

Hasan, Iftekhar; Wachtel, Paul; Zhou, Mingming

**Working Paper**

## Institutional development, financial deepening and economic growth: evidence from China

BOFIT Discussion Papers, No. 12/2006

**Provided in Cooperation with:**

Bank of Finland, Helsinki

*Suggested Citation:* Hasan, Iftekhar; Wachtel, Paul; Zhou, Mingming (2006) : Institutional development, financial deepening and economic growth: evidence from China, BOFIT Discussion Papers, No. 12/2006, ISBN 952-462-832-5, Bank of Finland, Institute for Economics in Transition (BOFIT), Helsinki,  
<https://nbn-resolving.de/urn:nbn:fi:bof-201408072084>

This Version is available at:

<https://hdl.handle.net/10419/212584>

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BOFIT Discussion Papers  
12 • 2006

Iftekhar Hasan, Paul Wachtel and Mingming Zhou

Institutional development, financial  
deepening and economic growth:  
Evidence from China



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## Economists

### **Mr Pekka Sutela, head**

Russian economy and economic policy  
Russia's international economic relations  
China in the world economy  
Pekka.Sutela@bof.fi

### **Ms Tuuli Juurikkala, economist**

Russian economy and economic policy  
Private sector development  
Tuuli.Juurikkala@bof.fi

### **Mr Juuso Kaaresvirta, economist**

Chinese economy and economic policy  
Juuso.Kaaresvirta@bof.fi

### **Ms Tuuli Koivu, economist**

Chinese economy and economic policy  
Editor-in-Chief of *BOFIT China Review*  
Tuuli.Koivu@bof.fi

### **Mr Iikka Korhonen, research supervisor**

Exchange rate policies in transition economies  
Monetary policy in transition economies  
Editor-in-Chief of *BOFIT Discussion Papers*  
Iikka.Korhonen@bof.fi

### **Mr Aaron Mehrotra, economist**

Chinese economy and economic policy  
Monetary policy in transition economies  
Aaron.Mehrotra@bof.fi

### **Mr Simon Ollus, economist**

Russian economy and economic policy  
Russian industrial policy  
Simon.Ollus@bof.fi

### **Mr Jouko Rautava, economist**

Russian and Chinese economies and economic policies  
Editor-in-Chief of *BOFIT Russia Review* and  
*BOFIT Online*  
Jouko.Rautava@bof.fi

### **Ms Heli Simola, economist**

Economic relations between Russia and Finland  
Russia's impact on the Finnish economy  
Heli.Simola@bof.fi

### **Ms Laura Solanko, economist**

Russian regional issues  
Public economics  
bofit@bof.fi

### **Ms Merja Tekoniemi, economist**

Russian regional issues  
Merja.Tekoniemi@bof.fi

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Mr **Vesa Korhonen**, email: KorhoneV@ebrd.com

Ms **Seija Lainela**, email: Seija.Lainela@formin.fi

Mr **Jian-Guang Shen**, email: JGShen@imf.org

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Department coordinator  
Publications traffic  
Liisa.Mannila@bof.fi

### **Ms Tiina Saajasto, information specialist**

Information services  
Tiina.Saajasto@bof.fi

## Contact us

Bank of Finland  
BOFIT – Institute for Economies in Transition  
PO Box 160

Phone: +358 10 831 2268  
Fax: +358 10 831 2294  
E-mail: bofit@bof.fi

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BOFIT Discussion Papers  
Editor-in-Chief Iikka Korhonen

BOFIT Discussion Papers 12/2006  
5.10.2006

Iftekhhar Hasan, Paul Wachtel and Mingming Zhou: Institutional development,  
financial deepening and economic growth: Evidence from China

ISBN 952-462-832-5  
ISSN 1456-4564  
(print)

ISBN 952-462-833-3  
ISSN 1456-5889  
(online)

Multiprint Oy  
Helsinki 2006

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All opinions expressed are those of the authors and do not necessarily reflect the views of the Bank of Finland.

Iftekhhar Hasan, Paul Wachtel and Mingming Zhou:

## Institutional development, financial deepening and economic growth: Evidence from China

### Abstract

There have been profound changes in both political and economic institutions in China over the last twenty years. Moreover, the pace of transition has led to variation across the country in the level of development. In this paper, we use panel data for the Chinese provinces to study the role of legal institutions, financial deepening and political pluralism on growth rates. The most important institutional developments for a transition economy are the emergence and legalization of the market economy, the establishment of secure property rights, the growth of a private sector, the development of financial sector institutions and markets, and the liberalization of political institutions. We develop measures of these phenomena, which are used as explanatory variables in regression models to explain provincial GDP growth rates. Our evidence suggests that the development of financial markets, legal environment, awareness of property rights and political pluralism are associated with stronger growth.

JEL Classifications: O16, P14, P16, O53

Key words: economic growth, institutions, financial markets, China

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Iftekhhar Hasan, Rensselaer Polytechnic Institute (RPI) – Lally School of M&T  
110 8<sup>th</sup> Street, Troy, NY 12180 USA, [hasan@rpi.edu](mailto:hasan@rpi.edu), Bank of Finland, [iftekhhar.hasan@bof.fi](mailto:iftekhhar.hasan@bof.fi)

Paul Wachtel, New York University – Stern School of Business, 44 West 4<sup>th</sup> Street, New York, NY  
10012 USA, [pwachtel@stern.nyu.edu](mailto:pwachtel@stern.nyu.edu)

Mingming Zhou, Rensselaer Polytechnic Institute (RPI) - Lally School of M&T  
110 8<sup>th</sup> Street, Troy, NY 12180 USA, [zhoum@rpi.edu](mailto:zhoum@rpi.edu)



Iftekhhar Hasan, Paul Wachtel and Mingming Zhou:

## Institutional development, financial deepening and economic growth: Evidence from China

### Tiivistelmä

Kiinan poliittiset ja taloudelliset instituutiot ovat muuttuneet hyvin paljon kahden viime vuosikymmenen aikana. Muutosten takia Kiinan eri alueiden taloudellinen kehitystaso vaihtelee nykyään varsin paljon. Tässä tutkimuksessa käytetään Kiinan provinseja koskevaa paneelidataa sen selvittämiseksi, miten juridiset instituutiot, finanssimarkkinoiden kehityssaste ja poliittinen moniarvoisuus vaikuttavat alueellisiin kasvuvauhteihin. Siirtymätaloudelle tärkeimpiä institutionaalisia muutoksia ovat markkinatalouden kehittyminen, omistusoikeuden juridisen pohjan vahvistuminen, yksityissektorin kasvu, rahoitusmarkkinoiden synty ja kehitys sekä poliittisten instituutioiden liberalisointi. Tutkimuksessa pyritään mittaamaan näitä muutoksia ja käytetään mittareita regressiomalleissa selittämään provinssien BKT-kasvuvauhteja. Tuloksien mukaan rahoitusmarkkinoiden ja juridisten instituutioiden kehittyminen, omistusoikeudet ja poliittinen moniarvoisuus ovat kaikki positiivisesti korreloituneita taloudellisen kasvun kanssa.

