Financial Openness and the Chinese Growth Experience

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Abstract

We reflect on China's economic performance from the perspective of the experiences of a broad panel of countries. We formulate an econometric framework building on standard growth regressions that allows us to measure the impact of various factors on economic growth and growth variability. As China has become more and more integrated into the world's economic and financial landscape, we devote special attention to measures of (de jure) financial openness. We also document how the real effects of openness are impacted by financial development, political risk, and the quality of institutions. Standard growth regressions cannot explain China's extraordinary growth experience and we fail to find an important role for foreign trade and foreign direct investment. In contrast, the sheer volume of investment has played a significant role in China's growth. As China's per capita GDP continues to grow, it must find sustainable sources of growth. We identify a more efficient financial sector, less state ownership, higher quality of government institutions and full financial openness as important factors. Interaction analysis suggests that the beneficial effects of financial openness first require further financial and institutional development. China is less of an outlier in its growth variability experience but achieved high growth with surprisingly low growth volatility.

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1 Introduction

If China continues to experience its current rate of growth, the size of its economy will exceed that of the U.S. in only 12 years. Even if this is overly optimistic, China's growth track record has been remarkable as can be seen in Figure 1. Our paper reflects on the Chinese growth experience from the perspective of an empirical multicountry model in the neoclassical tradition (see e.g. Barro (1997)). That is, we link future growth to initial GDP per capita and a number of determinants of steady state GDP, such as population growth, life expectancy, financial development, the quality of institutions, etc. We devote special attention to international openness. There is a large literature that has documented the positive effects of trade openness on economic growth. China has progressively opened to trade and FDI (see Branstetter (2006) and Branstetter and Lardy (2006) for a detailed account of this process) and we attempt to quantify the role of trade openness in the Chinese growth experience. China has also has opened its capital markets to foreign investment but this process is far from complete. Currently, there is a large debate on the benefits of financial openness on growth (see for instance Prasad, Rogoff, Wei and Kose (2003) for a summary article), which suggests that the growth effect is mixed. However, in this article we show, consistent with the results in Bekaert, Harvey and Lundblad (2005) and Quinn and Toyoda (2003), that equity market openness and capital account openness are indeed associated with increased growth. Hence, China's efforts to open its capital account may further enhance growth.

Whatever the growth effect, many countries fear that liberalizing their capital markets to foreign investors may have considerable costs in terms of real economic volatility. The crises many South-East Asian countries went through are often attributed to the capital market integration experience and the fact that China escaped the adverse growth consequences of the crises as proof that capital controls may be beneficial (see the discussion in Forbes (2004)). The current formal empirical investigations of the effects of financial openness on economic volatility do not yield a uniform picture: Kose, Prasad and Torrones (2003) find that openness is associated with increased consumption to output volatility whereas Bekaert,

Harvey and Lundblad (2006a) find mostly insignificant to negative effects.

In this paper, we investigate the mean and volatility effects in a unified empirical framework developed in Bekaert, Harvey and Lundblad (2006b). The framework also allows us to decompose the volatility experience of countries in their determinants. We estimate the system not only for GDP (output) growth but also for consumption growth. In standard representative agent models, average consumption growth and idiosyncratic consumption growth volatility would constitute the main determinants of a country's welfare.

It should be no surprise that the Chinese growth experience is hard to capture by standard growth models and that, consequently, a benchmark model leads to a large and positive Chinese residual. We explore whether the Chinese growth puzzle can be attributed to: the country receiving a high rate of foreign direct investment, low foreign debt, the high rate of domestic investment, or pure measurement problems, as suggested by, for example, Young (2003).

Our empirical framework measures average effects of financial openness, but there is much debate on whether China is "ready" for capital account openness (see, e.g. Prasad, Rumbaugh and Wong (2005)). It is quite conceivable that the effects of financial openness depend on local conditions and institutions. Prasad et al. (2003), Bekaert, Harvey and Lundblad (2006a) demonstrate the importance of such threshold effects. Therefore, we supplement our usual specification with a series of interaction variables to allow for heterogeneity in the openness impacts across countries. The interaction variables include measures of financial development, the role of government, the quality of institutions and the investment climate.

The paper is organized as follows. The second section provides some analysis of changes in the degree of financial openness through time as well as an assessment of financial development, political risk, and the quality of institutions in China. This section also describes the data and provides some summary statistics. Our econometric model that explains both growth and volatility for a panel of countries is presented in the third section. The fourth section details our results on average growth and the fifth section further explores the Chinese growth puzzle. The sixth section summarizes our results on growth volatility. The heterogeneity of the real effects of financial openness is studied in the seventh section. Some

concluding remarks are offered in the final section.

2 Growth Determinants and China

2.1 *Chronology and summary data*

Any examination of the growth experience in China must start with a detailed examination of the country's history. Table 1 presents a chronology of important economic, political, and financial events over the past 25 years in China. While the Prasad and Wei (2005) chronology focuses on important events related to the capital account in China, our chronology puts more focus on the equity market and broad macroeconomic events that impact financial development. We also pay special attention to regulatory events. The chronology is drawn from Bekaert and Harvey (2005) and details important events such as the dates when price fluctuation limits and stamp taxes changed, the formation of the China Security Regulatory Commission and the introduction of A and B shares.

Figures 1-4 provide some summary analysis of China's growth experience. Figure 1 shows the time-series of real GDP and consumption growth. The growth rates are astounding. Since 1980, the lowest GDP growth rate is 2.2% in 2000. The average growth rate over this period is 7.8%. Consumption growth has averaged 7.0%; yet GDP growth and consumption growth diverge in the last three years. During this period, consumption increased by only 1.7% per year while GDP was increasing at a rate of 7.4% per year. This is also evident in Figure 2 which show the shares of the components of GDP. Consumption has dropped to only 40.4% of GDP. The comparable consumption ratio for the U.S. is 70.3% and the average for all developing countries in 2003 is 68.3%. Investment in China is an extraordinary 44.3% of GDP. The U.S. investment ratio is 15.2% and the average for developing countries is 21.5%. The share of investment to GDP in China is more than double the average for developing countries and almost three times the U.S. level. We show comparisons with other countries in Figure 3. Interestingly, exports minus imports comprises only 2.6% of GDP; consequently China runs, on average, a current account surplus. This is atypical for a developing country as Figure 3 demonstrates. China's huge investment level is mainly financed using domestic

savings.

China's high growth has not been associated with increased macroeconomic volatility. A rolling five-year standard deviation of China's GDP growth has dropped from a level of about 3% in the 1980s and 1990s to a level of 0.8% since 2000. Consumption growth volatility is higher but shows a similar pattern. In the 1980s, consumption growth volatility averaged 6.3%. The volatility decreased to 4.9% in the 1990s. Over the past four years, the volatility has decreased to 3.3%.

2.2 *Data*

Our multicountry macroeconomic and financial data, spanning 1980-2003, are drawn from a number of sources detailed in Table 2.[1] In our empirical exercises, we consider a broad cross-section of countries. Unfortunately, measures of stock market development and the quality of institutions are only available for a limited set of countries. Our sample size is determined by data availability and ranges from 51 to 96 countries.

2.3 *Summary statistics*

We now examine some of the key variables and provide summary statistics. We consider developed markets as well as developing markets. We consider regional averages across Asia, Africa and Latin American. Finally, we detail the values for China. As a general warning sign, one difficulty our analysis faces is that quantitative measures are not always reflective of the true regulatory constraints faced by economic agents operating in China. Before we examine a number of potentially important determinants of economic growth, let's use the numbers reported in Table 3 to compare the Chinese growth experience with that of the rest of the world. Developed countries grow on average about 2% per year on a per capita basis, with about 2% volatility. Developing countries do not even generate 1% growth and volatility is 5%. Thus, China manages to grow much faster than developed markets with relatively low growth volatility (3%).

[1]These data do not reflect the revisions implemented by the Chinese government at the end of 2005.

2.3.1 *Trade sector*

There is a perception that foreign trade has been an important engine of Chinese economic growth. To test this conjecture, we first need a measure of trade openness. We will simply use the size of the trade sector, exports plus imports to GDP. Table 3 shows that the actual size of the sector compared to GDP is remarkably modest. The trade sector comprises only 35% of GDP on average in China compared to an average of 59% in all developing countries. The trade sector in China is even smaller than the African regional average. Of course the average reflects a continued upward trend in trade openness with the trade sector standing at over 60% in 2003. This increase is the mirror image of significant reforms to the trade regime, taking place during the eighties and nineties, including accession to the WTO in 2001, which led to a steady decrease in tariffs. Branstetter (2006), who provides a detailed analysis of trade liberalization in China, shows that tariff revenues as a fraction of imports decreased from about 12% in 1980 to 2.5% in 2002. The four-time decrease in tariffs nicely mirrors the approximately four times increase in the trade sector documented in Figure 5. Nevertheless, Wacziarg and Welch (2003) still view China as having not experienced trade liberalization.

The Chinese national statistics do not reveal the large discrepancies in openness and likely its effects on economic growth within China. The major exporting and importing industries in China are located in east coastal provinces, whereas most inland provinces are still relatively isolated from world trade. A recent analysis by Jin (2005) suggests that the beneficial effects of trade openness may not extend to these inland provinces. While it seems imperative for policy makers to address such regional divergences in economic performance, our data do not permit further analysis of this issue.

2.3.2 *Financial development*

We consider two measures of financial development. The first is based on the size of banking system where we measure the amount of private credit divided by GDP, which is a standard banking development indicator. For this metric, China scores highly, 92% of GDP on average.

This is higher than the average proportion for developed countries, 86%. Figure 5 shows that this measure of China's banking development has steadily improved over the sample period and private credit to GDP is now over 100%. However, this statistic illustrates the tremendous measurement problem any analysis of China faces. While this ratio suggests that China's banking system is highly developed, experts have revealed a number of serious deficiencies in China's banking system. Fung, Ho and Zhu (2005) describe how reforms to the banking system have been rather limited, with a large proportion of financial resources allocated through the state banking system, with interest rates playing little role in the resource allocation. This state of affairs was pointedly illustrated by the recent change in the official lending rate, the first in nine years!! There are frequent articles in the press and in practitioner research describing serious problems with non-performing loans in the banking sector. For example, Table 1 shows that a report by Standard and Poors in June 2003 argued that Chinese financial institutions needed a $500 billion bail out. Apart from the formal sector, an informal credit market has emerged supplying funds to the non-state sector (see Allen, Qian and Qian (2005)), which is presumably guided by market principles. In a robustness check, we will use a financial development measure that is more correlated with the quality of the financial system.

A similar admonition holds for measures of equity market development. The turnover in the Chinese market is 148% per year compared to only 51% in developed markets on average. This does not necessarily mean that the equity market is highly developed in China. In fact, the modern Chinese stock market is very young, the two stock exchanges in Shanghai and Shenzhen having been established only in 1990 after a 49 year hiatus.[2] An important feature of the Chinese stock market is the existence of A shares for local investors and B shares for foreign investors. Until February 2001, the two markets were totally separated with the A shares trading in local currency and the B shares, a much more limited set of companies, trading in dollars or Hong Kong dollars. Since then, Chinese residents have been allowed to purchase B shares using foreign currency. More recently, foreign qualified institutional investors have been allowed to invest in the A market.

[2]The Shanghai Stock Exchange was founded in the 1860s and ceased operations in December 1941.

