and underdeveloped economies included in our sample. In order to verify whether bureaucratic qualities still play a decisive role in the developed world, we re-estimate our model for a sub-sample of developed countries. As a benchmark, we

included those countries which have at least one company ranked in the Forbes-2000 index. This reduces our second sample to a total number of 27 relatively developed countries. In comparison with the original sample, the mean market capitalization increases from 56% to 84%, and the mean of bureaucratic quality increases from 0.78 to 1.30 (std. dev. 0.85) (see Appendix 2). Table 4 presents our results, which confirm the previous estimates. Once again we find significant and positive effects of bureaucratic quality on financial market and the development of large-scale corporate enterprises. For our regression on listed firms, for instance, the Adj. R^2 of model III is 4%, and jumps to 45% (Model IV) under the inclusion of bureaucratic quality. For the more developed countries, a one-standard deviation increase in bureaucratic quality even causes a 0.75 standard deviation increase of listed firms relative to population. That is, an increase of bureaucratic quality of 0.85 points causes an increase by 23.6 firms per population. The comparatively stronger Adj. R^2 of bureaucratic quality as compared to the full sample (Table 2, Model II) suggests that bureaucratic quality is getting more rather than less important in more developed countries. This finding is consistent with our assumption that particularly the modern corporation depends to a large extent on bureaucratic quality as a crucial counterpart.

A final remark on the role of legal system origin: The smaller panel confirms our earlier findings on the subordinate role of English-origin legal systems, once bureaucratic quality is included. Under inclusion of bureaucratic quality, legal-system origin has in none of our estimates a positive effect; in one case it even turns significantly negative (Model VI). These estimates further confirm that legal system origin loses its direct

impact on financial and corporate development the higher the economic development and institutional quality.

Insert table 4 about here

We also further specified the underlying concept of our model. Theoretically, bureaucratic quality might simply mirror the existence of efficient and growth-promoting shareholder rights. If this were the case, our results would merely reflect the positive effects of security laws implemented and enforced by effective governments. In order to separate our bureaucratic measure from the provision of appropriate security laws, we further extend our model by two more control variables, both widely-used proxies of shareholder protection: the Anti-Director Rights-Index (ADR) and a dummy indicating whether the securities law specifies “one-share-one vote” (data from La Porta et al. 1997). As their dataset differs from our own sample, the inclusion of these variables reduces our sample to 42 countries.

Table 5 presents the estimates. Even after inclusion of specific shareholder rights, bureaucratic quality still has a significant positive impact on market capitalization and the number of national corporations. Only in the Forbes-model (Model VI) does bureaucratic quality turn insignificant at conventional levels, though the slope coefficient still has the expected sign. In none of our three estimates including measures of bureaucratic quality, shareholder rights exert the assumed positive effects on financial market development. In one case the impact of anti-director rights even gets significantly negative (column VI).⁶

⁶ Theoretically, the additional inclusion of an indicator assessing rule of law would be ideal, as security-measures only depict *de jure* legislation but not the quality of law enforcement. High correlations with

We take these findings as an indication that it is particularly bureaucratic quality that provides shareholders with the necessary institutional security enabling arm's length finance of the modern corporation.

Insert table 5 about here

Our inferences made so far may to some extent suffer from the fact that our measures of bureaucratic quality are not truly exogenous. Thus, bureaucratic quality might be influenced by omitted factors that also influence our outcome variables. If such an unobserved factor actually determines both explanatory and outcome variables, our estimates would be biased and inconsistent. One approach to deal with this endogeneity issue and to eliminate the omitted-variables bias is to apply instruments that are correlated with the explanatory but not the outcome variables.⁷

Country size, as measured by log area, provides a valid instrument. While theory and empirical evidence are not conclusive whether large country size yields positive or negative effects on bureaucratic quality, country size is increasingly perceived as a determinant of policy choices. On the one hand, small countries may benefit from smaller heterogeneity and may find it easier to respond effectively to citizens' preferences; on the

bureaucratic quality would, however, lead to inaccuracies due to multi-collinearity. Including it nonetheless does not eliminate the significance of bureaucratic quality.

⁷ Good instruments should not only satisfy the condition of strong correlation with the explanatory variables while having no direct effect on the outcome variable beyond its effect on the endogenous regressor; they should also “come from detailed knowledge of the economic mechanism and institutions determining the regressor of interest” (Angrist and Krueger 2001). However, theory-building and research on the causal mechanisms explaining the quality of bureaucratic performance are still in their infancy. Only few reliable findings have been produced in recent years. While La Porta et al. (1999) found that religion has some explanatory power on the quality of government as measured by specific concepts such as corruption and public goods provision, it did not qualify as a valid instrument. Similarly, we had to rule out social protests as a valid instrument. For other common indicators such as ethnolinguistic fractionalization and language heterogeneity, which are both correlated with bureaucratic quality, the direction of causality is not entirely beyond doubt.

other hand, large countries may benefit from economies of scale for public goods provision as long as the administrative territory does not overextend (Alesina and Spolaore 2005).⁸ Our correlation tests show a significant correlation of log(territory) with bureaucratic quality (-0.24). As there is also no direct effect from territory on market capitalization, country surface qualifies as a technically appropriate and theoretically/empirically well founded instrument.