Asiasanat: talouskasvu, instituutiot, finanssimarkkinat, Kiina

# 1 Introduction

The late twentieth century has witnessed the transformation of numerous economies around the world from centrally planned to market systems. The most common transition path was a “Big Bang” (Hoff and Stiglitz, 2004), which was characterized by economic liberalization preceded by massive force of democratization and followed by privatization. Democratization and economic liberalization generally accelerate growth with the establishment of specific institutions, which in turn determine other economic policies (Persson and Tabellini, 2006). Economists have long been interested in the role of institutions and financial markets in explaining economic transitions and growth. Rajan and Zingales (1998) argue that financial development facilitates economic growth by reducing the costs of external finance to firms; their empirical evidence from a cross-country study also supports this rationale. Guiso, Sapienza and Zingales (2004) examine the effects of differences in local financial development, which can explain the spread of entrepreneurship and economic growth. La Porta, Lopez-de-Silanes, Shleifer and Vishny (1997, 1998, 2000), hereinafter LLSV, study the relationship between law and finance, and consequently economic development, and highlight the importance of legal institutions.

China has followed a quite different path where economic reform and transition to a market economy occurred without democratization, liberalization proceeded only incrementally and privatization was delayed until almost two decades after the initiation of reforms. The development of China, featured by its incremental and experimental approach to reforms, has generated high and stable growth over the last three decades (Prasad and Rajan, 2006). This remarkable growth performance accompanied by a relatively undeveloped legal and financial system makes China a puzzle. According to Allen, Qian and Qian (2005), China seems like “a counterexample to the findings in law, institutions, finance and economic growth literatures.” They document the poor legal protection of minority and outside investors and the dominant role of the state public sectors. Cull and Xu (2005), using a survey of managers, find that expropriation risk plays a role in Chinese firms’ reinvestment decisions.

These prior studies shed some light on the unique features of Chinese law, institutions and financial system, and indicate the important role played by the Chinese institu-

tional setting in the economic growth. However, none of these studies relates China's regional economic growth to the differences across the vast country in the timing and extent of institutional development. Our intent is to see whether the remarkable economic performance of China can be ascribed, at least partially, to this evolution of the country's legal, economic and political institutions and its financial markets.

In this paper we use a panel of data from the Chinese provinces to study the relationship between measures of the development of legal and political institutions, indicators of financial market development and economic growth. Based on a sample of 31 Chinese provinces for the period 1986-2002, our empirical results indicate that those regions with greater rule of law, more property rights awareness more political pluralism are associated with stronger growth. We believe these findings further our understanding of the "Chinese economic miracle", and consequently add to the growing literature relating to law, institutions, finance and economic growth.

The rest of the paper proceeds as follows. Section I provides a description of institutional reforms and financial sector development in China over the last two decades. Section II reviews the relevant literature. Section III describes our data and the various measures we employ for institutional development. In Section IV, we present our results and examine the relationship between institutional development and growth in China. Concluding remarks are found in Section V.

## 2 Decentralization, institutional reform and financial sector development

The transition from planned to market economy necessitates the establishment of almost entirely a new set of institutions. However, the ambition of the Chinese Communist Party to retain a monopoly on political power prevents the full emergence of the rule of law and the power of local governments over a wide range of issues that could potentially undermine the coherence of national policy. Nevertheless, with the ideological shift and institutional development made so far, China has gradually experienced the emergence of legal institutions, decentralization of political institutions, rapid growth of the private sector and the development of financial markets.

Institutional change in China can be divided into three distinct stages. The first stage includes the years between 1979 and 1993 when a variety of transitional institutions emerged through experiments and innovations. The second stage begins around 1994 when most of the old revolutionaries were gone from the political scene. The strategic shift in the official ideology led to completely abandoning central planning and embracing a market system. The third stage begins in 2002 when China acknowledged its desire to be part of the world community and began to revise legislation in order to fulfill its obligations under the WTO agreements.

In order to further explore our research question, background information on some important aspects of the institutional development in China needs to be highlighted.

**Reforms of Chinese SOEs** After nearly thirty years of reform, the Chinese state owned enterprises (SOEs) remain one of the most intractable problems in the economic system (Chen and Feng, 2000). In 1978, the restructuring of the SOEs was initiated and designated by the Chinese governments as the core of the economic reform. Instead of privatizing the SOEs, the Chinese government chose to restructure them by increasing autonomy in managerial decisions and by creating financial incentives at the enterprise level. In the 1980s, the state experimented with various approaches to rejuvenate the SOEs, the contract responsibility system (CRS) and corporatization. The essential idea of CRS is to grant managerial autonomy to SOEs and apply profit-sharing rules to motivate the firms while maintaining state ownership. Corporatization refers to converting SOEs into shareholding companies with limited liability with the objective of protecting SOE management from government interference. The experiment of corporatization began in 1984, and was kept in a low profile until late 1991, when it was greatly promoted by the establishment of two stock exchanges in Mainland China. In 1997, the 15th Party Congress meeting introduced a “differential treatment” strategy to SOE reform, namely “protection of the large and release of the small.” Smaller state-owned enterprises were asked to “find their own solution” and by 2001 the government retained only 60% of the firms that were state owned in 1996. The process of SOE reform since 1978 can be viewed as a gradual decentralization in the management of state enterprises; management authority has shifted from government bureaucrats to SOE managers.

**Emergence of the Private Sector** The distinguishing feature of a market economy as opposed to a planned economy is individuals have control over their own property (Hoff and Stiglitz, 2004). Over the last two decades, the private sector in China has grown from

an extremely restricted and ignored sector into a powerful growth engine for China's economy (Bai, Lu and Tao, 2006).