Our turnover number is for the B shares, turnover is even higher for A shares. The huge turnover and the surprising discount on the "less liquid" B shares has generated much research into their causes. Mei, Scheinkman and Xiong (2005) convincingly demonstrate the existence of a speculative component in Chinese share prices which may both help explain the discount on B shares and the tremendous turnover in A shares. The increase in turnover on the B share market after February 2001 is then viewed as due to speculation, not to an improvement in market efficiency. Other standard measures of stock market development paint a more realistic picture of the development of the Chinese stock market. For instance, the size of the equity market compared to GDP in China is only 23% which is lower than the average for all developing countries and sharply lower than the 60% average for developed countries.

Other informal indicators suggest that Chinese stock market efficiency is still at a relatively low level (see Wang and Cheng (2004)). Individual investors dominate the market and while free float has been increasing it is still pretty limited. Short selling is impossible and there are no futures or options markets in stocks in China. There are also accounts of stock price manipulation (see Aggarwal and Wu (2006)) and rampant insider trading (see Du and Wei (2004)). That being said, it is conceivable that the proximity of the relatively efficient Hong Kong market mitigates the adverse effects of an inefficient stock market on resource allocation. High quality Chinese companies tend to list on the Hong Kong market rather than the domestic market and the so-called Red Chip companies raise much more capital through the Hong Kong market than through the domestic market.

The potentially beneficial effects of further stock market development, especially with the goal of attracting foreign investors, cannot be under-estimated. We will illustrate the real benefits of equity market liberalizations below, but let's here note that the Chinese market should be very attractive for foreign investors as returns appear to correlate very little with world markets returns. For the 1993-2003 period, Lui, Menkveld and Yang (2004) show that the correlation between returns on both A-share markets and other countries (Hong Kong, Singapore, Taiwan, Japan, the U.S., France, Germany, the U.K., and Australia) is not higher than 5%. For the B-shares, the correlations are higher but do not exceed 22% (with Hong

Kong) for countries in the East and 8% (with Germany) for countries in the West. Hence, Chinese stocks are very attractive diversification vehicles for international investors.

2.3.3 *Financial openness*

We construct three measures of financial openness which are detailed in Table 2. The first indicator, denoted throughout the paper as the "Official Liberalization" indicator, takes a value of one when the equity market is officially liberalized; otherwise, it takes a value of zero. Official liberalization dates are taken from the chronology presented in Bekaert and Harvey (2005) and expanded to all the countries considered in this study in Bekaert, Harvey, and Lundblad (2006a). It is difficult to know precisely when an equity market is effectively liberalized. That is, while regulations may change to allow foreigners to access the local equity market, the market may be effectively open years prior to the official date if ADRs and country funds are available to foreign investors. Conversely, savvy investors may circumvent official capital controls. Furthermore, most liberalizations are not one-time events, they are gradual and may not be comprehensive at first.

The Official Liberalization measure does not reflect the degree of openness of the equity market. Our second equity market openness measure addresses the extent of the liberalization by taking the ratio of the market capitalizations of the constituent members of the IFC investable and the IFC global indices for each country, following Bekaert (1995) and Edison and Warnock (2003). In this context, a ratio of one means that all of the stocks are available to foreign investors. For example, during the 1990s Korea lifted foreign ownership restrictions in a number of steps leading to an intensity indicator that gradually moved from zero to one. For both indicators, fully segmented countries have an indicator value of zero, and fully liberalized "open" countries have an indicator value of one.

The usual measure of capital account openness is based on the IMF's *Annual Report on Exchange Arrangements and Exchange Restrictions* (AREAER). The IMF publication details several categories of information, mostly on current account restrictions. A capital account openness dummy variable takes on a value of zero if the country has at least one restriction in the "restrictions on payments for the capital account transactions" category. However,

Eichengreen (2001) has criticized the IMF capital account measure for being too coarse and therefore uninformative. Our measure of capital account openness is from Quinn (1997) and Quinn and Toyota (2003) and is also created from the annual volume published by the IMF's AREAER. However, in contrast to the binary IMF indicator, Quinn's openness measure is scored from 0 to 4, with 4 representing a fully open economy. Quinn grades capital payments and receipts separately on a scale of 0 to 2 (0.5 increments), and then adds the two. The scale is determined as follows: 0=approval required and rarely granted; 0.5=approval required and sometimes granted; 1.0=no restrictions but official approval required (and frequently granted) plus transaction is taxed; 1.5=no official approval needed but transaction may be taxed; and 2.0=free. The Quinn variable measures the degree to which the capital account is open and is analogous to our intensity indicator for equity market liberalization. We transform the Quinn measure into a 0 to 1 scale.

In Table 3 we report some summary statistics on these measures for groups of countries and China. The value of 0.565 in Table 3 for China's Official Liberalization variable reflects the fact that the date for the official stock market liberalization is 1991 about half way through the sample. The values for the other groups of countries show that developed countries were mostly open during the whole sample whereas only a minority of country years (26.7%) for developing countries is characterized as open. Asia has been more open than Latin-America. This measure ignores the fact that significant foreign ownership restrictions remain and that much of the Chinese stock market capitalization is not traded on the stock market at all. The intensity measure averages only 7.8% over the entire sample which is less than the average of developing countries. By the end of the sample, only 35% of market capitalization is available to foreigners. This ratio still falls short of the averages for Asian countries as well as Latin American countries.

In terms of capital account openness, China was on average less open than both the average developing country and the average Asian country. The Quinn measure stood at 0.0 in 1980 and is now 0.375. Prasad and Wei (2005) provide a detailed account of the remaining capital controls and how they evolved over time. One reason for the low value of the Quinn measure is that the Chinese government has relaxed restrictions on foreign direct

investment (FDI) inflows quite substantially but has only recently and cautiously started to relax restrictions on FDI outflows. Moreover, its regulations and currency inconvertibility have made foreign borrowing and portfolio inflows difficult. As a result, the composition of inflows has been very heavily tilted towards FDI. Despite this fact, Prasad and Wei debunk the myth that China has been an attractive FDI destination in terms of regulations and that FDI has been a large driver of Chinese economic growth. They show that FDI is subject to more restrictions than in other countries, that the FDI inflows in percent of GDP are rather moderate both compared to the level of FDI in other countries and compared to the massive levels of domestic savings funneled into real investments. Finally, it is also conceivable that part of the FDI inflows really reflects other forms of capitals disguised as FDI to circumvent capital controls. Nevertheless, it is worth examining whether China's reliance on FDI and reluctance to incur foreign debt has contributed to their growth spurt and we will do so below.

2.3.4 *Institutions and political risk*

Political unrest and institutional factors feature prominently in classic work on growth determinants (Barro (1997); Acemoglu et al. (2002)). They may also affect risk assessments of foreign investors. That is, financial openness might not attract foreign capital if the country is viewed as risky. Therefore, these variables are also important in analyzing why countries respond differently both in terms of growth and growth volatility to financial openness. We use the International Country Risk Guide's (ICRG) ratings to measure the quality of institutions and political risk.

The ICRG provides ratings in three different categories: economic, financial, and political risk. A higher value means lower risk. Figure 6 shows the time-series of these indices along with the composite risk measure. Over the entire period, there is little change in the political risks that China faces. The average value of this indicator in the 1990s was 65.6. In the last four years, it has averaged 66.4. There has also been only a marginal change in the economic indictor. Most of the increase in the composite is due to the financial risk indicator.

It is important to look within these indices. Most of our study focuses on the political risk

indicator and four subcategories of this indicator, reflecting political conditions, the quality of institutions, socioeconomic conditions, and conflict. Table 3 presents some summary statistics for these measures. We report investment profile separately as well (see Table 2 for details).

China has on average less political risk than developing countries but substantially more risk than developed countries. The good performance relative to other developing countries is due to good scores on socio-economic conditions and conflict risk.

Figure 7 shows the time-variation in four sub-indices that we have created. For Political Conditions (the extent of the military involvement in politics and democratic accountability), China's rating has fallen from an average value of 34.4 in the 1990s to 28.1 in the last few years. The quality of political institutions (corruption, law and order, and bureaucratic quality) has also declined. The average rating in the 1990s was 62.0 and it has fallen to 46.9 in the last four years. Socioeconomic conditions (government stability, socioeconomic conditions, and investment profile) shows a substantial improvement rising from and on average 56.9 in the 1990s to 68.8 in the last four years. Looking within the subcomponents, both government stability and investment profile have improved. The conflict indicator (internal conflict, external conflict, religion in politics, and ethnic tensions) has been relatively flat over the past 15 years. The substantial improvement from the values in the 1980s is almost entirely driven by the perceived lower probability of external conflict.

3 Empirical Framework

3.1 *Growth, growth volatility and international risk sharing*

There is a considerable literature on the risk sharing benefits that financial market integration may bring about. In stylized representative agent endowment models, perfect risk sharing has stark implications. Consumption growth rates across countries should be perfectly correlated, idiosyncratic consumption risk should be diversified away, and consumption growth should not react to country-specific income shocks. Early work by Backus, Kehoe and Kydland (1992) shows that consumption correlations across countries are surprisingly

low, and often lower than output growth correlations. One interpretation of this result is that the benefits of risk sharing have not been realized (for example, because of home asset preference), and the literature has mostly resorted to "counterfactual" exercises within the context of parameterized general equilibrium models to compute the cost of imperfect risk sharing. A survey article by van Wincoop (1999) suggests that the benefits of perfect risk sharing are quite substantial even when only focusing on the reduction in consumption growth volatility. These benefits could be even more substantial given that open capital markets may also increase growth (see Obstfeld (1994)), an implication of market integration ignored by most previous studies.

In Bekaert, Harvey and Lundblad (2006b), we view changes in de jure international financial openness as an exogenous improvement in international risk sharing, an idea also present in Lewis's (1996) work. We then build on the framework of Athanasoulis and van Wincoop (2000) to simultaneously measure the effects of financial and trade openness on average consumption growth and idiosyncratic consumption growth volatility. Of course, opening equity markets (or opening capital markets more generally) is not likely a sufficient step to realize the theoretical benefits of perfect risk sharing. For example, markets are incomplete and the proportion of output represented by tradable claims is probably quite small. In addition, only a minority of the population of most countries hold stocks. Nevertheless, it is likely that the benefits of risk sharing are relatively larger for emerging markets (see for example, Tesar (1995), Obstfeld (1992), and Lewis (1996)).

Note that in terms of risk sharing, the benefits of equity market liberalization in emerging markets are two fold. For the world at large, emerging markets provide a great opportunity to diversify risk because of their low correlations with other global equity markets and with one another (see Harvey (1995)). From this perspective, any liberalization should serve to increase the total risk sharing potential of world capital markets. Of course, the small size of many emerging markets may limit this potential. From the perspective of the emerging market, liberalization of inward investment mostly goes hand-in-hand with liberalization of outward investment (e.g. Mathieson and Rojaz-Suarez (1993)). Hence, equity market liberalization provides potentially large risk sharing opportunities for the local population

as well. Consequently, for countries with asymmetric financial liberalization regimes with respect to outflows and inflows, such as China, our results must be interpreted with care.

3.2 *A direct measure of risk sharing*

We use a simplified version of the specification proposed in Bekaert, Harvey and Lundblad (2006a):

$$g_{i,t+k} - g_{w,t+k} = \alpha'(x_{i,t} - x_{w,t}) + \epsilon_{i,t+k} \tag{1}$$

$$\sigma^2_{i,t} = \gamma'_k(z_{i,t} - z_{w,t}) \tag{2}$$

where i is the country, w is the world, $g_{i,t+k}$ is the logarithmic consumption growth rate for country i from time $t+1$ to $t+k$, x and z represent instrumental variables and $\sigma^2_{i,t}$ is the conditional variance of $\epsilon_{i,t+k}$.