Insert table 6 about here

Table 6 presents our results, which confirm our benchmark model (table 2). Only for the Forbes model (III), the level of significance of our bureaucratic quality variable drops slightly below conventional levels, but coefficients are still significant at the 15% level. The value of slope coefficients increases consistently over all estimations. The Hausmann-test confirms that our earlier OLS-estimates were actually consistent.

As to our control variables, English legal origin remains insignificant in all second stage regressions; in one case (III) it is again significantly negative. Also latitude is consistently insignificant, while it was significant in our OLS-benchmark model (Table 2). Hence, both control variables do not exert an independent and direct effect on corporate and financial market development. The first stage results reported in table 6 show that both control variables affect financial market and corporate development through their impact on bureaucratic quality. Our estimates on legal-origin are consistent

⁸ Economic history provides ample examples on the close relation between territorial expansion and governance. To the extreme, the excessive expansion of states led to the demise of state power; Chinese dynasties collapsed when the empire's administrative reach was overextended, and France's territorial expansion in the sixteenth and seventeenth century hampered economic development as political administration became inefficient.

with previous work by La Porta et al (1999), who found a strong influence of legal system origin on diverse measures of government performance. This would suggest that development-effects of legal-system may actually stem from its effect on the bureaucratic quality. Such a causal linkage seems plausible as distinct legal systems work as rough proxies for the traditional political orientation of governments and colonial heritage (La Porta et al. 1999). While the English common law tradition aims at limiting the power of the sovereign, French civil law was built to be a powerful tool to further the power of the state. Historically shaped bureaucratic structures and quality of public service provision may possibly mirror these broad political orientations.⁹

Conclusion

Institutional analysis of financial markets and corporate development has so far almost exclusively focused on the specific role of legal tradition and the impact of distinct shareholder rights. While we agree that rule of law and legal rights play a crucial role in solving corporate governance issues stemming from the separation of ownership and control, we believe that this focus overlooks an important complement of financial market and corporate development: the state. According to Weber, it is the quality of the state bureaucracy that emerges as a crucial determinant of the quality of the state-firm interface. Without high bureaucratic quality, corporations lack a host of preconditions necessary for corporate growth and financial market development.

⁹ Diagnostic tests do not suggest that our estimates might suffer from weak instruments. The F-statistic for all first-stage regressions are well above the threshold of 10 suggested by Staiger and Stock (1997). Our two-stage LS results are confirmed in our extended model specification including anti-director rights and one-share-one-vote as additional independent variables. Estimation results are available upon request from the authors.

Our analysis of the linkage between bureaucratic quality and corporate development confirms Weber's hypothesis that arm's length finance not only needs a reliable legal environment, but also a well-functioning bureaucracy characterized by calculable high-fidelity performance. Our analysis yields two major findings: (1) With three out of four bureaucracy indices strongly supporting the bureaucratic quality hypothesis, we provide evidence for a close linkage between bureaucracy and finance. As with all indices, one concern remains of course. At this point, we cannot distinguish, whether it is the combination of distinct components of bureaucratic tasks or whether our results are driven by a distinct component of bureaucratic quality. However, the identification of specific bureaucratic products or qualities was clearly beyond the aim of our contribution, which mainly tried to reveal a general connection between bureaucratic quality and financial market development. Further research is needed to reveal the exact underlying mechanics. (2) Under inclusion of bureaucratic quality, legal origin seems to play an indirect role in determining financial development, as it affects the financial market development through the bureaucratic channel.

Our findings invite some practical policy advice. In light of the crucial role of bureaucratic quality, it is questionable whether privatization and restructuring of state-owned firms into joint-stock firms may provide a viable and growth-promoting strategy, if minimum standards of bureaucratic quality are not yet satisfied. The problem is particularly critical for transition and developing economies, which often lack the respective bureaucratic qualities necessary for financial market and corporate development. Romania, for instance, has nowadays about 4500 listed firms, whereas market capitalization does not even reach 10%. The task for policy advisors would

therefore be to take into account whether countries have the bureaucratic capacity to provide the necessary institutional environment for corporate development. It is not by accident that many of the countries of the East Asian growth economies relied in their early development stages on family-owned firms rather than on the Western-style modern corporation. Family firms with their intense network of personal ties across business and state hierarchies are much more prone to survive than larger firms, if the state-firm interface is not structured by transparent, impartial and impersonal relations (Whitley 1999).

Similarly, lingering financial markets and lagging corporate development might simply reflect the poor status of overall bureaucratic quality, which impedes good management and thereby renders ownership separation as too costly. Cures are therefore not only to be sought in the financial market sphere, as specified by new rules of corporate governance such as shareholder rights and changes in board compositions. On a national basis, it might well also involve broader reforms that help improve overall bureaucratic quality.