An early form of privatization, known as the "Wenzhou Model," was based on capital accumulation in a family and village environment of small enterprises. In the late 1980s, regulations regarding shareholding enabled these enterprises to define property rights and separate collective and private enterprise shares which led to de facto privatization in some areas. From 1992, enterprises were offered the chance to convert to a limited liability structure in anticipation of the Company Law that was then under consideration by the National People's Congress in Beijing which only came into effect in 1994.

Investor protection has the power to create the incentive to accumulate capital and thus promote economic growth (Castro, Clementi and MacDonald, 2004). The 1994 Company Law improved property rights by establishing the firm as a legal entity that owns the firm's assets. A further move towards privatization and confirmation of private property rights was made in 2000, when provincial authorities propagated a 'deepened system reform' aiming at reducing all public enterprise shares to less than 50% and effectively giving private entrepreneurs a majority share in local enterprises. Implementation of the Company Law and support extended to private enterprises by local state institutions differed from region to region. Privatization and the acknowledgement of property rights were the outcome of local political enactment that followed the national legislation.

Overall, the establishment of private property rights in China has been an incremental process from the introduction of usage rights to the acknowledgment of individuals as owners of capital and from collective rights to the establishment of firms as the legal owners of assets. The speed of this process depended on local politics, that is, the operation of local networks that provide firms with private property rights protection and contractual security and access to many non-tradable resources (Krug and Hendrichske, 2001).

**FDI Policy** In hoping for the spillover effects from multinational enterprises to domestic industries (Javorcik, 2004), the Chinese government decided to open a window for foreign investment; two coastal provinces, Guangdong and Fujian, were allowed to adopt "special policies" to attract more international business. In 1980, four special economic zones (Shenzhen, Zhuhai, Shantou, and Xiamen) with special privileges were established. Their success led the central government to grant special autonomy to fourteen additional coastal cities in 1984 and other areas were added in subsequent years. Additionally, many inland cities that do not enjoy the special status established their own develop-

ment zones with tax benefits. As a result, FDI increased sharply from \$4.4 billion in 1991 to \$28 billion in 1999. Dayal-Gulati and Husain (2002) and Havrylchyk (2005) examine the influence of FDI on growth at the provincial level.

**Reform of Budgetary policy** Beginning in 1979, the Chinese government began to replace state budget allocation with bank loans. In 1995, the new “Budget Law” took effect, which prohibited the central government from borrowing from the central bank, required that local governments balance their budgets and restricted the local governments from bond issuance or borrowing in the financial market. The Central Bank Law in 1995 reduced the influence of local governments on monetary policy and credit allocation decisions. Furthermore, decentralization occurred as fiscal expenditures were reallocated from the national to state and local governments.

In 1980, the profit tax began to substitute for profit remittances to the state sector, though the various tax reform measures were complicated and subjected to abuse, which resulted in a decrease in tax revenue (Blejer and Szapary, 1990). Since 1988, enterprises have the right to decide on their own investments and a bidding system was established. In 1994, China introduced major tax and fiscal reforms, which made a clear distinction between national and local taxes, thus making it very difficult for local governments to reduce national taxes as they did in the past.

**Banking Reform** Credit markets in China are relatively large by international standards (the assets of deposit money banks is a larger share of GDP than it is in the US), however credit to the private sector is a much smaller share of GDP than most other countries. So the strange structure of the financial system was ripe for the reforms that did not start until 1994 when the central government decided to separate the policy banks from commercial banks and established three policy-lending banks and four specialized commercial banks (the so-called three-tier system). The banking reforms thereafter include, among others: (1) establishing a central bank; (2) transforming the urban credit cooperatives into commercial banks (1996-1998); (3) granting limited licenses to some foreign banks; (4) granting licenses to non-state commercial banks; (5) reducing government intervention in credit allocation; (6) loosening interest rate controls; (7) recommending standard accounting and prudential norms.

Though these changes in banking policy are important, serious banking sector problems remain: under-capitalization, large percentage of bad loans, continued extensions of low-interest policy loans to state enterprises, and corruption and other abuses by bank loan

officers. The non-performing loans of the state banks are the major obstacle to their efficient performance. However, major changes in the banking sector began with China's entry into the WTO in 2001. These include further liberalization of interest rates, fewer restrictions on ownership and increased operational freedom. Recent developments include partial privatization with shares sold in the market and minority foreign ownership stakes.

**Establishment of stock market** The establishment of the Shanghai Stock Exchange in 1990 and the Shenzhen Stock Exchange in 1991 was initially aimed at promoting the SOE reforms. In early 1992, tens of thousands of SOEs sought permission to restructure into shareholding companies. Furthermore, in 1992, the central government assumed formal policy-making powers and re-organized stock market regulatory institutions. However, at the same time, local leaders retained significant influence over the listing process and the enforcement of secondary market regulation. The illegal participation of financial institutions (e.g. investment banks and insurance companies) in the stock market exacerbated the situation. By 2000, the central regulatory authority had consolidated its powers and the influence of local government was significantly reduced. The stock market regained the confidence of public investors, and has enjoyed rapid expansion since then. Rousseau and Xiao (2006) however do not find any effect of stock market development from 1995-2005 on real economic activity although they did find that banking sector developments played an important role

**Corporate bond market** Corporate bonds markets lagged behind the development of equity and government bond markets. Corporate bonds were first issued in 1986 and for a long time, the corporate bond listings were small and other trading was explicitly prohibited. Outstanding issues in 1999 were only about one-half of one percent of GDP (People's Daily, Sept. 1, 2000). However, the corporate bond market began to expand thereafter when new rules governing issuance were implemented.

There are various reasons why the development of the corporate bond market was slow. First, the process for corporate bond issuance is extremely cumbersome, as three different bodies, including the State Development Planning Commission, which allocates quotas on the basis of regional and sectoral balance, must approve all new issues. Second, the issuing enterprise must seek recommendations and guarantees from the local government and the ministry responsible for its sector. Third, the interest rate on the corporate bonds cannot exceed more than 40 percent of deposit interest rate with the same term. Such stringent restrictions on issuers' qualifications, issuance amounts and pricing of new non-

financial corporate issues, along with the inadequate supervision and legal framework, lack of investor diversity and low liquidity has kept the corporate bond market from playing a major role in the economy.