Equation (1) describes a classic Barro-type empirical growth regression, except that we formulate it in deviations from world growth. The residual in such a regression represents idiosyncratic, unpredictable growth and its variance is the idiosyncratic growth volatility. It is also conceivable that the sensitivity of domestic growth to world growth varies with openness. We explicitly accommodate this possibility in Bekaert, Harvey and Lundblad (2006a) but ignore it here.

The set of $\mathbf{x}$ instruments is largely based on Barro's (1997) work, including life expectancy, population growth, the size of the government sector, secondary school enrollment (a measure of human capital), inflation (a measure of the quality of macroeconomic policy), private credit to GDP (a financial development variable), trade to GDP and a financial openness measure. These variables should help account for steady state GDP across countries. We also include initial per capita GDP to account for the standard conditional convergence effect in empirical growth regressions. It is well known that growth regressions suffer from a fragility problem as many variables such as human capital, life expectancy, etc., measure closely related "good" characteristics of a country. We follow the lead of Roll and Talbot (2004) in focusing primarily on variables that governments can easily modify and influence.

In robustness checks, we do include investment variables as well, because part of the Chinese growth experience must be related to its extraordinarily high savings rates. However, as we are interested in the growth effects of financial openness, it is problematic to directly include investment as liberalization may mainly work through the investment channel.

The system of equations in (1)–(2) defines a very large GMM system with moment conditions:

$$f_t = \begin{pmatrix} \epsilon_{i,t+k} \otimes (x_{i,t} - x_{w,t}) \\ (\epsilon^2_{i,t+k} - \sigma^2_{i,t}) \otimes (z_{i,t} - z_{w,t}) \end{pmatrix} \tag{3}$$

The system contains $N \times 2 \times L$ moment conditions (where $L = L_x + L_z$, L_x is the dimension of $x_{i,t}$, L_z is the dimension of $z_{i,t}$) and $2L(N-1)$ overidentifying conditions. Because the system is so large, it would be difficult to estimate with a general weighting matrix. We only allow for a restricted form of correlation across countries. The country mean and volatility errors are allowed to be correlated within one country, but not across countries. Furthermore, the correlation is assumed to be the same across countries. The weighting matrix corrects for the induced serial correlation in the errors for overlapping growth horizons, following Bekaert, Harvey and Lundblad (2001). We estimate the model for $k = 5$. It should be noted that our results are robust to slight variations on the weighting matrix, for example, setting the mean-volatility correlation to zero. Also note that we add a constant to both the mean and variance specifications.

4 Results for Average Growth

4.1 *Base results on growth predictability*

In panel A of Table 4, we report the results of the estimating (1)–(2) for our panel of respectively 96 countries (equity openness measures) or 77 countries (capital account openness measure). We report the regressions for both consumption and output growth. The coefficients on the size of the government sector and inflation were not significantly different from zero in any of our specifications and were therefore omitted from the regressions. The initial GDP variable is updated every five years. In all the regressions we observe strong

convergence effects. Countries that have per capita GDP below their steady states grow faster than average. Life expectancy and population growth have the expected, strongly significant effects, which are remarkably robust across the different specifications, especially for life expectancy. The effects are invariably larger for GDP growth. Secondary school enrollment makes a positive and usually significant contribution to growth. Trade has a robustly positive and significant effect on growth. The coefficients on the financial development measure are always more than one standard error from zero and are significant in the capital account openness specification. Equity market openness has a robust and significant growth effect varying between 57 basis points and 73 basis points. The effect of full capital account openness is even larger, 1.33% for consumption and 1.88% for output growth. Consequently, a country with a fully open capital account grows, on average, 1.88% per year faster than a country with a fully closed capital account.

In panel B of Table 4, we provide a number of different decompositions of the regression results. We consider five different groups: all developed countries, all developing countries, African countries, Asian countries and Latin-American countries. We also consider China separately. For each group we average the right hand side variables over the sample period and compute average predicted excess consumption growth. We perform the decomposition for the official equity market liberalization (top panel) and capital account openness regressions (bottom panel). We start by discussing the top panel results.

The regression seems to capture average growth relatively well for the five groupings, although it tends to over-predict growth for Latin American and African countries, and under-predict growth for developed and Asian countries. The major contributors to growth overall seem to have been the convergence effect, life expectancy, and financial openness. Trade openness is less important quantitatively than expected. The results for GDP growth are similar.

The China experience stands out: it has the largest residual of all countries. That is, the regression fails to describe the Chinese growth experience. Financial development and equity market liberalization provide a small positive contribution to growth, but as we indicated before, these indicators are hard to interpret for China. Trade seemed to have played a

relatively minor role on average. The main contributors are the convergence effect – China's per capita GDP was at least 70% percent below the world average during the sample period – and life expectancy.

These results ignore the dynamics of what China accomplished over the sample period: increased trade opening, partial financial liberalization, improvements in health care that increased life expectancy etc. To see the effects of these changes on growth, we repeat the experiment of Panel B for 1980 and 2003. We multiply the regression coefficients by the values for China in 1980 and 2003. For the latter period, we can only show predicted growth, not the actual experience. We find that the predicted excess consumption growth decreases from 1.7% to 1.5% from 1980 to 2003 in the equity market liberalization specification. The decrease is driven by a much higher initial GDP. In 1980, China's per capital GDP only represented 4.3% of the world average; in 2003, it represented 26.3% of the world average. The decrease in the convergence effect is partially offset by the positive impact of the equity market liberalization as well as the growing trade sector. However, again trade is shown to have played only a minor role in the Chinese growth experience.

The capital account openness regression displays similar results. Even though capital account openness provides a negative contribution to overall growth – its contribution is less negative in 2003 than in 1980 and is one of the main factors offsetting the influence of initial GDP. In section 5, we further explore the specific role China's promotion of inward FDI has played.

Another relatively large contributor to growth in the capital account regression, both overall and in a temporal sense, is private credit to GDP. This is entirely due to the fact that the private credit to GDP measure only measures the quantity of loans provided without taking into account the notorious poor capital allocation by Chinese state banks. La Porta, Lopez de Silanes and Shleifer (2002) and Dinc (2005) correct the standard measures of banking development for state ownership of banks, viewing state control as synonymous with inefficient resource allocation. We interpolate the state ownership ratios provided by La Porta, Lopez de Silanes and Shleifer (2002) for two years during our sample to the full sample and create a new measure of banking development as private credit to GDP times (1-

ratio of state ownership). This correction drives Chinas private credit to GDP ratio close to zero for most of the sample, while leaving banking development in many developed countries unaffected. When we use this measure in the capital account regression (not reported), the lack of banking development now detracts 0.242% of China's relative growth. This suggests that one sustainable source of new growth for China may be to improve resource allocation through the banking system.

Many believe that China's embrace of trade openness (and FDI, see below) has played a significant role in its rapid economic development over the least decade or so. While we are not the first to argue that their effects are likely less important than seems generally accepted (see e.g. Branstetter and Lardy (2006)), we explore the possibility of the import plus exports measure scaled by GDP being a poor proxy to the true trade liberalizing effects of China's trade policy. We therefore obtained the trade liberalization dates developed in Wacziarg and Welch (2003) for 75 countries. As we noted before, China is assumed effectively not trade liberalized. Wacziarg and Welch look at five factors: average tariff rates of 40% of more; nontariff barriers covering 40% or more of trade; a black market exchange rate that is depreciated by 20% or more relative to the official exchange rate, on average, during the 1970s or 1980s; a state monopoly on major exports; and a socialist economic system. If a country meets any of these five criteria, it is classified with indicator variable equal to zero and deemed closed. Given China is a socialist economy, it is given a closed rating. While China undoubtedly cannot be classified as totally open, this classification seems erroneous given the account of trade liberalization in Branstetter and Lardy (2006). We therefore replaced the series for China with a series used in the Branstetter study that captures the gradual trade liberalization in China over the last two decades: 1 minus tariff revenue as a fraction of import revenue. We view this series as providing us with an upper bound on the effects of trade liberalization in China on growth. While we do not report the results in detail, we find that the trade liberalization variable is very significant. Because China is relatively open, trade openness now contributes significantly to excess growth, but on average never much more than 50 basis points per year.

4.2 *Political risk and growth*

To examine the role of political risk for consumption and GDP growth, we reestimate our benchmark regressions adding six different specifications for the political risk variable (overall political risk; political conditions; quality of institutions; socio economic conditions; conflict; and the investment profile subcomponent). A higher rating means a lower level of risk. There are 36 coefficients estimated (consumption and GDP growth for three openness measures and six political risk specifications). While detailed results are available upon request, we note that the coefficients on the political risk measures are positive in 35 of 36 cases, more than one standard error from zero in 34 of 36 cases, and more than two standard errors from zero in 28 of 36 regressions. Overall political risk is a significant predictor of relative growth and generally diminishes the importance of the financial openness variables.

Table 5 reports the coefficients on the political risk variables and the growth decompositions for consumption growth. We focus on the equity market liberalization and capital account openness specifications. Examining the political risk indicators separately, political conditions enters the capital account openness regressions with a coefficient that is three standard errors from zero. While the coefficient on the openness variables decreases somewhat (not reported), it is still large in value and highly significant. The political conditions variable does not play a significant role in the equity market liberalization/openness regressions. The quality of institutions variable plays a key role in each of the six regressions; being highly statistically significantly different from zero in every case. The magnitude of the openness variable is decreased when institutions are included in the regression. However, the equity market liberalization variable remains significant for the consumption growth specification and capital account openness remains highly significant in both regressions. It is conceivable that the liberalization effect and the quality of institutions effect are correlated. Bekaert, Harvey and Lundblad (2006b) document that countries which liberalize their capital markets tend to be countries with high quality institutions.

The results for socioeconomic conditions are stronger than those for the quality of institutions variables. On average, the coefficients on this political risk indicator are close to 5.5

standard errors from zero. In this case, the equity market openness variables are no longer significant at standard levels. However, the capital account openness variable remains economically and statistically significant. The conflict variable is close to two standard errors from zero in each of the equity market liberalization/openness regressions; it is almost four standard errors from zero in the GDP growth specification with capital account openness. The coefficients on the openness variable are relatively less affected when this political risk variable is used.

The final columns look at one important sub-component of the political risk variable: investment profile. Investment profile assesses the risk of expropriation or contract viability, payment delays and the ease with which profits can be repatriated. It is therefore a very important determinant of foreign (direct) investment and may be most closely associated with our openness measures. Moreover, China scores relatively well on this indicator. In all six regressions, the coefficient is significant, averaging 5.3 standard errors from zero.

Most of Table 5 is devoted to the economic impact of the five subindices of political risk (as well as the composite) in explaining excess consumption growth in each region, as well as China. This table allows us to identify the political risk factors that make the largest growth contributions for China. The first panel examines equity market liberalization and suggests that socio-economic conditions plays the most important role of all of the subcomponent measures contributing 0.358% to the 2.006% excess growth prediction. A similar result can be found for capital account openness. Socio-economic conditions contributes 0.310% of the predicted 3.086% excess consumption growth. The Investment Profile subcomponent accounts for 0.65% of 2.38% predicted growth in the case of the Equity Market liberalization and 0.54% of 3.38% predicted in the capital account openness regression. Poor political conditions subtract 0.23% of the predicted growth in the capital account specification. Thus China's economic growth potential benefits from policies that create an attractive climate for foreign investment and good socio-economic conditions but its poor political conditions and relative lack of high quality governmental institutions are growth detractors.

4.3 *Other growth determinants*

In this section, we investigate other potentially important determinants of growth, including state ownership of assets, the existence of a high quality social security system and stock market development. Table 6 contains a summary of the results.