References:

- Acemoglu, Daron, Simon Johnson and James A. Robinson. 2001. "The Colonial Origins of Comparative Development: An Empirical Investigation", *American Economic Review*, 91(5):1369-1401.
- Alesina, Alberto and Enrico Spolaore. 2005. *The Size of Nations*. Harvard: MIT Press. 2nd ed.
- Angrist, Joshua D. and Alan B. Krueger. 2001. "Instrumental Variables and the Search for Identification: From Supply and Demand to Natural Experiments", National Bureau of Economic Research, Working Paper 8456.
- Barro, Robert. 1991. *Determinants of Economic Growth: A Cross-Country Empirical Study*. Cambridge, MA: The MIT Press.
- Beck, Thorsten and Ross Levine. 2004. "Stock Markets, Banks, and Economic Growth: Panel Evidence". *Journal of Banking and Finance*. 28(3): 423-442.
- Boycko, Maxim, Andre Shleifer, and Robert W. Vishny. 1996. "A Theory of Privatization." Paish lecture, *Economic Journal* 106: 309-319.
- Collins, Randall. 1980. "Weber's Last Theory of Capitalism: A Systematization." *American Sociological Review* 45:925-942.
- DiMaggio, Paul J., and Walter W. Powell. 1983. "The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields." *American Sociological Review* 48:147-160.
- Edwards, Jeremy, and Klaus Fisher. 1994. *Banks, Finance and Investment in West Germany since 1970*. Cambridge: Cambridge University Press.\

- Evans, Peter. 1995. *Embedded Autonomy: States and Industrial Transformation*. Princeton: Princeton University Press.
- Evans, Peter, and James E. Rauch. 1999. "Bureaucracy and Growth: A Cross-National Analysis of the Effects of 'Weberian' State Structures on Economic Growth." *American Sociological Review* 64: 748-765.
- Fligstein, Neil. 1990. *The Transformation of Corporate Control*. Cambridge, MA: Harvard University Press.
- Garber, Peter M. 2001. *Famous First Bubbles. The Fundamentals of Early Manias*. Cambridge, MA: MIT Press.
- Gelderblom, Oscar and Joost Junker. 2004. "Completing a Financial Revolution: the Finance of the Dutch East India Trade and the Rise of the Amsterdam Capital Market 1595-1612." *The Journal of Economic History*, 64(3)_641-671.
- Greif, Avner. 2006. *Institutions and the Path to the Modern Economy: Lessons from Medieval Trade*. Cambridge: Cambridge University Press.
- Hart, Oliver. 1995. "Corporate Governance: Some Theory and Implications." *The Economic Journal* 105 (May): 678-689.
- Kaufman, Daniel, Aart Kraay, and Massimo Mastruzzi. 2005. "Governance Matters IV: Governance Indicators for 1996-2004", WPS3630, The World Bank, Washington D.C.
- _____. 2006. "Governance Matters V. Governance Indicators for 1996-2005." *World Bank Policy Research Department Working Paper* No. 4012. The World Bank: Washington D.C.

- _____. 2007. "Growth and Governance: A Reply." *The Journal of Politics* 69(2):555-562.
- Knack, Steve and Philip Keefer. 1995. "Institutions and Economic Performance: Cross-country Tests Using Alternative Institutional Measures." *Economics and Politics*, 7:207-227.
- La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert W. Vishny. 1997. "Legal Determinants of External Finance." *The Journal of Finance* LII (3): 1131-1150.
- _____. 1998. "Law and Finance." *Journal of Political Economy* 106 (6): 1113-1155.
- _____. 1999. The Quality of Government. *Journal of Law, Economics, & Organization*, 15(1): 222-279.
- Landes, David S. 1998. *The Wealth and Poverty of Nations*. New York: W.W. Norton Company:
- Levy, Haim. 1983. "Economic Evaluation of Voting Power of Common Stock." *Journal of Finance* 38 (March): 79-93.
- Mauro, Paolo. 1995. "Corruption and Growth", *Quarterly Journal of Economics* 110:681-712.
- Mayer, Colin. 1990. "Financial Systems, Corporate Finance, and Economic Development." In R.G. Hubbard, ed., *Asymmetric Information, Corporate Finance, and Investment*. Chicago: University of Chicago Press.
- Merton, Robert K. 1940. "Bureaucratic Structure and Personality." *Social Forces* 17:560-568.

- Nee, Victor. 2000. "The Role of the State in Making a Market Economy." *Journal of Institutional and Theoretical Economics* 156:64-88.
- North, Douglass C. 1981. *Structure and Change in Economic History*. Cambridge: Cambridge University Press.
- North, Douglass C., and Robert Paul Thomas. 1973. *The Rise of the Western World: A New Economic History*. Cambridge: Cambridge University Press.
- Olson Jr., Mancur. 2000. *Power and Prosperity: Outgrowing Communist and Capitalist Dictatorships*. New York: Basic Books.
- Olson Jr., Mancur, Naveen Sarna and Anand V. Swamy. 2000. "Governance and Growth: A Simple Hypothesis Explaining Cross-country Differences in Productivity Growth", *Public Choice* 102: 341-34.
- Prak, Maarten. 2005. *The Dutch Republic in the Seventeenth Century. The Golden Age*. Cambridge: Cambridge University Press.
- Rajan, Raghuram G. and Luigi Zingales. (2003). "The Great Reversals: The Politics of Financial Development in the Twentieth Century", *Journal of Financial Economics* 69: 5-50.
- Rauch, James E. 1995. "Bureaucracy, Infrastructure, and Economic Growth: Evidence from U.S. Cities During the Progressive Era", *American Economic Review*, 85(4): 968-979.
- Rauch, James E. and Peter B. Evans. 2000. "Bureaucratic Structure and Bureaucratic Performance in Less Developed Countries", *Journal of Public Economics* 75: 49-71.