However, some progress has also been observed recently, as the Chinese government is paying more attention to the importance of corporate bonds in the capital market. Specifically, the right to issue corporate bonds has been extended from mega-size SOEs to local enterprises, controls governing fund usage have been eased, and interest rates for corporate bonds have been increasingly determined by market forces. The liquidity of corporate bonds is on the rise, and risk control mechanisms for corporate bonds are improving, as more and more issuers have opted for bank guarantees instead of guarantees by related enterprises (China Daily, Hong Kong Edition, July 25, 2003)

**Development of the political environment** With the end of the Cultural Revolution in 1977, political reforms began in addition to the changes in economic structure that have been addressed so far. Deng Xiaoping used his theory of "socialism with a Chinese character" to reinterpret old principles and subtly start adjustments to the political regime. The Communist Party was very successful in carrying out the economic reforms and maintaining social and political stability at the same time.

The rudiments of a legal system were reintroduced in 1979 and members of the legal profession were rehabilitated. As part of its economic and legal reforms, China adopted a patent law to protect foreign patents in 1984.

At the same time the Party still claimed that the "dictatorship of the proletariat" was in place and it continued to dominate political life. Economic reform was accompanied by an increase in economic crimes such as embezzlement and corruption which were dealt with harshly by the Communist regime. The repressive regime restricted expressions of opinion about the reform process and there were tensions between the Communist Party and those who advocated political pluralism. The Party continued to forbid the organization of any political opposition, except for a "Political Consultative Conference," which consists of all different parties in China, and provides political consultation and advice for the Communist Party. It is notable that even though the objective of the conference is to increase the representativeness of different viewpoints, members of the Communist Party still occupy a significant proportion of the seats in the conference. Political reforms and democracy have lagged behind economic reform, which has brought economic freedom



and diversity to China and which may lead to greater opening and democracy in China's political institutions.

This brief introduction to the major changes in economic and political institutions in China shows two things. First, the reform process has already touched on a broad range of economic, political and social areas of life. Second, the uneven pace of reform leads to considerable variation across the country and over time in institutional development. In the rest of the paper, we will try to exploit these differences over time and place to better understand the determinants of growth.

### 3 Literature review

The link between institutional development and economic growth has gained increasing interest among researchers in recent decades. Since our review of institutional reform in China has emphasized three facets of such development – legal-, financial- and political-intuitions, we focus here on the literature that links these issues to the economic development of China.

An important stream of research focuses on the development of legal and financial institutions and economic growth (Demirguc-Kunt and Maksimovic, 1998; La Porta, Lopez-de-Silanes, Shleifer and Vishny, 1998; Rajan and Zingales, 1998; Wachtel, 2001). Well-defined property rights and related rules ensure that the use and trading in these rights is fair and transparent and that abuses are appropriately punished. Furthermore, the protection of property right facilitates the development of well-functioning financial markets. In an era of entrepreneurship, well-functioning and flexible financial markets may allow entrepreneurs to embrace economic opportunities and respond to technology shocks (Baumol, 1990). Using data on Chinese entrepreneurs, Djankov, Qian, Roland and Zhuravskaya (2006) highlighted the importance of legal and economic institutions in fostering entrepreneurship. Jonhson, McMillan and Woodruff (2002) examine the relative importance of property rights and external finance in several transition countries. They find property rights to be overwhelmingly important. Acemoglu and Johnson (2003) separate proxies for the security of property rights into two groups, i.e., those measuring the risk of expropriation and those measuring the ease and reliability of contract enforcement, and their cross-country results suggest that risk of expropriation is the more severe impediment to eco-

economic development. Following the same definition of security of property rights and Chinese firm level data, Cull and Xu (2005) indicate that at China's current stage of development, expropriation risk, contract enforcement, access to finance, and ownership structure all appear to matter for Chinese firms' reinvestment decisions.

Political institutions, as one component of the institutional framework, have been recognized to exert crucial influence on economic growth. In a transition economy, an improving democracy may have significant effect on political and economic conditions of a country (Rodrik and Wacziarg, 2006). Researchers often used the degree of democracy or level of corruption to capture the contribution of political institutions. Corruption, often as a signal of the quality of political institutions, imposes substantial economic costs, particularly in less developed economies (Shleifer and Vishny, 1993). Empirical evidence from some cross-country or cross-region studies (Mauro, 1995; Hall and Charles, 1999) confirm that corruption negatively affects aggregate outcomes such as growth and investment rates.

An aspect of political institutional development that is beginning to attract more attention is the link between political pluralism and economic liberalization and development. In democratic politics, pluralism is a guiding principle that permits the coexistence of different interests. Political pluralism plays a role in economic growth because there may be an intrinsic connection between the dispersal of political power inherent in the competitive market economy and political pluralism (Rodrik and Wacziarg, 2006). Representativeness, accountability and transparency are essential aspects of well-functioning political institutions and since political institutions play a dominant role in determining economic policies, one would expect that economic liberalization should be positively related to the degree of political pluralism in the country or region.

There are some other studies that examine the disparities among China's different provinces (Borensztein and Ostry, 1996; Liu and Li, 2001), but very few of them make efforts to incorporate the role of institutions. However, there are two recent studies that look at province-level data on financial sector development and two more that focus on institutional developments. Aziz and Duenwald (2002) and Boyreau-Debray (2003) both find little influence of financial sector depth at the provincial level on growth primarily because little credit growth in the 1990s went to the private sector. Chen and Feng (2000) find that growth of private and semi-private enterprises leads to an increase in economic growth while the presence of SOEs reduces growth rates among the provinces based on their sample 29 Chinese provinces from 1978 through 1989. In addition, Biggeri (2003) uses pro-

vincial level data for the period 1986 to 2001 and finds that the level of aggregate output in each province is negatively influenced by the presence of state owned enterprises, a proxy for the extent of marketization of the economy. These early studies of inter-provincial differences in growth indicate that more careful specifications of institutional development are clearly called for and data that extends into the post-2000 era is needed.

## 4 Data and methodology

Empirical research using cross-country data has provided much insight on the role of institutions in promoting economic growth (King and Levine, 1993; Knack and Keefer, 1995; Rousseau and Wachtel, 2000). However, cross-country studies are sometimes faulted for being unable to distinguish between the proximate determinants of growth and country specific idiosyncrasies. Although it might be tempting to examine Chinese experiences by making comparisons with transition experiences in Europe and the former Soviet Union, the unique transition path chosen by China would make this approach unreliable.