The first panel focuses on state ownership. While it was difficult to find a direct indicator, we obtained the political risk indicators from BERI. They include a measure of the degree of privatization in the 44 countries the service follows, which includes China. BERI also assesses the quality of the credit market (which includes both long and short term credit as well as the availability of venture capital) and we use that measure as an alternative financial development market indicator. Recall that China scores rather highly on private credit to GDP, whereas most China experts rate the Chinese banking sector as highly inefficient. In the BERI data, China 's Credit Market score is below average. BERI also has a measure for the legal framework for remittance and repatriation that is likely very correlated with financial openness and we use it to replace our standard financial openness measure.

The results reveal that our standard growth determinants are rather robust to the inclusion of these new variables, except for the coefficient on trade to GDP, which is no longer significantly different from zero. The coefficient on the Privatization measure is significantly different from zero for both the consumption and GDP growth regressions and provides a substantial negative contribution to Chinese excess consumption growth (-0.33%). The Credit Market variable is economically and statistically unimportant. The Openness measure has a highly significant effect on growth. China scores relatively poorly on this measure and its contribution to excess growth is negative (0.29%). At first glance, this seems inconsistent with the effect Investment Profile had in the previous section, but the set of countries is different here and China's record on financial openness is indeed mixed.

All the other panels use the standard regression (with private credit to GDP and capital account openness), but the number of countries is reduced substantially. The second panel includes a Social Security measure due to Botero et al. (2004). While China scores relatively high on this measure, Allen et al. (2005) point out some important caveats. Clearly, social se-

curity is a very important growth determinant, and according to the official numbers, having a high quality social security system contributes 0.71% to Chinese excess growth. Financial openness remains important but the significance of trade openness is severely diminished. In this regression, the predicted Chinese excess growth reaches 5.04%, significantly reducing unexplained growth.

Panels 3 and 4 focus on stock market development, reducing our set of countries to 51. As we indicated before, measuring China's stock market development is problematic. It scores very high on the standard turnover measure, but rather low on the size of the equity market (market capitalization to GDP measure). The latter number may be closer to the truth. Unfortunately, for our panel of countries the turnover measure is a much more significant predictor of growth. The regression with turnover leads to a very high-predicted excess growth for China (4.89%) with turnover contributing 0.85%. For the other regions, relative stock market development is important as well. The financial openness measure remains a very important predictor of growth.

While the results in Table 6 suggest that the growth regressions capture the Chinese experience much better than our previous specifications, it is important to note two important caveats. First, a substantial part of the increase in China's predicted economic growth arises from a stronger convergence effect. It is well known that convergence effects are stronger among more homogeneous sets of countries and our smaller data sets here cause the convergence coefficients to more than double in magnitude. Second, while the tables show impressive growth contributions of China's social security system and stock market turnover rates, we stress again that measurement issues suggest another interpretation. Table 6 shows that privatization, financial openness, a good social security system and stock market development all are important sustainable sources of economic growth; in all these areas, China really needs to catch up with the developed world.

5 The China Puzzle

In the previous sections, standard growth regressions substantially under-predicted the Chinese growth numbers. Once we included institutional features such as Social Security or turnover (stock market development), China's excess growth was considerably reduced but still close to 1%. Unfortunately, China's relative outperformance on these measures is rather suspect so that the puzzle remains. How can China achieve such extraordinary growth that is not explained by the usual predictors of GDP growth that explain other country's growth experiences relatively well?

In this section, we explore three possibilities. First, China's asymmetric attitude towards foreign investment, promoting FDI and shunning foreign debt may have been particularly beneficial. Second, partial state control of investments has led to investment rates that are extraordinarily high (see Figure 3) and these may not be properly accounted for in our analysis. Third, Chinese economic statistics have met with some serious criticism and measurement error may drive the Chinese growth puzzle.

5.1 *FDI and Foreign Debt*

Table 7 includes measures of FDI and foreign debt in our benchmark specification. We take the Foreign Debt Index from ICRG, so that higher values actually indicate less foreign debt. China's foreign debt index is 0.711 over the full sample which is sharply higher than the 0.519 level for developing countries. Over the last four years, the debt index has climbed to 0.900 while the same measure for developing countries has slightly deteriorated to 0.510. The FDI measure is the sum of inflows and outflows over GDP. We have already noted that relative FDI levels for China are not as elevated as many may suspect and, in fact, are dwarfed by the FDI ratios in developed markets. Table 7 shows that the ratio of FDI to GDP is only 0.03 in China over the full sample compared to a ratio of 0.06 for developed countries. In the last four years, the Chinese ratio has increased to 0.046. However, during the same period, the ratio for developed countries jumped to 0.134. Adding these two measures reduces our sample to 49 countries.

Table 7 shows that both measures have the expected effects on growth and both coefficients are significantly different from zero. Interestingly, capital account openness remains significant by itself even though it may have some correlation with the new variable. The growth decomposition shows that FDI was relatively unimportant for China's growth experience but the lack of foreign debt did provide a positive growth contribution of 0.265% on average. Total predicted excess growth increases to 4.264% and most of its value is driven by the convergence effect. Hence, China's special foreign investment policy does not account for its growth miracle.

5.2 *Domestic Investment*

Another possibility is that China has simply invested much more capital than other countries and this is not directly reflected in our base specification. Table 8 reports some statistics on average GDP and consumption growth, the investment to GDP ratio, capital stock growth and factor productivity. We will return to the analysis of factor productivity growth and the Young corrections later but first focus on China's investment expenditures.

Both in terms of investment growth and investment to GDP, China is clearly an outlier. It is important to investigate how much these extraordinary levels of investment have contributed to growth, because it is likely that they are not sustainable in the long run. For a country to really catch up with the developed world and increase GDP per capita levels, it is important to bring factor productivity levels up to developed country levels (see the discussion in Gourinchas and Jeanne (2004)).

In Table 9, we attempt to measure how much the very high investment levels in China have contributed to growth by including Investment/GDP on the right hand side of the regression (again in excess of the world average). We suspect that this component of growth will gradually disappear; instead China must improve institutions, financial development and the capital allocation process to improve factor productivity and thus sustain its growth miracle. The Investment/GDP coefficient is more than two standard errors away from zero in all of the excess consumption and GDP growth regressions. However, inclusion of this variable does not completely resolve the problem of a large growth residual. For instance,

for the equity market liberalization regression, the predicted excess consumption growth rate increases from 1.774% to 2.084%. Across all three openness specifications, the investment to GDP ratio comprises approximately 40% of the total predicted excess consumption growth. We conclude that China's extraordinary investment levels can only explain part of the Chinese growth miracle. As an important side note, financial openness remains significant in the presence of investment to GDP. This indirectly suggests that the growth effect of capital market liberalization does not work only through an investment channel but that it may help increase factor productivity.

5.3 *Measurement Error*

In a series of papers, Young (1994, 1995) critically assessed the growth experience of the New Industrializing Countries in South East Asia, finding that careful measurement of inputs makes their growth experience less extraordinary. It is striking that in our tables, Asia as a whole is still an outlier as well. Therefore, we estimated our benchmark specification with regional dummy variables (Africa, Asia, Europe, North America and South America). This impacts the significance of some of our variables in the three specifications. However, many of the same results hold. For example, the openness variable is always positive but not significantly different from zero in the official liberalization or equity openness regressions. Similar to the results without regional dummies, the capital account openness variable is significant and economically large in size (137 basis points for consumption growth and 202 basis points for GDP growth). The openness indicator in the GDP regression is more than six standard errors from zero. These results are available on request. More importantly, the Asia regional dummy is a positive 50 basis points, but this helps little in explaining either the Asian or Chinese growth experience better. However, there are very concrete indications of problems with Chinese statistics.

Young (2003) argues that the official government statistics in China have two relevant biases: a price deflation bias and growth in the labor force that outstrips population growth. We provide a robustness analysis of our standard growth regressions that implements the Young adjustment. GDP growth is scaled down by 1.8% to reflect the price adjustment and

0.9% to capture the growth in the labor force and increased labor participation. With data from 1980-2003, the official GDP growth rate averages 7.84% per year. The Young adjusted data show a growth rate of 5.14%. Such an adjustment substantially reduces excess GDP growth.

Young (2003) argues that consumption growth rates suffer substantially less from the price deflation bias. Consequently, we only adjust consumption growth by 0.9%, the labor force adjustment. We report the corrected numbers in Table 8.

Table 10 investigates whether the Young adjustments to consumption and GDP growth affect the ability of the growth regressions to explain China's growth experience. In fact, in an effort to maximize explanatory power, we augment our benchmark specification with the composite political risk measure and investment to GDP. The private credit to GDP measure we use is adjusted for state ownership. When we run this specification, trade to GDP is no longer significant and has the wrong sign. We therefore remove it from the specification reported in Table 10. We use capital account openness as the financial openness measure.

The results largely confirm the results in previous tables in the consumption growth regressions but for GDP growth, private credit to GDP is now actually significantly positive whereas the investment to GDP ratio no longer is. When we perform the growth decomposition for consumption growth, we still find unexplained excess growth close to 2%, but several variables have non-negligible impact on Chinese excess growth, including life expectancy, population growth, investment to GDP and political risk. The lack of full financial openness is the largest growth detractor. Table 10 also reports a decomposition for GDP growth with the surprising result that China's excess growth is now fully accounted for. While this result undoubtedly confirms that measurement issues are of first-order importance, we must caution again that the convergence effect is the main contribution. This implies that Chinese growth is explained "on average" over the sample but that, with initial GDP increasing over time, predicted Chinese growth in 2003 is much lower than in 1980.

5.4 *Factor Productivity Growth*

Because of its importance to long-run development, let's return to the factor productivity statistics produced in Table 8. Factor productivity here is defined in the usual way. We build per capita physical capital stocks over the 1980–2003 period using the method in King and Levine (1994). We derive an initial estimate of the capital stock for 1950, assuming each country is at its steady state capital-output ratio at that time. Then, we use the aggregate real investment series from the Penn World Tables 6.0 and the perpetual inventory method with a depreciation rate of 7% to compute the capital stock in later years. Productivity growth is calculated as the difference between the GDP growth rate and 0.3 times the capital stock growth rate, assuming a capital share of 0.3.

As we can see from the table, developing countries have on average much lower factor productivity growth than developed countries. Again, China is an exception displaying factor productivity growth in excess of 5% per annum. It is almost certain that this does not reflect the true state of affairs. Reports from experts typically mention the existence of a relatively efficient private sector, but largely inefficient state sector. The factor productivity growth results may arise in a number of ways. First, the assumed capital share ratio of 0.3 may be erroneous for China. In fact, Young (2003) provides alternative (and higher) estimates for China and a number of South-East Asian countries. Second, the GDP growth numbers may have been overstated, but some reports suggest that for some years official statistics may even understate Chinese growth. Third, investment growth might be understated in the official statistics.

We re-estimated factor productivity growth using our data set but making use of the corrections in Young (2003): a decrease in GDP growth with 2.7%; a decrease in capital growth of 0.9% reflecting the increased labor participation also reflected in GDP growth and an increased capital share of 0.4. With these corrections, China's factor productivity growth falls to a more mundane 2%. While still high, this may make China less of an outlier. In Bekaert, Harvey and Lundblad (2006c), we explore the determinants of factor productivity growth. These regressions reveal that the same variables that explain growth also explain

factor productivity growth. Interestingly, that decomposition reveals that the regression explains Chinese factor productivity growth, when the Young adjustments are taken into account. We intend to explore this further in future work.

6 Results on Growth Volatility

Panel A of Table 11 reports the results for idiosyncratic growth variability. We focus on consumption growth variability as that is most relevant from a welfare perspective.

The regression shows relatively few significant effects. The level of development, proxied by life expectancy and secondary school enrollment, has a negative effect on variability and the coefficients are always more than one standard error below zero. High population growth significantly increases variability in each case. These results are consistent with those reported in Bekaert, Harvey and Lundblad (2006b).