- Rodrik, Dani, Arvind Subramanian, Francesco Trebbi. 2004. "Institutions Rule: The Primacy of Institutions Over Geography and Integration in Economic Development." *Journal of Economic Growth* 9:131-165.
- Rydquist, Kristian. 1987. "Empirical Investigation of the Voting Premium." Working Paper No. 35. Evanston, III.: Northwestern University.
- Shleifer, Andrei, and Robert W. Vishny. 1997. "A Survey of Corporate Governance." *The Journal of Finance* 52 (2): 737-783.
- Staiger, D. and J.H. Stock. 1997. "Instrumental Variables Regression with Weak Instruments", *Econometrica* 65: 557-586.
- Stinchcombe, Arthur. 1965. "Social Structure and Organizations." Pp.142-93 in *Handbook of Organizations*, ed., James March (Chicago: Rand McNally).
- Stringham, Edward. 2003. "The Extralegal Development of Securities Trading in Seventeenth-Century Amsterdam." *The Quarterly Review of Economics and Finance*, 43: 321-344.
- Tirole, Jean. 1994. "The Internal Organization of Government." *Oxford Economic Papers* 46: 1-29
- Tullock, Gordon. [1965] 2005. *Bureaucracy*. Indianapolis: Liberty Fund.
- Wade, Robert. 1990. *Governing the Market: Economic Theory and the Role of Government in East Asian Industrialization*. Princeton: Princeton University Press.
- Weber, Max. [1922] 1978. *Economy and Society*. Berkeley: University of California Press.
- _____ [1918] 1988. "Parlament und Regierung im neugeordneten Deutschland" In: Weber, Max: *Gesammelte Politische Schriften*, 5th ed, Tübingen, pp. 306-443.

Whitley, Richard. 1999. *Divergent Capitalisms. The Social Structuring and Change of Business Systems*. Oxford: Oxford University Press.

Wilson, James Q. 1989. *Bureaucracy: What Government Agencies Do and Why They Do It*. New York: Basic Books.

World Bank. 2006. *A Decade of Measuring the Quality of Governance*. World Bank: Washington D.C.

Xin, Katherine R. and Jone L. Pearce. 1996. "Guanxi: Connections as Substitutes for Formal Institutional Support." *Academy of Management Journal*, 39(6):1641-1658.

Tab. 1: Core Variables

| | Market capitalization (average 2001-2003) | Listed firms per 1 million people (2004) | Total of national Forbes 2000 listed firms/total of national firms (%) 2004 | Bureaucratic quality (average 1996 to 2004) |
|----------------------------|---|--|---|---|
| Australia | 102.15 | 70.67 | 2.70 | 1.896 |
| Bangladesh | 2.68 | 1.78 | 0.00 | -0.558 |
| Botswana | 28.36 | 11.04 | 0.00 | 0.714 |
| Canada | 94.39 | 113.12 | 1.87 | 2.000 |
| Cyprus | 30.39 | 197.40 | 0.00 | 1.154 |
| Ghana | 13.62 | 1.21 | 0.00 | -0.056 |
| India | 31.71 | 5.30 | 0.53 | -0.100 |
| Ireland | 59.31 | 13.78 | 0.00 | 1.742 |
| Israel | 54.32 | 86.10 | 0.00 | 1.066 |
| Jamaica | 76.90 | 14.77 | 0.00 | -0.210 |
| Kenya | 16.69 | 1.59 | 0.00 | -0.750 |
| Malaysia | 142.61 | 36.21 | 1.56 | 0.898 |
| Namibia | 5.85 | 6.47 | 0.00 | 0.296 |
| New Zealand | 37.33 | 39.15 | 0.00 | 1.956 |
| Nigeria | 12.75 | 1.46 | 0.00 | -1.144 |
| Pakistan | 13.77 | 4.72 | 0.00 | -0.546 |
| Saudia Arabia | 50.95 | 3.11 | 0.00 | -0.092 |
| Singapore | 137.52 | 111.76 | 2.74 | 2.436 |
| South Africa | 139.61 | 9.30 | 4.23 | 0.452 |
| Thailand | 50.27 | 6.53 | 3.21 | 0.292 |
| Trinidad a. Tobago | 72.81 | 26.72 | 0.00 | 0.448 |
| United Kingdom | 136.19 | 38.95 | 6.06 | 2.098 |
| United States | 124.57 | 18.21 | 13.58 | 1.818 |
| English origin mean | 74.45 | 40.43 | 1.63 | 0.722 |
| Austria | 16.61 | 10.63 | 0.00 | 1.762 |
| Germany | 45.73 | 8.29 | 9.21 | 1.760 |
| Japan | 59.44 | 24.42 | 10.46 | 1.178 |
| Korea | 49.38 | 32.62 | 2.62 | 0.726 |
| Switzerland | 212.16 | 39.32 | 12.80 | 2.334 |
| German origin mean | 76.66 | 23.06 | 7.02 | 1.55 |
| Argentina | 67.48 | 2.83 | 0.00 | 0.078 |
| Belgium | 60.89 | 14.64 | 7.89 | 1.616 |
| Brazil | 37.05 | 2.08 | 5.17 | -0.124 |
| Chile | 91.72 | 15.22 | 0.00 | 1.296 |
| Columbia | 15.43 | 2.56 | 0.00 | -0.144 |
| Cote d'Ivoire | 11.40 | 2.26 | 0.00 | -0.634 |
| France | 77.79 | 12.10 | 8.57 | 1.584 |
| Greece | 62.51 | 30.73 | 3.54 | 0.770 |
| Indonesia | 19.88 | 1.55 | 0.00 | -0.330 |
| Italy | 43.49 | 4.70 | 16.61 | 0.854 |
| Jordan | 86.07 | 30.32 | 0.00 | 0.354 |
| Lebanon | 7.52 | 2.89 | 0.00 | -0.190 |
| Marocco | 26.95 | 1.76 | 0.00 | 0.058 |
| Mauritius | 29.39 | 32.79 | 0.00 | 0.590 |
| Mexico | 18.62 | 1.55 | 11.32 | 0.132 |
| Netherlands | 103.60 | 11.28 | 18.03 | 2.426 |
| Peru | 22.83 | 7.26 | 0.00 | -0.238 |
| Philippines | 36.28 | 2.87 | 0.00 | 0.038 |
| Portugal | 38.90 | 5.65 | 0.00 | 1.126 |
| Spain | 79.04 | 77.64 | 9.40 | 1.658 |
| Tunisia | 10.45 | 4.64 | 0.00 | 0.766 |
| Turkey | 26.59 | 4.02 | 3.87 | -0.104 |