The use of sub-national data has major advantages over cross-country studies in addressing these issues. The data comparability issue, for example, is less serious within a country than across countries. While the comparison of institutional and political characteristics across countries can be difficult due to the diversity in historical experiences, cultural norms and institutional contexts, sub-national data can control for such contexts and focus on specific aspects of the institutional and political system. Our sample consists of a panel for 31 provinces<sup>1</sup> in Mainland China with annual data for 1986-2002.

Our dependent variable, growth, is the growth rate of real annual per capita GDP in the province.<sup>2</sup> The province-level GDP data and the other macroeconomics variables were collected from China Economic Information Network Database. The original sources of these data are the annual issues of the *Statistics Yearbook of China*.

A major challenge in this paper was to find data that adequately measure or proxy the institutional issues of interest. As we shall see, in some instances direct measures of

<sup>1</sup> The 31 provinces, including four municipalities with the same level of authority as the provinces are Anhui, Beijing, Chongqing, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Neimenggu (Inner Mongolia), Ningxia, Qinghai, Shanxi, Shandong, Shanghai, Shanxi, Sichuan, Tianjing, Xinjiang, Xizhang, Yunnan, Zhejiang.

<sup>2</sup> The variable is defined as the change in the log of real per capita GDP.

institutional development can be obtained while in other instances the available data provide only imperfect proxies. We will begin with the financial institutions for which direct measures are obtainable and widely used in growth studies. We will then proceed to the legal and political institutions for which proxies provide indirect but adequate representations.

For the development of the financial sector, we use two measures of financial depth, one based on banks alone and the other on non-bank sources of private sector financing:

(1) The ratio of total bank loans to GDP measures banking sector depth. Bank loans data are obtained from the annual issues of the *Almanac of China's Finance and Banking* (ACFB). This measure is not available prior to 1989 and so for the three missing years we use state owned bank loans. The two series are very similar, in early years when the state-owned banks dominated the banking sector. The data are linked using the ratio of the series in 1994 (the year prior to major financial reforms).

(2) The ratio of equity and non-financial corporate debt (long-term and short-term) issuance to GDP is a measure on non-bank financial market activity. The issuance is for firms incorporated in the province. In the sense that the issuance of IPOs and corporate bonds represents the activities of the capital markets, this ratio also captures the degree of development of financial institutions such as investment banks, accounting firms, supervisory bodies, etc. The IPO data are from Statistics Yearbook of Shanghai and Shenzhen Stock Exchange and the corporate bonds issuance data are collected from the ACFB. The bond data are available until 1999 and the later data are extrapolated for each province based on the growth in national bond issuance.

We turn now to variables that represent legal and related institutional developments.

(3) The prominence of the private sector in a province is measured by the ratio of private sector total fixed investment to overall total fixed investment. As suggested by Cull and Xu (2005), the extent of private ownership is an indicator of property rights. This measure reflects the relative size of the private sector, and also the extent of property right protection, fairness in the area and the of local governments support of the private sector entrepreneurship. The data are from the China Economic Information Network Database and the original source of data on total capital formation is the China National Statistics Bureau.

(4) The rule of law is always difficult to measure; we take the presence of legal professionals as an indicator. Specifically, our variable is the number of lawyers per 10,000 people. This ratio should capture the degree of development of public integrity mechanisms, which promote public accountability and limit corruption. The data are collected from the *Statistics Yearbook of China's Legislation* and the *Statistics Yearbook* of each province. The data are available for 1990, 1995 and annually from 2000. Missing years are interpolated based on nation wide growth in the number of lawyers.

(5) Similarly, the awareness of property rights is proxied by the ratio of the number of trademark applications to the number of firms. This ratio should capture both awareness of property rights and the degree of development of secure property rights-associated institutions in each province. The trademark data are collected from the *Almanac of China's Property Rights* and *Yearbook of China's Industrial and Commercial Administrative Statistics*. The data are only available from 1998 and are backcasted using the national data and the proportions of applications in the province in 1998.

(6) Although political pluralism is in its rudimentary stages in China, the extent to which non-Communist Party members participate in the People's Congresses is an indicator of its strength. Our variable is the proportion of non-party members in the provincial People's Congress relative to the proportion in the National People's Congress.<sup>3</sup> If the provincial proportion of non-Communist Party members is higher than the national benchmark at that time, then the province arguably has a more relaxed or pluralistic political environment

The data are collected from the regional *People's Congress Yearbooks* of each province in China ("Difang Zhi – Renmin Daibiao Dahui Zhi") which are compiled intermittently by regional committees. Even though yearbooks are published for most of the provinces, the information on membership structure is not always available. Another data source for the People's Congress data was the Examination and Approval Reporting Document issued by the Examination Committee of People's Congress which addresses

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<sup>3</sup> The proportion of non-Communist Party members in the People's Congress at the national level is not just average of the ratios of all provinces in China; instead, it is the proportion of non party member from the National People's Congress. National People's Congress members are elected from the Congress members at the province level. This national measure is an excellent indicator of the overall political environment in the whole country, in the sense that just before each once-in-5-year election year, the national-level Standing Committee of the People's Congress will issue a recommendation of membership structure of the to-be-elected new Congress members, both applied to national People's Congress, and various sub-level Congresses. Such recommendations have binding powers because the ex-post membership structure are required to be reasonably close to the recommended structures of various membership.

whether the newly-elected People's Congress members of the provinces have conformed to the recommended benchmarks from the national-level People's Congress. In such examination reports, there is often a declaration of the number and proportions of members who are representing various classes or parties. Still, there are six provinces for which we cannot find any information of the membership structures of the People's Congress, and those missing data are estimated judgmentally by using data from neighboring provinces with similar political characteristics. Since the People's Congresses are re-elected every five years, the proportions of non-Communists in the Congress hold constant for every five years, roughly at the intervals of 1983-1987, 1988-1992, 1993-1997, and 1998-2002.

(7) Finally, we include three control variables that are commonly found in growth rate studies. First, the log of real initial (or lagged) GDP per capita will provide evidence of any convergence effects. Second, a secondary school enrollment ratio controls for the influence of human capital investments on growth. Only limited time series information on schooling was available at the provincial level. Our variable is the ratio of total number of students enrolled in secondary school to the number of graduates from primary school. The data are from the *Comprehensive Statistical Data and Materials on 50 Years of New China* (for 1986-98) and for later years, the *China Statistical Yearbook*. Third, the ratio of exports to GDP is a measure of openness of the local economy.