Trade openness significantly increases the variability of idiosyncratic consumption growth. This seems consistent with the Rodrik (1998) hypothesis which conjectures that open countries are more buffeted by international shocks, but Rodrik suggests that such countries would have large government sectors to help them smooth such shocks. By including the size of the government sector as an independent variable, we control for this effect. Nonetheless, the trade variable retains its significance. Moreover, the larger government sectors increase growth variability.

The equity market liberalization indicator is negative but only 1.7 standard errors from zero. In contrast, the equity market openness variable is negative and 3.7 standard errors from zero. While the capital account openness variable is also negative, it is not significantly different from zero. Consequently, having an open capital account does not necessarily lead to more real variability. In contrast, an open equity market is associated with significant lower real variability.

The bottom part of Panel A compares actual idiosyncratic volatility (the square root of the average squared residuals) with the model. When we group over various regions, the model clearly gets the absolute and relative magnitudes about right. Because China

represents such a big outlier in the regressions, we had to adapt the procedure to compute actual idiosyncratic volatility, subtracting the average residual first. Clearly, the regression slightly over-predicts the variability of Chinese consumption growth. However, the model does so for the developed countries as well, and more dramatically so. Hence, while China has achieved remarkable growth with less variability than expected, the volatility of its growth experience is less puzzling given its economic, political and financial infrastructure as captured by the regression variables.

Panel B of Table 11 decomposes the contribution of each of the regressors to volatility. To do this, we set the coefficient on a particular variable to zero and compute the predicted variance.[3] The numbers reported are the change in the predicted variance from setting the variable back at its actual value relative to the actual predicted variance. For example, if setting Life Expectancy to zero increases the variance, as it does for developed countries, we report a negative value. The value of -0.478 means that having high life expectancy reduces the variance by 47.8%. Before we conduct this exercise, we actually re-run the regression omitting the initial to GDP variable. The variable is never significant and has a hard to interpret sign, likely because it is relatively co-linear with life expectancy and secondary school enrollment. For developing countries, the table reveals that Secondary School Enrollment, Life Expectancy, and Population Growth significantly contribute to low real volatility. Interestingly, the effect of external risk, as proxied by the trade sector, is not only statistically but also economically significant. Both profligate governments and a well developed banking sector still increase real volatility by 10%. While the latter result seems counterintuitive,, it is conceivable that countries with a better institutional framework to smooth income shocks simply can afford to incur more real risk and actually do so. China also receives a relative large contribution to Private Credit to GDP, but the use of the unadjusted measure makes this result hard to interpret. Interestingly, what most contributed to China's relatively low variability is its high score on Life Expectancy. For a typical developing country, Life Expectancy has a small positive impact on idiosyncratic volatility. China behaves more like

[3]Note that this is equivalent to setting the variable in question at the world average, since variables enter the regression in excess form.

developed countries where life expectancy is a negative contributor to idiosyncratic growth volatility. Similarly, the contribution of Population Growth is negative and reasonably large whereas the opposite is true for developing countries as a group. Financial Openness has negligible effects on volatility.

7 Heterogeneous Responses to Financial Market Integration

Does the growth and volatility effect from financial openness differ across countries? For example, theories of financial fragility (Furman and Stiglitz (1998)) suggest a good institutional framework is essential to prevent crises. We now consider a menu of characteristics that might affect both the growth and volatility response. We consider variables related to financial development, government provided insurance, the quality of political institutions, and the investment environment.

Our method for Table 12 is as follows. In Panel A, we focus on the official equity market liberalization variable. In the main regression with control variables, we break up the liberalization indicator variable into three pieces. The first indictor is for countries that are fully liberalized throughout our sample. The second indicator is for liberalizing countries with a lower than median value of the particular characteristic that we are considering. The third indicator is for liberalizing countries with a higher than median value of the characteristic. We also consider the direct effect of the characteristic by adding it to the main regression. By examining the difference between the 'from the low level of the variable' and the 'from the high level of the variable,' we can determine whether the growth and growth volatility response to a liberalization differ across key characteristics. For all characteristics, 'high' is good (high development, low risk) and vice versa. Finally, we report the low versus high separating value and the average value for China.

In Panel B of Table 10, we explore the Quinn measure of capital account openness. A liberalizing country here (and the date at which it liberalizes) is defined as a country that increases its capital account openness measure by more than 0.25. A fully liberalized country is a country with an openness measure above 0.75 for the full sample. We ignore the few

reversals that are observed.

7.1 *Financial development*

We consider three measures of financial development: the size of the banking system, equity market turnover, and the size of the equity market.

Countries with more developed banking sectors experience significantly higher consumption growth and lower consumption growth volatility using both measures of openness. The coefficients for countries that are lower than median private credit to GDP are not significant for either the growth or volatility regressions. However, high private credit to GDP countries experience increased growth and decreased volatility upon liberalization. The Wald tests indicate that differences with the effects for countries with poorly developed banking sectors are significant. As noted earlier, using this standard indicator, China places in the 'high' private credit/GDP group of countries, but in reality China's banking system is underdeveloped. We also re-run the regression using the adjusted private credit measure, which more accurately reflects China's true banking development. For the equity liberalization regression, the mean interaction effects become much stronger, the volatility effects are weaker. Nevertheless, it remains the case that only countries with a well developed banking sector derive unambiguously beneficial effects of equity market liberalization. In the case of the capital account openness regression, the adjusted measure leads to even stronger interaction effects than were present for the unadjusted measure.

The results are more mixed for the other two measures of financial development. For the official liberalization indicator, the growth response to liberalization is positive (negative) for high (low) turnover countries and the difference in responses is statistically significant at the 1% level; for the capital account openness indicator, the sign is reversed. There is no significant difference in the volatility response using the official liberalization measure; whereas in the capital account openness regression, only high turnover countries experience a modest volatility decrease.

Countries with a high market capitalization to GDP measure experience significantly higher growth than low market capitalization countries after official liberalizations. How-

ever, there is no significant difference in the growth effect when we examine the capital account liberalization measure. However, for volatility, both the official equity market and the capital account liberalizations measures produce significantly lower volatility for countries with relatively large stock markets compared to countries with small stock markets.

7.2 *Privatization*

There is a general perception that an inefficient state sector misallocates capital and that most of the growth in China comes from more or less private enterprises. Relaxing state control of the resource allocation process could potentially generate substantial additional growth and improve the efficiency with which foreign funds are allocated. In Table 12, we use BERI's privatization measure to test whether there are threshold effects for the liberalization effect with respect to this measure. China, not surprisingly, ranks in the bottom half of our country set on the privatization measure. Privatization has a strong and significant direct effect on growth but does not significantly affect volatility. The growth effect of liberalizing countries with a small government sector (high levels of privatization) is 63 basis points whereas it is minus 61 basis points for countries with low levels of privatization in Panel A. The difference is significant at the 10% level. The volatility effect of liberalization is more negative for highly privatized countries, but the difference is not significant. The results using capital account liberalization in Panel B are qualitatively similar for growth, but volatility in countries with low privatization levels actually increases upon liberalization, whereas it remains unchanged for the highly privatized countries.

7.3 *The government as a provider of insurance*

Social security systems may be the most important means of smoothing income shocks in most countries, especially for low income people. The own effect of social security is significantly positive for growth and negative for growth volatility. As we discussed, China places somewhat implausibly in the 'high' group of countries for Social Security. Note that our sample here is much smaller and we do not have panel data on social security. In the

consumption growth volatility regression, the coefficient for the higher than median countries is negative in both Panels A and B, but only in the capital account openness specification is the difference with the coefficient for countries with poor social security systems statistically significant at the 10% level. Hence, there is only weak evidence that social security systems help in realizing the consumption insurance benefits from open capital markets. As to the effects of financial openness on average growth, Social Security generates adverse effects in the capital account openness regressions; countries with low levels of social security seem to generate significantly larger liberalization effects. In the official equity market liberalization regression, there are neither significant coefficients nor significant interaction effects.

We also use the size of the government sector as a proxy for the extent of shock insurance through the government. For this variable, China places in the 'low' group of countries. We find that countries with higher than median government sectors have a significantly positive consumption growth impact associated with financial openness. Countries with lower than median government sectors also have a positive growth increment, but the coefficient is not significantly different from zero. While the direct effect of the size of the government sector on volatility remains positive, liberalizing countries with relatively large government sectors experience a decrease in volatility. However, the coefficient is not significantly different from zero. Countries with small government sectors experience small and insignificant volatility increases upon liberalization. Overall, we do not observe significant threshold effects.

7.4 *Quality of political institutions*

We focus on the components of the ICRG Political Risk Rating that are associated with the Quality of Political Institutions (Table 2). Acemoglu, Johnson and Robinson (2002) stress the importance of the institutional environment in explaining cross-country differences in economic development. Our variable includes: Corruption, Law and Order, and Bureaucratic Quality. China is slightly above the median value. The own effect of this variable is positive for growth and negative for growth volatility – both being statistically significant in each of the liberalization specifications. In the official equity liberalization specification, both countries with higher and lower than median Quality of Institutions, experience pos-

itive growth increments associated with financial openness. However, neither coefficient is significantly different from zero. However, in the capital account liberalization specification, countries that liberalize and have higher quality institutions have significantly higher growth than liberalizing countries with poor institutions.

The volatility specifications provide consistent results. While some of the coefficients are not significant, liberalizations (both definitions) are associated with higher volatility for countries with poor quality institutions and lower volatility for countries with good quality institutions.

7.5 *Socio-economic conditions*

The coefficient on our indicator of socioeconomic conditions (government stability, socioeconomic conditions, and investment profile) shows a significant increment to consumption growth in both the official and capital account liberalization specification. However, the liberalization effect for low versus high socio-economic conditions countries is only significant in the official liberalization specification. The volatility regression yields consistent results across both liberalization specifications. Higher than median socio-economic conditions are associated with significantly lower consumption growth volatility upon liberalization versus countries with poor socio-economic conditions which face higher consumption growth volatility. In addition, the difference between the two effects is significant.

7.6 *Investment climate*

Finally, we consider the investment profile (which is a subcomponent of our socio-economic conditions index) of different countries. China places in the 'high' group of countries. The own growth effect of this variable is very substantial in both specifications, being more than five standard errors above zero. In the volatility regressions, the coefficients are negative but only about 1.6 standard errors below zero.

For both lower and higher than median values of investment profile, the coefficients on the liberalization variables are positive but not significantly different from zero. Both

volatility regressions indicate significantly different liberalization responses between investment friendly and investment unfriendly countries. The Wald statistics are higher for these tests than for any other tests in the two panels in Table 12. Investment friendly countries experience significantly lower consumption growth volatility after liberalizations.

Table 12 suggests that both the consumption growth as well as the consumption volatility response to financial openness depends on the particular situation within a country. We measure country heterogeneity by looking at the extent of financial development, the role of the government sector, the quality of institutions and the investment climate. While many of the coefficients are not significantly different from zero, viewed together, the evidence is supportive of the hypothesis of heterogeneous responses depending on country characteristics. The responses are consistent with good institutions and financial development generating relatively larger growth and risk sharing benefits.

8 Conclusions

For some, China has become critical to world economic growth. However, little is known about the sources of its extraordinary economic growth over the last two decades. In this paper, we use panel data and Barro-type cross-country growth regression to see if we can learn something about the Chinese growth experience. From the perspective of a simple cross-country growth regression, China is a huge outlier with the bulk of its past growth unaccounted for by the standard variables. China also has achieved this remarkable growth with relatively low growth volatility, but this seems less of a puzzle given the experiences of countries with similar institutional, financial and economic backgrounds. Surprisingly, its trade openness played an insignificant role, even though it continues to put China in the spotlight. Among the key variables in predicted growth for China are the simple convergence effect and life expectancy. We find that avoiding foreign debt was beneficial but the FDI levels China experienced do not suffice to help explain much excess growth. Once we account for political risk variables, the quality of institutions, social security and state ownership, the cross-country regressions predictions become closer to the actual growth numbers but

still under-predict China's growth.