| | | | | |
|---------------------------------|--------------|--------------|-------------|--------------|
| Venezuela | 4.50 | 2.10 | 0.00 | -0.906 |
| French origin mean | 45.89 | 15.47 | 3.17 | 0.536 |
| Denmark | 54.86 | 34.69 | 5.35 | 2.042 |
| Finland | 122.61 | 27.26 | 10.56 | 1.998 |
| Iceland | 69.78 | 165.51 | 0.00 | 1.952 |
| Norway | 39.62 | 34.21 | 0.00 | 1.936 |
| Sweden | 91.58 | 29.46 | 10.60 | 1.900 |
| Scandinavian origin mean | 75.69 | 58.22 | 5.30 | 1.966 |

Figure 1: Scatterplots (with 95% confidence interval) of financial market measures and bureaucratic quality

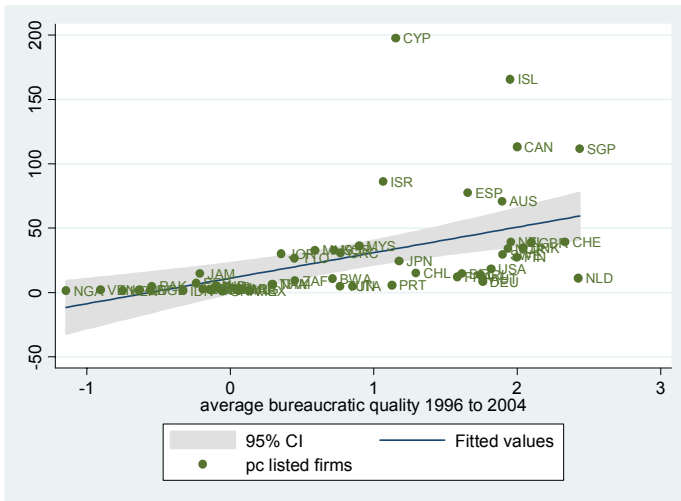
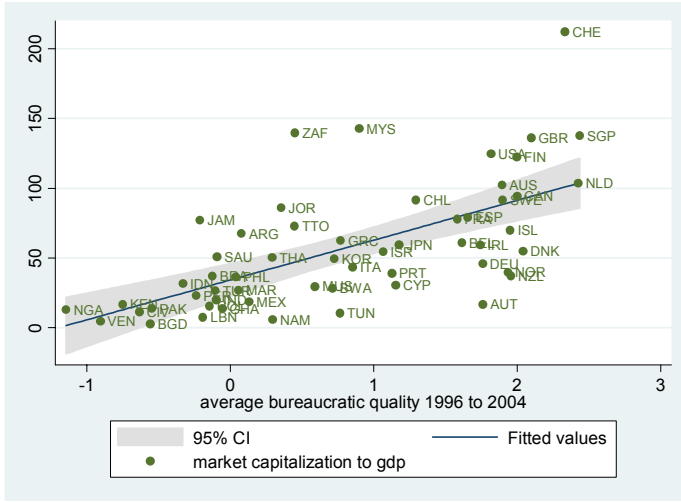