Descriptive statistics and variable names are shown in Table 1 and Table 2 presents the correlation matrix of the variables. The median real GDP growth rate is 7.0 percent and the standard deviation is almost as large. The explanatory variables also show a great deal of variation. Their range indicates that there are outlier observations though no effort was made to exclude such observations other than to include fixed effects for provinces in some regressions. Interestingly, the simple correlations with the growth rate of GDP are all modest. The level of GDP is highly correlated with the schooling, openness and the institutional variables. Interestingly, the correlation of the level of GDP is not as highly correlated with the financial variables or the size of the public sector.

Our model builds on the approach to growth equations introduced by Barro and Levine (1991). The baseline equation includes the convergence effect (log of initial real GDP), the human capital investment variable (schooling) and the export ratio (openness). We will show that the baseline regression provides a reasonable framework for analyzing growth in China. We then add measures of financial sector development, institutional development and political pluralism to the baseline regression.

The models are estimated in three different ways. First, OLS regressions with robust standard errors are shown in Table 3. It is well known that OLS estimates are biased and inconsistent when there are dynamic effects and simultaneities in the specification. The growth literature takes two different approaches to dealing with the estimation issues. The first is to simply use a multi year averages growth rate as the dependent variable and to use initial year values for all the independent variables. In Table 4 we show results with three-year average growth rates so that the number of observations is reduced.<sup>4</sup> These estimates include fixed effects for provinces, which are not shown in the table. Since all the independent variables are predetermined, the simultaneity bias is reduced.

To more fully account for the dynamic simultaneity effects, the recent literature has utilized the GMM techniques developed by Arellano and Bond and others for panel estimation. Thus, we also use a panel data estimation technique to correct for possible bias due to endogeneity. Table 5 presents the equations with annual data estimated with the Arellano-Bond dynamic panel-data estimation technique, i.e., one-step system GMM estimations.<sup>5</sup> We treat all of the financial and institutional variables as endogenous and the baseline variables as exogenous. Instruments were chosen from financial, legal and political variables that are not part of the model. The regression table includes two tests for the validity of the instruments. The null hypothesis of the Sargan test is that the instruments are not correlated with the residuals and the null hypothesis of the AR(2) test is that the first difference equation used in the estimation procedure does not have second order serial correlation. In both instances a failure to reject supports the instrument choice. The last two rows of the table indicate a failure to reject (a high p) in most instances.

## 5 Results and interpretation

The same specifications are shown in all three regression tables. Absolute values of t-statistics are reported in parentheses in all the regression tables and \*, \*\*, \*\*\* indicate significance at the 10%, 5% and 1% levels respectively. The first equation reports the baseline model – regressions that only include the log of lagged real GDP per capita, the secondary

<sup>4</sup> There are six periods starting with 1986-88 though the last (2001-02) is just two years.

<sup>5</sup> This is an augmented version outlined in Arellano and Bover (1995) and developed in Blundell and Bond (1998) and Bond (2002) provides an explanation of this approach. Levine, Loayza and Beck (2000) use the technique to estimate growth equations similar to ours with three year average cross country panel data.

school enrollment ratio and openness. The second equation relates growth to the financial variables while equation three shows the baseline growth model augmented by the two measures of financial sector development. Similarly, equations four to six introduce the legal institutions variables. They are shown by themselves to illustrate the overall correlations and then as part of the growth model. Equation six presents the growth model augmented by both the financial and institutional variables. Equations eight to ten introduce the political pluralism variable in the same fashion. The robustness of the results to some changes in specification is shown in the remaining equations (6, 11 and 12).

The broad picture presented by the results is consistent with our expectations. Although, coefficient estimates and confidence levels vary from equation to equation and between the three-year average and dynamic panel estimates, the overall picture is supportive of our hypotheses. In the following discussion we will comment on the estimates with the two approaches to reducing simultaneity bias (results in Tables 4 and 5).

To begin the baseline regression provides some evidence of a convergence effect. In the three year average fixed effect regressions, the convergence effect is small and in line with expectations while in the dynamic panel estimates it is unstable and sometimes unbelievably large. The effect of the secondary school enrolment rate variable on growth is consistently positive and significant although the impact is numerically small. The openness variable is positive and significant with the three year fixed effects regressions but not with the dynamic GMM estimates. The baseline variables perform better in the three-year average regression in Table 4 than in the dynamic estimates in Table 5.

Turning to coefficients on the measures of financial sector depth, bank loans to GDP and capital market activity to GDP are both significant in the 3-year average regressions. With GMM, the bank depth variable often has the wrong sign and the capital market depth variable is often insignificant. The two variables are not highly correlated (0.19) but the results are sensitive to variation in the specification. The banking depth variable is widely used in cross-country studies to demonstrate the relationship between finance and growth and the results are robust. However, in this instance there might be good reason why it may not have a positive influence on growth. That is, bank loans that are predominantly non-performing loans to SOEs are hardly likely to be growth inducing. The capital market depth variable reflects private sector activity and therefore might be more relevant in the Chinese context.



The impact of financial sector deepening on growth implied by our results is fairly large. The 3-year average regressions (Table 4) suggest that the coefficient on the bank loan ratio is about 0.1 and the coefficient on the capital market depth is about 0.6. Now, consider an increase of each variable by one standard deviation (0.26 and 0.02 respectively from Table 1). Such an increase in bank depth increase the growth rate by 2.6 percentage points ( $0.1 \times 0.26$ ) and a one standard deviation increase in the capital market depth increases the growth rate by 1.2 percentage points. With the GMM estimates, the capital market ratio effect is almost twice as large although the bank loan effect is often negative or insignificantly different from zero.

The best results for the variables measuring the development of legal institutions and the size of the private sector are found with the GMM estimates. Looking at the results with GMM in Table 5, we see that the size of the private sector has a strong and significant positive effect on growth. If the private sector investment ratio increases by .25 (the sample mean is 0.36) then the growth rate would go up by about 2.5 percentage points.

The two measures of legal development – property rights awareness (trade marking) and rule of law (lawyers) – have a simple correlation of 0.61. Therefore, it is not surprising that the coefficients are sensitive to what is included in the equation and the estimation procedure used. Consider equation 5 in Table 5, which includes all the institutional and baseline variables but omits the financial depth measures. A one standard deviation increase in either the rule of law measure or the property rights measure would lead to an increase in the growth rate of less about 1.7 percentage points. The magnitudes of these results are just suggestive since the coefficient estimates are a bit unstable.