Interestingly, among the variables that seem important to growth and can be affected by policy (for instance, capital account openness, the quality of political institutions and state ownership), China performs relatively poorly. Lack of full financial openness is an important growth detractor. While it may appear that China needs not grow any faster than it does right now, this perception is incorrect. China's GDP per capita is still only 26.3% of the world average. A large gap still needs to be closed. Moreover, as Young convincingly showed past growth and factor productivity growth was probably over-stated and we find that the unusually high investment to GDP levels China ran also contributed significantly to its growth. Pretty soon, China will also grapple with the consequences of a rapidly aging population, which will absorb significant resources. Before it does, it must find sustainable sources of growth that raise productivity levels towards those of the Western world and improve the capital allocation process. We believe that foreign capital can be rather helpful in this endeavor, but our threshold analysis in Section 7 suggests that full capital account convertibility should probably be preceded by a sound institutional framework of a highly financially developed system, less state ownership, attractive socio-economic conditions and a favorable investment profile. On the latter two measures, China appears to score favorably relative to other developing countries. On the other measures, China must still implement significant reforms.

In future work, we plan to investigate more closely what factors are most important in ensuring increased factor productivity. It is conceivable that trade and FDI indirectly provided significant contributions to factor productivity (see also Branstetter (2006)), and hence, such research may overturn our surprising finding that they played a relatively minor role in China's extraordinary growth.

References

Acemoglu, Daron, Simon Johnson, and James A. Robinson, 2002, Reversal of Fortune: Geography and Institutions in the Making of the Modern World Income Distribution, *Quarterly Journal of Economics* 117, 1231–1294.

Agenor, Pierre-Richard, 2003, Benefits and Costs of International Financial Integration: Theory and Facts. *World Economy* 26, 1089–1118.

Aggarwal, Raj and Guojun Wu, 2006, Stock Market Manipulations. *Journal of Business*, forthcoming.

Aghion Philippe, Abhijit Banerjee and Thomas Piketty, 1999, Dualism and Macroeconomic Volatility, *Quarterly Journal of Economics* 114, 1359-97.

Alesina, Alberto, Vittorio Grilli and Gian Maria Milesi-Ferretti, 1994, The Political Economy of Capital Controls, in Leonardo Leiderman and Assaf Razin, eds. *Capital Mobility: The Impact on Consumption, Investment and Growth*, Cambridge: Cambridge Press.

Allen, Franklin, Jun Qian, and Meijun Qian, 2005, Law, Finance, and Economic Growth in China, *Journal of Financial Economics* 77, 57–116.

Ang, Andrew and Geert Bekaert, 2006, Stock Return Predictability: Is it There? *Review of Financial Studies* forthcoming.

Athanasoulis, Stefano G., and Eric van Wincoop, 2000, Growth Uncertainty and Risk Sharing, *Journal of Monetary Economics* 45, 477–505.

Athanasoulis, Stefano G., and Eric van Wincoop, 2001, Risk Sharing within the United States: What Do Financial Markets and Fiscal Federalism Accomplish, *Review of Economics and Statistics* 83, 688–698.

Backus, David K., Patrick Kehoe and Finn Kydland, 1992, International Real Business Cycles, *Journal of Political Economy* 100, 4, 745–775.

Barro, Robert, 1997. Determinants of Economic Growth, MIT Press, Cambridge.

Bekaert, Geert, 1995, Market Integration and Investment Barriers in Emerging Equity Markets, *World Bank Economic Review* 9, 75-107.

Bekaert, Geert and Campbell R. Harvey, 2000, Foreign Speculators and Emerging Equity Markets, *Journal of Finance* 55, 565-614.

Bekaert, Geert and Campbell R. Harvey, 2005, A Chronology of Important Financial, Economic and Political Events in Emerging Markets, http://www.duke.edu/∼charvey/Country_risk/couindex.htm

Bekaert, Geert, Campbell R. Harvey and Christian Lundblad, 2001, Emerging Equity Markets and Economic Development, *Journal of Development Economics* 66, 465–504.

Bekaert, Geert, Campbell R. Harvey and Christian Lundblad, 2005, Does Financial Liberalization Spur Growth?, *Journal of Financial Economics* 77, 3–56.

Bekaert, Geert, Campbell R. Harvey and Christian Lundblad, 2006a, Openness, International Risk Sharing and Growth, Unpublished working paper.

Bekaert, Geert, Campbell R. Harvey and Christian Lundblad, 2006b, Growth Volatility and Financial Liberalization, *Journal of International Money and Finance*, forthcoming.

Bekaert, Geert, Campbell R. Harvey and Christian Lundblad, 2006c, Financial Openness and Growth: The Channels, Unpublished working paper.

Bekaert, Geert, Campbell R. Harvey, Christian Lundblad and Stephan Siegel, 2006, Growth Opportunities and Market Integration, *Journal of Finance*, forthcoming.

Blanchard, Olivier J., and John A. Simon, 2001, The Long and Large Decline in U.S. Output Volatility, *Brookings Papers on Economic Activity* 135–174.

Bollerslev, Tim and Jeffrey M. Wooldridge, 1992, Quasi-maximum Likelihood Estimation and Inference in Dynamic Models with Time-Varying Covariances, *Econometric Reviews*, 11, 143-172.

Botero, Juan, Simeon Djankov, Rafael La Porta, Florencio Lopez-de-Silanes, and Andrei Shleifer, 2004, The Regulation of Labor, *Quarterly Journal of Economics* 119, 1339-1382.

Branstetter, Lee, 2006, Openness, International Trade and Foreign Investment, this volume.

Branstetter, Lee and Nicholas Lardy, 2006, China's Embrace of Globalization. Working paper, Columbia University.

Brennan, Michael J. and Bruno Solnik, 1989, International Risk Sharing and Capital Flows, *Journal of International Money and Finance* 8, 3, 359–373.

Caprio Jr., Gerard and Daniela Klingebiel, 2001, Bank Insolvencies: Cross-country Experience, Working paper 1620, World Bank, Washington, DC.

Cole, Harold L. and Maurice Obstfeld, 1991, Commodity Trade and International Risk Sharing – How Much do Financial Markets Matter, *Journal of Monetary Economics* 28, 3-24.

Crucini, Mario J., 1999, On International and National Dimensions of Risk Sharing, *Review of Economics and Statistics* 81, 73–84.

Davis, Steven J., Jeremy Nalewaik, and Paul Willen, 2000, On the Gains to International Trade in Risky Financial Assets, National Bureau of Economic Research working paper 7796.

Dinc, I. S., 2005. Politicians and banks: Political influences on government-owned banks in emerging markets, *Journal of Financial Economics* 77, 453–479.

Du, J. L. and Wei, S. J., 2004, Does Insider Trading Raise Market Volatility? *Economic Journal* 114, 916–942.

Easterly, William, R. Islam and J. Stiglitz, 2001, Volatility and Macroeconomic Paradigms for Rich and Poor Countries," in Jacques Dreze, ed., Advances in Macroeconomic Theory, New York: Palgrave. 2001.

Edison, Hali and Frank Warnock, 2003, A Simple Measure of the Intensity of Capital Controls, *Journal of Empirical Finance* 10, 81-104.

Edwards, Sebastian, 2001, Capital Mobility and Economic Performance: Are Emerging Economies Different, Unpublished working paper, UCLA.

Eichengreen, Barry, 2001, Capital Account Liberalization: What do the Cross-country Studies Tell Us?, *World Bank Economic Review* 15, 3, 341–365.

Eichengreen, Barry, James Tobin, and Charles Wyplosz, 1995, Two Cases for Sands in the Wheels of International Finance, *Economic Journal*, 162-172.

Forbes, Kristan, 2004. The Asian Flu and Russian Virus: The International Transmission of Crises in Firm-Level Data. *Journal of International Economics* 63, 59-92.

Frieden, Jeffrey, 1991, Invested Interests: The Politics of National Economic Policies in a World of Global Finance, *International Organization* 45 425-451.

Fung, Michael K.Y. , Wai-Ming Ho and Lujing Zhu, Financial Liberalization and Economic Growth: A Theoretical Analysis of the Transforming Chinese Economy, 2005, *Pacific Economic Review* 10, 125-148.

Furman, Jason and Joseph E. Stiglitz, 1998, Economic Crises: Evidence and Insights from East Asia, *Brookings Papers on Economic Activity* 1–114.

Goodman, John B. and Louis W. Pauly. 1993. The Obsolescence of Capital Controls? Economic Management in an Age of Global Markets, *World Politics* 46, 50–82.

Gourinchas, Pierre-Olivier and Olivier Jeanne, 2004, On the Benefits of Capital Market Integration for Emerging Market Economies, Unpublished working paper, International Monetary Fund.

Grilli, Vittorio and Gian Maria Milesi-Ferretti, 1995, Economic Effects and Structural Determinants of Capital Controls. *IMF Staff Papers* 42, 517–551.

Hansen, Lars P., and Robert J. Hodrick, 1980, Forward Exchange Rates as Optimal Predictors of Future Spot Rates, *Journal of Political Economy*, 88, 829-853.

Hodrick, Robert J., 1992, Dividend Yields and Expected Stock Returns: Alternative Procedures for Inference and Measurement," *Review of Financial Studies* 5, 357–386.

Jin Jang, C., 2005, On the Relationship between Openness and Growth in China, Evidence from Provincial Time Series Data, Unpublished working paper.

Kaminsky, Graciella L. and Carmen Reinhart, 1999, The Twin Crises: The Causes of Banking and Balance of Payments Problems, *American Economic Review* 89, 473-500.

King, Robert and Ross Levine, 1993, Finance and Growth: Schumpeter Might Be Right, *Quarterly Journal of Economics* 108, 717-738.

Kose, M. Ayhan, Eswar S. Prasad, and Marco E. Terrones, 2003, Financial Integration and Macroeconomic Volatility, *IMF Staff Papers* 50, 119–142.

Kraay, Aart and Jaume Ventura, 2001, Comparative Advantage and the Cross-section of Business Cycles, NBER working paper 8104.

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert W. Vishny, 1997, Legal Determinants of External Finance, *Journal of Finance*, 52, 1131-1150.

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert W. Vishny, 1998, Law and Finance, *Journal of Political Economy* 106, 1113-1155.

La Porta, Rafael, Florencio Lopez-de-Silanes, and Andrei Shleifer, 2002. Government Ownership of Banks, *Journal of Finance* 57, 265–301.

Leblang, David A., 1997, Domestic and Systemic Determinants of Capital Controls in the Developed and Developing World. *International Studies Quarterly* 41, 435–454.

Lewis, Karen K., 1996, What Can Explain the Apparent Lack of International Consumption Risk Sharing?, *Journal of Political Economy* 104, 267-297.

Lewis, Karen K., 1999, Trying to Explain Home Bias in Equities and Consumption, *Journal of Economic Literature* 37, 571-608.

Li, Quan and Dale Smith, 2002, Testing Alternative Models of Capital Control Liberalization, *Policy Studies Review* 19, 28–52.

Lin, Kuan-Pin, Albert J. Menkveld, Zhishu Yang, 2004, China and World Equity Markets: A Review of the First Decade. Working paper.

Mathieson, Donald J. and Liliana Rojaz-Suarez, 1993, Liberalization of the Capital Account: Experiences and Issues, IMF Occasional Paper No. 103.