Table 2: Ordinary Least Square Regression: Financial development and bureaucratic quality, 56 countries

| | Market capitalization | | Listed firms per 1 million people | | Total of national Forbes 2000 listed firms/total of national firms (%) | |
|---|-----------------------|----------------------|-----------------------------------|----------------------|--|----------------------|
| | I | II | III | IV | V | VI |
| <i>Log(GDP)</i> | 7.467*** (2.421) | 4.481** (2.215) | -4.918 (4.001) | -6.552 (4.129) | 0.013*** (0.003) | 0.013*** (0.002) |
| <i>Latitude</i> | 0.668* (0.336) | -0.731** (0.309) | 0.939** (0.437) | -0.106 (-0.389) | 0.0005 (0.0003) | -0.0002 (0.0002) |
| <i>English-origin legal system</i> | 21.765** (9.950) | 11.117 (9.119) | 22.982** (10.741) | 14.712 (9.46) | -0.010 (0.008) | -0.015* (0.009) |
| <i>Bureaucratic quality^a</i> | | 34.862*** (6.447) | | 26.645*** (4.572) | | 0.012** (0.006) |
| <i>Intercept</i> | -60.300** (24.931) | -4.642 (26.051) | 45.495 (37.500) | 79.003* (40.671) | -0.139*** (0.026) | -0.128*** (0.028) |
| <i>Adj. R-square</i> | 0.180 | 0.445 | 0.135 | 0.321 | 0.411 | 0.435 |

White's Heteroskedasticity-consistent standard errors are given in brackets.

An asterisk denotes statistical significance at the 10% level; two at the 5% level; three at the 1 percent level.

^a: For market capitalization and listed firm per population we use the average of bureaucratic quality for 1996-2002.

Table 3: OLS-estimates with alternative bureaucracy indicators

| | Market capitalization | | | Listed firms per 1 million people | | | Total of national Forbes 2000 listed firms/total of national firms (%) | | |
|------------------------------------|-----------------------|----------------------|---------------------|-----------------------------------|----------------------|--------------------|--|----------------------|---------------------|
| | I | II | III | IV | V | VI | VII | VIII | IX |
| <i>Log(GDP)</i> | 3.596 (2.927) | 9.376* (3.936) | 3.776 (6.872) | -8.761* (4.484) | -4.762 (5.883) | -1.423 (3.833) | 0.0135*** (0.002) | 0.026*** (0.003) | 0.013* (0.006) |
| <i>Latitude</i> | -0.378 (0.430) | -0.198 (0.382) | -0.050 (0.647) | -0.235 (0.356) | 0.156 (0.384) | 0.075 (0.440) | 0.0002 (0.0003) | 0.0001 (0.0002) | 0.00 (0.00) |
| <i>English-origin legal system</i> | 7.560 (11.828) | 10.333 (18.494) | 14.224 (17.475) | 7.627 (8.316) | 14.229 (13.506) | 20.663 (16.489) | -0.014 (0.009) | -0.038** (0.013) | -0.011 (0.012) |
| <i>ICRG</i> | 28.367*** (9.026) | | | 33.419*** (8.009) | | | 0.008 (0.005) | | |
| <i>IMD</i> | | 19.378*** (5.690) | | | 12.680*** (3.985) | | | 0.012*** (0.003) | |
| <i>Weberianness</i> | | | 3.955 (3.319) | | | 4.347* (1.91) | | | 0.001 (0.001) |
| <i>Intercept</i> | -59.757 (29.015) | -110.290 (54.689) | -32.116 (69.300) | 34.587 (37.751) | 34.811 (66.742) | -8.686 (37.893) | -0.152 (0.028) | -0.328*** (0.049) | -0.146** (0.066) |
| <i>Number of observations</i> | 55 | 35 | 23 | 55 | 35 | 23 | 55 | 35 | 23 |
| <i>Adj. R-square</i> | 0.29 | 0.34 | 0.00 | 0.38 | 0.34 | 0.21 | 0.41 | 0.45 | 0.22 |

White's Heteroskedasticity-consistent standard errors are given in brackets.

An asterisk denotes statistical significance at the 10% level; two at the 5% level; three at the 1 percent level.

Table 4: Ordinary Least Square Regression: Financial development and bureaucratic quality, 27 Forbes-2000 countries

| | Market capitalization | | Listed firms per 1 million people | | Total of national Forbes 2000 listed firms/total of national firms (%) | |
|---|-----------------------|-----------------------|-----------------------------------|----------------------|--|----------------------|
| | I | II | III | IV | V | VI |
| <i>Log(GDP)</i> | -9.135 (6.288) | -7.529 (5.403) | -4.489 (3.786) | -3.305 (3.110) | 0.012* (0.006) | 0.013* (0.006) |
| <i>Latitude</i> | 0.967* (0.465) | -0.334 (0.568) | 0.282 (0.445) | -0.677* (0.331) | 0.0006 (0.0004) | -0.00001 (0.0004) |
| <i>English-origin legal system</i> | 50.068** (16.244) | 28.523 (17.898) | 27.644 (16.520) | 11.753 (14.177) | -0.034 (0.018) | -0.044** (0.019) |
| <i>Bureaucratic quality^a</i> | | 37.225*** (12.132) | | 27.454*** (5.084) | | 0.017* (0.009) |
| <i>Intercept</i> | 148.806 (87.607) | 136.124* (72.244) | 68.509 (59.729) | 59.156 (44.080) | -0.105 (0.078) | -0.114 (0.074) |
| <i>Adj. R-square</i> | 0.13 | 0.46 | 0.048 | 0.454 | 0.260 | 0.292 |

White's Heteroskedasticity-consistent standard errors are given in brackets.