Finally, we introduce our measure of political pluralism, the relative presence of non-party members in the province People's Congress. The coefficients are positive and significant with the GMM estimates but not significant with the 3-year average regressions where the coefficients are positive but small. The coefficients in Table 5 suggest that a one standard deviation increase in relative pluralism is associated with as much as a one-half percentage point increases in the growth rate. The results with the 3-year average growth rates are only a tenth of this or less. The pluralism variable is only observed once every five years when an election is held and remains the same between elections. Thus, the GMM results may be picking up some of the autocorrelation in growth rates in addition to the effects of inter-province political pluralism.

## 6 Conclusion

Since China's economic success is virtually unparalleled in recent history, the transitional path that the country has followed may be unique as well. Thus it is important to see whether and how the specifically Chinese institutional structures transitions have exerted its effect on economic growth. In this paper, we review the institutional development in China since the start of reforms, and empirically examine the role of institutional development on economic growth, using cross-province sample. Our evidence, in general, indicates the strong role of institutional development in promoting economic growth.

We investigate three facets of institutional development: financial sector development, development of legal institutions and the development of political institutions. The first facet is represented by measures of financial deepening which we find has a strong influence on growth. Proxies for institutional development are harder to identify. A broad measure is simply the size of the private sector in the economy, which we find to have a strong influence on growth. It reflects the degree of protection of property rights, fairness of the judicial system, extent of allowance and tolerance of the local governments to the private sector and the extent of local entrepreneurship. Direct measures of legal development are harder to specify. We are able to identify proxies for the *awareness of property rights* and for the *rule of law*. Our measures are indicators of the extent to which institutions adequately protect property rights and provide an environment with mechanisms for public integrity mechanisms that promote accountability and limit corruption. There is modest support with our proxy measures for the influence of institutional development on growth. Finally, the third facet is the development of political institutions, which we measure by the degree of political pluralism. Here as well there are indications that the development of institutions leads to growth.

Taken as a whole, our evidence suggests that institutional development is strongly associated economic growth, based on the 31 Chinese province data for period 1986-2002. More specifically, those regions with more rule of law, more property rights awareness and protections, more innovation-friendly environment, more open environment for private and foreign investors, and more investment opportunities and more complete market institutions are associated with stronger growth.

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Table 1

## Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Annual growth rate in per capita real GDP	516	0.070	0.062	-0.174	0.217
Real per capita GDP, RMB (lagged)	516	1704.1	1441.9	420.0	12694.3
Exports to GDP	515	0.125	0.152	0.012	1.018
Secondary School Enrollment Ratio	517	0.853	0.119	0.396	1.000
Bank Loans to GDP	512	0.857	0.282	0.316	2.925
Equity and Debt Issuance to GDP	517	0.010	0.022	0.000	0.360
Trademark applications per firm (Awareness of property rights)	513	0.418	0.584	0.002	5.013
Lawyers per 10,000 (Rule of law)	516	0.672	0.694	0.102	7.446
Ratio of private sector capital investment to total (Private sector presence)	514	0.374	0.154	0.025	0.703
Relative Pluralism	527	1.018	0.102	0.672	1.403

Table 2

## Correlation Matrix

	1	2	3	4	5	6	7	8	9	10
1 Real per capita growth in GDP	1									
2 Initial per capita real GDP	0.223	1								
3 Exports to GDP	0.173	0.581	1							
4 Secondary School Enrollment Ratio	0.271	0.564	0.317	1						
5 Bank Loans to GDP	0.001	0.337	0.134	0.251	1					
6 Equity & Debt Issuance to GDP	0.180	0.216	0.171	0.152	0.216	1				
7 Awareness of property rights	0.252	0.558	0.324	0.412	0.407	0.106	1			
8 Rule of law	0.207	0.775	0.453	0.462	0.608	0.225	0.609	1		
9 Private sector presence	0.287	0.356	0.237	0.257	-0.298	-0.024	0.385	0.179	1	
10 Relative Pluralism	0.075	0.272	0.147	0.062	0.071	0.111	0.29	0.218	0.112	1

Table 3

## OLS Regressions of real capita GDP growth, annual data

	1	2	3	4	5	6	7	8	9	10	11	12
Constant	0.033 (0.64)	0.061*** (7.23)	0.080 (1.52)	0.026*** (3.29)	0.139** (2.02)	0.182*** (2.64)	0.217*** (3.01)	-0.006 (0.23)	0.006 (0.12)	0.148** (2.13)	0.099 (1.46)	0.119* (1.81)
Log of Initial per capita Real GDP	0.006 (0.91)		0.001 (0.13)		-0.013 (1.34)	-0.020** (2.06)	-0.017* (1.78)		0.003 (0.37)	-0.021** (2.18)	-0.016 (1.63)	-0.017* (1.70)
Exports to GDP	0.042** (2.23)		0.042** (2.30)		0.037* (1.82)	0.037* (1.89)	0.037* (1.94)		0.042** (2.33)	0.037** (1.98)	0.040** (2.05)	0.034* (1.83)
Log of Secondary school Enrollment rate	0.074*** (2.71)		0.084*** (3.17)		0.089*** (3.04)	0.097*** (3.46)	0.101*** (3.68)		0.081*** (2.99)	0.101*** (3.62)	0.095*** (3.30)	0.094*** (3.32)
Bank loans to GDP		0.006 (0.62)	-0.011 (1.32)			0.002 (0.17)	-0.032*** (2.89)			0.004 (0.30)	0.013 (1.16)	
Equity and debt issuance to GDP		0.498*** (2.78)	0.384** (2.38)			0.418*** (2.96)	0.417*** (2.69)			0.400*** (2.96)		0.388*** (2.96)
Private sector presence				0.085*** (4.26)	0.084*** (3.68)	0.094*** (3.65)				0.096*** (3.72)	0.098*** (4.01)	0.092*** (4.23)
Rule of law				0.015*** (3.64)	0.010* (1.78)	0.009 (1.36)	0.012* (1.78)			0.009 (1.31)	0.009 (1.43)	0.011* (1.94)
Property rights				0.010* (1.72)	0.008 (1.50)	0.009 (1.42)	0.020*** (3.44)			0.006 (1.00)		
Relative pluralism								0.075*** (3.03)	0.054** (2.02)	0.042* (1.65)	0.050* (1.94)	0.040 (1.58)
N	513	510	507	508	508	502	503	516	513	502	506	512
R <sup>2</sup>	0.0887	0.0342	0.1044	0.1020	0.1346	0.1577	0.1269	0.0164	0.0963	0.1622	0.1405	0.1531
F-statistic	17.86	5.04	10.91	20.28	14.35	11.43	10.88	9.16	16.27	11.76	14.00	15.20