Mei, Jiangpin, Jose Scheinkman and Wei Xiong, 2005, Speculative trading and Stock prices: Evidence form Chinese A-B Share premia, NBER working Paper 11362.

Newey, Whitney, and Kenneth West, 1987, A Simple, Positive Semi-definite, Heteroskedasticity and Autocorrelation Consistent Covariance Matrix, *Econometrica*, 55, 703-708.

Obstfeld, Maurice, 1992, International Risk Sharing and Capital Mobility – Another Look, *Journal of*

International Money and Finance 11, 115-121.

Obstfeld, Maurice, 1994, Risk-taking, Global Diversification, and Growth, *American Economic Review* 84, 1310-1329.

Obstfeld, Maurice, 1995, International Capital Mobility in the 1990s, in Peter Kenen, ed., *Understanding Interdependence* Princeton University Press, 1995.

Pallage, Stéphane and Michel Robe, 2003. On the Welfare Cost of Economic Fluctuations in Developing Countries. *International Economic Review* 44 (2), 677–698.

Prasad, Eswar, Thomas Rumbaugh, and Qing Wang, 2005, Putting the Cart Before the Horse? Capital Account Liberalization and Exchange Rate Flexibility in China, IMF Working paper.

Prasad, Eswar and Shang-Jiin Wei, 2005, Capital Flows into China, Working Paper.

Prasad, Eswar, Kenneth Rogoff, Shang-Jin Wei, and M. Ayhan Kose, 2003, Effects of Financial Globalization on Developing Countries: Some Empirical Evidence. Working paper, International Monetary Fund.

Prasad, Eswar, Kenneth Rogoff, Shang-Jin Wei, and M. Ayhan Kose, 2004, Financial Globalization, Growth and Volatility In Developing Countries, National Bureau of Economic Research Working Paper 10942 (December 2004), forthcoming in Ann Harrison (ed.) Globalization and Poverty, University of Chicago Press.

Quinn, Dennis P., 1997, The Correlates of Changes in International Financial Regulation, *American Political Science Review* 91, 531–551.

Quinn, Dennis P. and Carla Inclan, 1997, The Origins of Financial Openess: A Study of Current and Capital Account Liberalization. *American Journal of Political Science* 41, 814–845.

Quinn, Dennis P. and A. M. Toyoda, 2003, Does Capital Account Liberalization Lead to Economic Growth?: An Empirical Investigation, Unpublished working paper, Georgetown University.

Rodrik, Dani, 1998a, Who Needs Capital Account Convertibility? Princeton Essays in International Finance 207, 1-10.

Rodrik, Dani, 1998b, Why Do More Open Economies Have Bigger Governments? *Journal of Political Economy* 997–1032.

Roll, Richard and John Talbot, 2001, Political and Economic Freedoms and Prosperity, Working paper, UCLA.

Stiglitz, Joseph E., 2000, Capital Market Liberalization, Economic Growth and Instability, *World Development* 1075–1086.

Stock, James H. and Mark W. Watson, 2002, Has the Business Cycle Changed and Why?, Unpublished working paper, Harvard University.

Sun, Qian, Wilson H.S. Tong, and Yuxing Yang, 2005, Market Liberalization Within a Country. Working paper.

Van Wincoop, E., 1994, Welfare Gains From International Risk Sharing, *Journal of Monetary Economics* 34, 175-200.

Van Wincoop, E., 1999, How Big are Potential Welfare Gains From International Risk Sharing?, *Journal of International Economics* 47, 109-235.

Wacziarg, Romain and Karen Horn Welch, 2003, Trade Liberalization and Growth: New Evidence, NBER Working Paper No. 10152

Wang, C. Y. and M. S. Cheng, 2004, Extreme Values and Expected Stock Returns: Evidence from China's Stock Market. *Pacific Basin Finance Journal* 12, 577–597.

Young, Alwyn, 1994, Lessons from the East-Asian NICS - A Contrarian View. *European Economic Review* 38, 964-973.

Young, Alwyn, 1995, The Tyranny of Numbers: Confronting the Statistical Realities of the East Asian Growth Experience. *Quarterly Journal of Economics* 110, 641-680

Young, Alwyn, 2003, Gold Into Base Metals: Productivity Growth in the People's Republic of China During the Reform Period. *Journal of Political Economy.*

Table 1

A Chronology of Economic, Political and Financial Events in China

Date YYMMDD	Event
850314	Regulations governing the establishment of foreign joint ventures in Shanghai Province were relaxed.[IMF]
850315	China and India signed a three-year agreement to develop economic and trade relations; the accord provided for encouraging joint ventures, the creation of consultancy services, the exchange of economic, trade, and technical delegations, and participation.[IMF]
850326	The Foreign Economic Contract Law was adopted.[IMF]
850401	The Chinese Patent Law, enacted in 1984, came into effect. The Ministry of Petroleum and Industry announced that foreign oil companies would be allowed to participate in exploration and development of oil and gas reserves in nine provinces and one autonomous region.[IFC]
850402	The State Council introduced a regulation on the control of foreign banks and joint venture banks in special economic zones.[IMF]
850822	China approved establishment of the first foreign branch bank office in the country since 1949. Hong Kong and Shanghai Banking Corporation (a foreign commercial bank) announced a plan to begin branch operations in Shenzhen in Oct.5, 1985.[IMF]
851106	China and Libya signed a protocol aimed at consolidating bilateral cooperation between the two countries.[IMF]
851203	A joint venture bank was opened in Xiamen with the Panin Group of Hong Kong.[IMF]
870205	Provisional regulations were approved permitting financial institutions and enterprises with sources of foreign exchange income to guarantee foreign exchange obligations of other debtors.[IMF]
870827	Provisional regulations were issued on a new system requiring the timely registration of external borrowing with the SAEC.[IMF]
880413	The National People's Congress adopted a new Chinese-foreign cooperative joint ventures law.[IMF]
890214	All foreign commercial borrowing required the approval of the PBC and is to be channeled through one of ten domestic entities. The short-term debt of each entity may not exceed 20% of the entity's total debt, and short-term borrowing is to be used only for working capital purposes.[IMF]
890306	The SAEC announced procedures governing Chinese direct investment abroad, which required government and SAEC approval, a deposit of 5% of the investment to secure repatriation of dividends and other income from the investment, and repatriation of earnings within six months.[IMF]
900404	The State would not nationalize joint ventures, simplified the approval procedures for new foreign investment enterprises, and extended the management rights of foreigners.[IMF]
900514	The Shanghai City Government announced plans for the development of the Pudong New Area, offering foreign joint ventures tax incentives similar to those available in the special economic zones.[IMF]
900519	The State Council issued regulations for the sale and transfer of land use rights in cities and towns to encourage foreign investor to plan long-term investment.[IMF]
901126	The Shanghai Securities Exchange reopened. It had been closed since December 8, 1941.[DT]
910409	The State Council adopted the Law Concerning the Income Tax of Foreign-Funded Enterprises and Foreign Enterprises and eliminated a 10% tax imposed on distributed profits remitted abroad by the foreign investors in foreign-funded enterprises.[IMF]
910426	The limit of daily price fluctuations increases from 0.5% to 1%.[GK]
910603	The stamp tax was decreased from 0.6% to 0.3%.[GK]
910926	"Regulations on Borrowing Overseas of Commercial Loans by Resident Institutions" and "Rules on Foreign Exchange Guarantee by Resident Institutions in China" were issued.[IMF]
910703	Shenzhen opened the country's second exchange.[DT]
9100	The "B" share came into existence. "B shares" can be owned by foreigners only, but they are afforded the same right of ownership as "A shares", which are reserved for Chinese nationals. In China, a share entitles the owner to a dividend distribution, but not to a right to influence the operations of the company.[CSRC]
9203	The policy on foreign trade and investment was further liberalized, opening a large number of island and border areas to such activities.[IMF]
920521	Free stock price through free trading (less control of price formation). Shanghai index increases from 617 to 1266 on this day.[GK]
921026	China Securities Regulatory Commission begins.[GK]

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Date YYMMDD	Event
9300	The introduction of the Insider Trading Laws.[BD]
9305	Interim regulations were issued governing the activities of domestic investors, but there is no law explicitly covering the presence or activities of foreign firms. Foreign securities firms may establish respresentative offices, but they cannot establish respresentative offices, but they cannot establish local branches or subsidiaries. They can only purchase seats to broker "B" shares (dominated in RMB but must be purchased with foreign currency, issued by Chinese companies for sale exclusively to non-Chinese). Foreign firms can not underwrite local securities issues or act as dealers or brokers in RMB dominated securities.[DT]
930701	ADR effective date. (Company=SINOPEC SHANGHAI PETROCHEMICAL COMPANY LIMITED, Exchange=NYSE).[BNY]
930806	A common order-driven market for A shares on Shanghai Stock Exchange was introduced. (Buy and sell orders compete for the best price. Throughout the trading session, customer orders are continuously matched according to price and time priorities.)[GK]
9400	The Chinese government converted four "specialized" banks into "commercial" banks by transferring their responsibilities for making noncommercial loans to three newly established "policy" bankings. The first PRC's central and commercial banking laws was passed to allowed new, non-state-owned banks to set up business.[DT]
9400	The People's Bank of China (PBOC) issued new supervisory guidelines requiring all banks to apply new credit control procedures designed to bring China in line with the risk-weighted capital adequacy established in the Basle Agreement. It also got approval to undertake a special US$32 billion bond issue to re-capitalize the state-owned commercial banks and enable then to meet the 8% capital-adequacy ration of the Basle Agreement[DT]
940312	Announcement of the 'Four No' rule. Chairman of CSRC announced that RMB 5.5 billion new shares are not allowed to be traded on stock exchanges within half a year; the transaction tax for stocks would not be levied in 1994.[IFC]
940615	Prohibition of illegal futures trading.[GK]
9501	Real interest rates turned positive as inflation has been squeezed out of the economy.[DT]
950103	Initiate T+1 trading procedure. Stocks bought in one day could not be sold until the next day. This reduces intraday trading.[GK]
9503	Exports surged by 62% over last year, increasing trade surplus by $ 7 billion.[IFC]
950517	Stopped futures trading on Treasury bonds. CSRC concerned the futures was attracting too much speculative money. On that day, the stock market surges 31%.[GK]
9505	The central bank increased the subsidy rate on bank deposits from 11.47% to 12.27%.[IFC]
950620	Commercial banks banned from entering stock or trust business.[GK]
9507	A new commercial bank law went into effect.[IFC]
9508	Inflation rate had decreased to 14.5% from 27% in October 1994.[IFC]
9511	China launched its first national inter-bank market linking 30 short-term credit offices across China into a single computer network[IFC]
9603	China carried out three rounds of military exercise across the Taiwan Straits, clouding the relationship between two countries.[IFC]
9608	The government removed the authority of local city governments to manage the Sanghai and Shenzhen stock exchanges.[IFC]
9609	The Shanghai city government cut the income tax rate of Shanghai based companies to 15% from 33%.[IFC]
960925	The regulation on External Guarantees Provided by Domestic Entities was passed, allowing for the provision of guarantees by authorized financial institutions and nonfinancial legal entities that have foreign exchange receipts.[JMF]
961003	Decreases in commissions for stock and fund transactions.[GK]
9610	The CSRC issued a circular prohibiting Chinese from opening up stock trading accounts in the name of their work units.[IFC]
961114	Central Bank of China prohibits that bank loans can be used to invest in stocks.[GK]
961216	The CSRC tightened restrictions on Chinese residents opening B-share accounts, which are reserved for foreign investors. A new regulation that will limit the maximum daily change to 10% was imposed.[IFC]