An asterisk denotes statistical significance at the 10% level; two at the 5% level; three at the 1 percent level.

^a: For market capitalization and listed firm per population we use the average of bureaucratic quality for 1996-2002.

Table 5: Ordinary Least Square Regression: Financial development, bureaucratic quality and regulatory quality, 42 countries

| | Market capitalization | | Listed firms per 1 million people | | Total of national Forbes 2000 listed firms/total of national firms (%) | |
|---|-----------------------|----------------------|-----------------------------------|----------------------|--|----------------------|
| | I | II | III | IV | V | VI |
| <i>Log(GDP)</i> | 1.429 (4.274) | 0.166 (3.876) | -1.305 (2.759) | -1.889 (2.383) | 0.019*** (0.004) | 0.019*** (0.004) |
| <i>Latitude</i> | -0.351 (0.409) | -0.710* (0.383) | -0.437 (0.302) | -0.603** (0.231) | -0.0001 (0.0003) | 0.0001 (0.0003) |
| <i>English-origin legal system</i> | 12.479 (11.874) | 9.418 (10.672) | 15.090 (9.390) | 13.676 (8.706) | 0.004 (0.013) | 0.003 (0.015) |
| <i>ADR</i> | 4.274 (5.768) | -0.074 (5.841) | 2.034 (2.516) | 0.025 (2.128) | -0.014*** (0.005) | -0.015** (0.005) |
| <i>One share one vote</i> | 31.315 (7.896) | -31.262 (25.700) | 23.109*** (5.695) | -5.805 (7.698) | 0.011* (0.006) | -0.003 (0.021) |
| <i>Bureaucratic quality^a</i> | | 63.377** (27.378) | | 29.284*** (8.841) | | 0.014 (0.021) |
| <i>Intercept</i> | 18.210 (52.486) | 49.156 (48.391) | 25.498 (35.628) | 39.798 (30.830) | -0.182*** (0.050) | -0.175*** (0.053) |
| <i>Adj. R-square</i> | 0.266 | 0.416 | 0.361 | 0.436 | 0.462 | 0.454 |

White's Heteroskedasticity-consistent standard errors are given in brackets.

An asterisk denotes statistical significance at the 10% level; two at the 5% level; three at the 1 percent level.

^a: For market capitalization and listed firm per population we use the average of bureaucratic quality for 1996-2002.

Table 6: Two-Stage Least Square Estimates: Financial development, bureaucratic quality, 56 countries

| | Market capitalization | Listed firms per 1 million people | Total of national Forbes 2000 listed firms/total of national firms (%) |
|--|-----------------------|-----------------------------------|--|
| | I | II | III |
| <i>Panel A. Second-stage</i> | | | |
| <i>Log(GDP)</i> | 4.288* (2.377) | -7.009 (4.230) | 0.012*** (0.003) |
| <i>Latitude</i> | -0.826 (0.497) | -0.322 (0.731) | -0.0005 (0.0007) |
| <i>English-origin legal system</i> | 9.431 (9.783) | 13.109 (9.513) | -0.019* (0.011) |
| <i>Bureaucratic quality^a</i> | 36.603*** (11.855) | 32.062** (15.064) | 0.026 (0.017) |
| <i>Intercept</i> | -0.133 (30.396) | 87.485* (45.617) | -0.106*** (0.036) |
| <i>Adj. R-square</i> | 0.4432 | 0.3123 | 0.3964 |
| <i>Panel B. First Stage for Endogenous Variable (bureaucratic quality)</i> | | | |
| <i>logGDP</i> | | 0.189*** (0.057) | |
| <i>Latitude</i> | | 0.035*** (0.005) | |
| <i>English-origin legal system</i> | | 0.332* (0.175) | |
| <i>Log(territory)</i> | | -0.173*** (0.047) | |
| <i>Intercept</i> | | -0.477 (0.638) | |
| <i>F-Statistic</i> | | 22.76 | |
| <i>Adj. R-square</i> | | 0.6128 | |

Estimates with robust standard errors.

Instrumented: bureaucratic quality

Instruments: loggdp, latitude, origin, logarea:

^a: For market capitalization and listed firm per population we use the average of bureaucratic quality for 1996-2002.