Note: all independent variables are one year lags

Table 4 Fixed effects regressions of 3-year average real GDP per capita growth

	1	2	3	4	5	6	7	8	9	10	11	12
	0.099	-0.020	0.166*	0.088***	0.287**	0.191	0.225	-0.017	0.068	0.189	0.133	0.228*
Constant	(0.99)	(1.08)	(1.81)	(5.51)	(2.07)	(1.36)	(1.65)	(0.28)	(0.67)	(1.33)	(1.08)	(1.84)
Log of Initial per capita Real GDP	-0.003		-0.024*		-0.026	-0.024	-0.032*		-0.008	-0.025	-0.019	-0.025
Exports to GDP	(0.21)		(1.96)		(1.31)	(1.26)	(1.77)		(0.58)	(1.28)	(1.03)	(1.36)
Log of secondary school Enrollment rate	0.146***		0.129***		0.069	0.106**	0.107**		0.131**	0.103*	0.114**	0.053
Bank loans to GDP	(2.86)		(2.83)		(1.24)	(1.99)	(2.01)		(2.54)	(1.91)	(2.10)	(0.98)
Equity and debt issuance to GDP	0.110***		0.131***		0.126***	0.128***	0.140***		0.121***	0.130***	0.125***	0.128***
Private sector presence	(2.78)		(3.73)		(2.96)	(3.21)	(3.70)		(3.04)	(3.18)	(3.07)	(3.09)
Rule of law		0.109***	0.108***			0.093***	0.099***			0.091***	0.110***	
Property rights		(4.67)	(4.93)			(3.37)	(3.70)			(3.26)	(4.39)	
Relative pluralism		0.743***	0.608**			0.613**	0.606**			0.615**		0.838***
		(2.84)	(2.40)			(2.36)	(2.33)			(2.36)		(3.28)
				-0.136***	-0.104*	-0.052				-0.049	-0.049	-0.074
				(2.74)	(1.94)	(1.02)				(0.95)	(0.94)	(1.41)
				0.055***	0.046***	0.015	0.012			0.015	0.015	0.039***
				(4.76)	(3.27)	(1.01)	(0.82)			(1.00)	(1.02)	(2.82)
				0.015	0.017	0.003	0.001			0.003		
				(1.33)	(1.40)	(0.25)	(0.06)			(0.24)		
								0.076	0.071*	0.010	0.007	0.042
								(1.30)	(1.66)	(0.26)	(0.18)	(1.03)
N	181	180	179	180	180	178	178	182	181	178	179	181
R <sup>2</sup>	0.1074	0.0545	0.1098	0.0193	0.0597	0.0870	0.1087	0.0135	0.1270	0.0900	0.0703	0.1030
ρ	0.2066	0.3523	0.4743	0.4119	0.4036	0.5174	0.4655	0.0571	0.1806	0.5080	0.5345	0.3654
P for F test that all u <sub>i</sub> =0	0.7561	0.0545	0.0034	0.5143	0.3101	0.0248	0.0073	0.9997	0.8334	0.0464	0.0311	0.3595

Note : All independent variables are the initial year of the three year period. There are 6 time periods (the last is for just two years)



Table 5 Arellano-Bond dynamic panel-data estimation, one-step system GMM results

	1	2	3	4	5	6	7	8	9	10	11	12
	0.033	-0.041	0.329***	-0.001	0.038	-0.055	0.517***	-0.606***	-0.261**	0.533*	-0.158	0.115
Constant	(0.64)	(1.41)	(3.06)	(0.04)	(0.26)	(0.14)	(2.64)	(4.48)	(2.34)	(1.72)	(0.74)	(0.41)
Log of Initial per capita Real GDP	0.006		-0.017		0.002	0.059	-0.051**		-0.036**	-0.117**	-0.046*	-0.084**
	(0.89)		(1.22)		(0.09)	(0.88)	(2.00)		(2.40)	(2.04)	(1.71)	(2.32)
Exports to GDP	0.042*		0.026		0.048*	0.066	0.012		0.048	-0.004	0.043	0.022
	(1.90)		(0.79)		(1.91)	(1.33)	(0.33)		(1.58)	(0.10)	(1.38)	(0.61)
Log secondary school Enrollment rate	0.074***		0.151***		0.077***	0.065	0.126***		0.158***	0.205***	0.169***	0.176***
	(3.24)		(4.04)		(2.81)	(1.05)	(2.75)		(4.09)	(3.55)	(4.56)	(4.58)
Bank loans to GDP		0.122***	-0.168***			-0.214***	-0.136***			-0.085	-0.021	
		(3.00)	(4.80)			(3.15)	(3.51)			(1.00)	(0.64)	
Equity and debt issuance to GDP		1.015	1.129***			1.623	1.701***			1.449**		1.880*
		(1.32)	(2.99)			(0.95)	(3.87)			(2.50)		(1.73)
Private sector presence				0.114***	0.088*	0.084*				0.085	0.100*	0.144**
				(3.39)	(1.70)	(1.79)				(0.59)	(1.68)	(2.13)
Rule of law				0.050***	0.029	0.118*	0.009			0.080*	0.008	0.035
				(2.81)	(1.01)	(1.65)	(0.32)			(1.70)	(0.24)	(0.91)
Property rights				-0.005	0.036**	0.127***	0.056***			0.011		
				(0.25)	(2.23)	(2.97)	(3.25)			(0.20)		
Relative pluralism								0.670***	0.606***	0.373*	0.555***	0.495***
								(5.00)	(3.64)	(1.72)	(3.74)	(3.10)
N	513	505	506	494	501	489	488	503	508	492	499	499
Wald Chi2	49.90	35.51	45.63	65.48	75.23	35.46	38.41	24.99	39.60	37.68	61.89	57.08
P-value of Sargen's Test	.	0.074	0.401	0.167	0.010	0.707	0.441	0.977	0.775	0.337	0.051	0.227
P-value of AR(2)	0.365	0.361	0.649	0.876	0.604	0.464	0.595	0.096	0.061	0.439	0.340	0.113

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Bank of Finland  
BOFIT – Institute for Economies in Transition  
PO Box 160  
FIN-00101 Helsinki

 + 358 10 831 2268  
bofit@bof.fi  
<http://www.bof.fi/bofit>