Appendix 1: Sources and measured concepts

| Source | Questions asked |
|--|--|
| Global Insight's Global Risk Survey | <i>Government Instability</i> : Increase in senior government personnel turnover that reduces the GDP growth rate by 2% during any 12 month period. <i>Government Ineffectiveness</i> : A decline in government personnel quality at any level that reduces the GDP growth rate by 1% during any 12 month-period. <i>Institutional Failure</i> : A deterioration of government capacity to cope with national problems as a result of institutional rigidity that reduces the GDP growth by 1% during any 12 month period. |
| Global E-Government Index | Global E-government |
| Economist Intelligence Unit | Quality of bureaucracy Excessive bureaucracy / red tape |
| World Economic Forum | Public spending composition, quality of general infrastructure, quality of public schools, time spent by senior management dealing with government officials |
| Merchant International Group | Quality of bureaucracy |
| Political Risk Services (ICRG) | <i>Bureaucratic quality</i> . Measures institutional strength and quality of the civil service, assesses how much strength and expertise bureaucrats have and how able they are to manage political alternations without drastic interruptions in government service or policy changes. |
| Global Insight's Business Conditions and Risk Indicators | <i>Policy consistency and forward planning</i> : How confident businesses can be of the continuity of economic policy stance – whether a change of government will entail major policy disruption, and whether the current government has pursued a coherent strategy. <i>Bureaucracy</i> : An assessment of the quality of the country's bureaucracy. The better the bureaucracy the quicker decisions are made and the more easily foreign investors can go about their business. |
| African Development Bank | Management of public debt, policies to improve efficiency of public sector, revenue mobilization, budget management. |
| Afro-Barometer | Based on your experiences, how easy or difficult is it to obtain household services (like electricity or telephone)? Based on your experiences, how easy or difficult is it to obtain and identity document? Government handling of health services; Government handling of education |
| Asian Development Bank | Civil service; Revenue Mobilization and budget management; Management and efficiency of public expenditures. |
| Business Environment & Enterprise Performance Survey | How problematic are telecommunications for the growth of your business? How problematic is electricity for the growth of your business? How problematic is transportation for the growth of your business? |
| Business Environment Risk Intelligence | Bureaucratic delays |
| Bertelsmann Foundation | Consensus building; Governance capability; Effective use of resources |
| Country Policy & Institutional Assessment | Management of external debt; Quality of public administration; Revenue mobilization; Budget management. |
| Freedom House | <i>Government and administration</i> : Government decentralization, independent and responsibilities or local and regional governments, and legislative and executive transparency are discussed. |
| Latino-Barometer | Trust in government |
| Institute for Management Development (IMD) | Government economic policies do not adapt quickly to changes in the economy; The public service is not independent from political interference; Government decisions are not effectively implemented; bureaucracy hinders business activity; the distribution infrastructure of goods and services is generally inefficient; policy direction is not consistent. |

Source: Kaufman, Kraay and Mastruzzi 2006.

APPENDIX 2:**Correlation Matrix (56 countries)**

| Variable | Minimum | Maximum | Mean | Std. Dev. | M.Cap / GDP | Listed firms | Forbes | Log(GDP) | Latitude | English origin |
|-----------------------|---------|---------|-------|-----------|-------------|--------------|--------|----------|----------|----------------|
| Market cap /GDP | 2.68 | 212.16 | 56.70 | 44.19 | | | | | | |
| Listed Firms | 1.21 | 197.49 | 26.77 | 39.85 | 0.31 | | | | | |
| Forbes | 0.00 | 0.18 | 0.03 | 0.05 | 0.47 | -0.09 | | | | |
| Log(GDP) | 8.22 | 16.15 | 11.63 | 1.79 | 0.36 | -0.08 | 0.62 | | | |
| Latitude | 1 | 64 | 31.61 | 17.23 | 0.30 | 0.25 | 0.42 | 0.38 | | |
| English Origin | 0 | 1 | 0.41 | | 0.11 | 0.19 | -0.22 | -0.17 | -0.31 | |
| Bureaucratic quality. | -1.14 | 2.44 | 0.78 | 0.99 | 0.64 | 0.49 | 0.47 | 0.39 | 0.71 | -0.08 |

Correlation Matrix (27 countries)

| Variable | Minimum | Maximum | Mean | Std. Dev. | M.Cap / GDP | Listed firms | Forbes | Log(GDP) | Latitude | English origin |
|----------------------|---------|---------|-------|-----------|-------------|--------------|--------|----------|----------|----------------|
| Market cap /GDP | 18.62 | 212.16 | 84.17 | 47.00 | | | | | | |
| Listed Firms | 1.55 | 113.12 | 30.60 | 31.49 | 0.41 | | | | | |
| Forbes | 0.005 | 0.18 | 0.07 | 0.05 | 0.12 | -0.42 | | | | |
| Log(GDP) | 11.44 | 16.15 | 13.03 | 1.21 | -0.17 | -0.15 | 0.37 | | | |
| Latitude | 2 | 60 | 37.60 | 16.46 | 0.03 | -0.10 | 0.44 | 0.25 | | |
| English Origin | 0 | 1 | 0.36 | | 0.36 | 0.36 | -0.45 | -0.03 | -0.49 | |
| Bureaucratic quality | -0.12 | 2.44 | 1.30 | 0.85 | 0.62 | 0.55 | 0.32 | 0.07 | 0.50 | 0.01 |