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Date YYMMDD	Event
970219	Paramount Chinese leader Deng Xiaoping died at age 92.[IFC]
9704	Government agreed to extend the preferential 15% corporate tax rate for nine of 25 H-share stocks for another year.[IFC]
9705	The CSRC decided to retroactively boost the annual ceiling on new shares issued for 1996 by 50%. China's State Council opted to raise the stamp tax on stock trading to 0.5% from 0.4%.[IFC]
970606	Central Bank prohibits assets owned or controlled by banks from being used to purchase stocks.[GK]
970701	The Hong Kong was handed over to the China.[IFC]
9711	Securities Commission promulgated rules for establishing mutual funds.[IFC]
980101	Regulations for issuing bonds denominated in foreign currency by domestic institutions were issued. (Controls on credit operations) (1) The implementation bylaws of regulations for external guarantees by by domestic institutions were issued. (2) Forward LCs with a maturity exceeding 90 days and less than 365 days have been included in the category of short-term credit, while those exceeding one year have been included in the category of medium- and long-term international commercial loans. (3) External borrowing regulations were changed.[IMF]
9802	Three month interbank rates in Hong Kong drop to 7.143%, the lowest level since previous October.[IFC]
9803	The consumer price index fell 1.9%, marking the fifth straight monthly decline.[IFC]
9804	S&P revised Chinese foreign currency rating from stable to negative.[IFC]
9805	The government banned all activities of direct sales companies such as Amway and Avon.[SP]
980612	Weak Japanese yen forces Chinese exports to see its first decline in 22 month. The government cuts the stock trading tax to 0.4% from 0.5%.[IFC]
9807	China cut bank lending rates on July 1 by 1.12 %. The Japan Rating and Investment Information downgraded China's sovereign rating to A+ from AA-.[IFC]
9808	Catastrophic floods along the Yangtze River, the country's worst since 1954. It is speculated that Beijing may devalue its currency because of a weaker Japanese yen and slower domestic growth.[IFC]
980820	(Controls on credit operations) Enterprises are barred from advance prepayment of debt.[IMF]
9809	The central bank has ordered all companies to repatriate foreign currency held overseas without authorization by October 1. On September 7, the HKSE instituted a "tick rule" for short-sellers.[IFC]
9810	China closed the 18-year-old Gitic (the Guangdong International Trust and Investment Corp) on October 6, after the company missed an $8.75 million payment on a bond.[IFC]
9812	China's first securities law was passed on December 29. Under the laws, brokers are banned from using client funds to finance their own operations and foreigners may not buy A-shares.[IFC]
9901	More than 70 companies in Shenzhen and at least 63 companies in Shanghai announced that they would report a net loss for 1998.[IFC]
9904	The government decides to allow cash-strapped brokerages to tap funds from the interbank market and state debt repurchase market. Measures that exempt foreign companies from 3 percent of local income tax are adopted by Beijing Municipal Government.[SP]
9905	The stamp duty on B-share trading was cut to 0.3% from 0.4% this month.[IFC]
9906	The People's Bank of China announced it would cut rates on deposits by an average of 0.75%.[IFC]
9907	The tension in the Taiwan Straits was raised by a speech of President Lee Teng Hui that scraps the "one China" policy.[IFC]
990715	(Controls on credit operations) Some controls on renminbi loans to FFEs under foreign exchange liens or guarantees were eased.[IMF]
990908	CSRC allows SOEs and all listed companies to issue shares and trade stocks.[GK]
9909	China plans to allow more banks and hi-tech private firms to tap the stock market for financing.[IFC]
9910	The government imposed 20% tax on bank deposit interest income and other market initiatives. Beijing allowed two state firms to sell state-owned shares and permitted certain share buybacks for Chinese B- and H-shares.[IFC]
9911	The Tracker Fund, representing part of the Hong Kong Special Administrative Region government's HK$208 billion (US$27 billion) share portfolio, was listed. The Stock Exchange of Hong Kong launched the Growth Enterprise Market (GEM) for smal cap and high tech firms, creating an out-flow of foreign liquidity from the Mainland B-share market to the Hong Kong GEM market.[IFC]

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Date YYMMDD	Event
9911	The Tracker Fund, representing part of the Hong Kong Special Administrative Region government's HK$208 billion (US$27 billion) share portfolio, was listed. The Stock Exchange of Hong Kong launched the Growth Enterprise Market (GEM) for smal cap and high tech firms, creating an out-flow of foreign liquidity from the Mainland B-share market to the Hong Kong GEM market. [IFC]
200004	The China Securities Regulatory Commission (CSRC) allowed state and listed firms to purchase domestic IPOs without restrictions on the size of these stakes.[IFC]
200006	China Unicom Ltd. became the third-largest IPO in the world.[IFC]
200006	The Chinese government decided to delay the set up of a NASDAQ-style market for high-growth companies and announced the launch of its first mutual fund to be advised by foreign fund companies. Beijing formally approved the merger of the A-share markets of of the Shanghai and Shenzhen exchanges.[IFC]
200010	The government announced a planned interest rate reform and published regulations on the opening of the telecommunications sector. China Petroleum & Chemical Corp.'s IPO became the fifth largest in the world for the year.[IFC]
200100	The crackdown on share price manipulation by the China Securities Regulatory Commission rekindled investor concerns about China's volatile stock market.[IFC]
20010222	The opening of the B-share market to domestic investors boosted the markets. Domestic investors could only invest with existing foreign currency deposits.[IFC]
200105	China cut interest rates on its foreign currency deposits, following U.S.'s rate cuts.[IFC]
20010601	Domestic investors now invest in B shares with with new foreign currency deposits.[PW]
200100	During the third quarter, the government crackdown illegal bank loans to stock market speculators and its practice of selling of shares to finance pension obligations.[IFC]
200108	China Mobile and China Unicom, the two leading telecommunications companies, saw share prices plunge on investor fears about market growth potential and profit margins.[IFC]
20010917	WTO successfully concludes negotiations on China's entry.[WTO]
20010919	Rules relaxed for purchasing foreign exchange for advance repayments of certain debt.[PW]
200110	The government suspended the sale of state-owned shares.[IFC]
20011116	Stamp tax decreases from 0.3% to 0.2%.[GK]
200112	New regulations were announced to tighten delisting rules. A major international rating agency upgraded China's sovereign rating. [IFC]
20011211	China's accession to the WTO which included promises to open their markets to international competition.[WTO]
20020129	The regulations governing foreign banks and financial institutions were issued by the People's Bank of China yesterday and are to take effect on 1 February, replacing the five sets of regulations in force since 1996.[IFC]
20020200	US President George W. Bush visits, on the 30th anniversary of President Nixon's visit to China (at the time, the first visit by a U.S. president).[IFC]
20020312	The government announced to ease restrictions limiting foreign investors to minority stakes in port infrastructure projects and approved foreign investment in urban pipeline projects for gas, heating and water as part of the revised Industrial Catalogue for Foreign Investment, due to come into effect on 1 April 2002.[WMA]
20020700	The US says China is modernizing its military to make possible a forcible reunification with Taiwan. Beijing says its policy remains defensive.[IFC]
20021009	China is to let private and foreign investors buy controlling stakes in domestically listed firms for the first time.[IFC]
20021104	The authorities have announced that foreign companies will be allowed to buy shares in listed Chinese companies.[IFC]
20021105	The Chinese Securities Regulatory Commission (CSRC) and China's central bank (PBOC) issued the Temporary Measures for Investment in Domestic Securities by Qualified Foreign Institutional Investors (the "QFII Regulation"), effective December 1, 2002. A monumental piece of legislation which, for the first time in history, permits foreign investors to directly invest and trad in publicly listed domestic securities. The historic regulation, released on the eve of the opening of the 16th Communist Party Congress, covers: (i) the eligibility standards of a Qualified Foreign Institutional Investor (a "QFII"), (ii) the foreign exchange aspect of the transactions, including the qualification and operation of the depositary banks and the management of the special QFII accounts at such banks, and (iii) control of the investment transactions per se.[RP]

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A Chronology of Economic, Political and Financial Events in China

Date YYMMDD	Event
20021105	Definition of Qualified Foreign Institutional Investor. 1) Funds (at least five years of operating history, more than US$10 billion undermanagement); 2) Insurance companies (at least 30 years of operating history, more than more than US$10 billion under management); 3) Securities firms (at least 30 years of operating history, more than more than US$10 billion under management 4) Commerical banks (total assets ranked in top 100 globally and more than more than US$10 billion under management).[RP]
20021115	Vice-President Hu Jintao is named head of the ruling Communist Party, replacing Jiang Zemin, the outgoing president. Jiang is re-elected head of the influential Central Military Commission, which oversees the armed forces.[IFC]
20021203	China went back on its plan to allow foreign investors into the country's bond market as the registration process for Qualified Foreign Institutional Investors (QFIIs) opened yesterday (2 December). QFIIs allowed to invest in A shares, subject to regulations.[IFC]
20021200	The seven-year Rmb60bn (US$7.25bn) bond sale completed. The bond was oversubscribed by 22 times on generous terms offered by the Ministry of Finance.[WMA]
20030300	National People's Congress elected Hu Jintao as president. He replaced Jiang Zemin, who stepped down after 10 years in the post.[IFC]
20030311	A new rural land reform in China, extending land-use rights to 30 years, should provide a significant boost to the rural economy by encouraging new investment and providing a source of capital.[IFC]
20030300	China and Hong Kong were hit by the pneumonia-like SARS virus, which was thought to have originated in Guangdong province in November 2002. Strict quarantine measures were enforced to stop the disease spreading.[WMA]
20030400	New rules on mergers and acquisitions were issued as China seeks to facilitate M&A activity and boost inward investment.[WMA]
20030527	Two foreign brokers were granted the right to trade in renmimbi denominated securities for the first time, marking a milestone in the development of China's capital market.[IFC]
20030600	Sluice gates on Three Gorges dam closed to allow reservoir to fill up. Construction of $25 billion project displaced almost one million people to make way for world's largest hydroelectric scheme.[BBC]
20030600	China and India reached de facto agreement over status of Tibet and Sikkim in landmark cross-border trade agreement.[IFC]
20030600	Standard and Poors estimates that Chinese banks need US$500bn bail-out.[WMA]
20030700	Some 500,000 people march in Hong Kong against Article 23, a controversial anti-subversion bill. Two key Hong Kong government officials resign. The government shelves the bill.[IFC]
20030800	The Chinese government announced to reduce the size of the country's armed forced by 200,000 by 2005.[IFC]
20030900	Wu Bangguo, the Standing Committee chairman of the National People's Congress (NPC), has confirmed that exchange rate policy would continue to focus on renmimbi (RMB) stability, but asserted that a shift to market-based determination remained the government's ultiimate goal.[IFC]
20031202	Authorities in China Assert No Change in Foreign Exchange Policy
2004010	Ceiling for foreign investment in a Chinese bank was raised from 20% to 25%. Any single foreign bank's share was raised from 15% to 20%.[PW]
20040100	The Chinese government has dipped into its US$400bn foreign exchange reserves in order to recapitalize two of the 'Big Four' state-owned banks, in a move to accelerate reform in the country's ailing financial sector.[WMA]
20040100	The World Bank's private-sector division - the International Finance Corporation (IFC) - has announced that it intends to double its investment in China, up to US$500m by 2006.[IFC]
20040203	The country's State Council has issued new investment guidelines for listed companies, clearing the way for greater capital investment and brokerage opportunities. The plan calls for the establishment of a multi-layered capital market system, consisting of a main board market and a secondary one for venture capital projects and corporate bond/futures products.[WMA]
20040200	The International Finance Corp (IFC) arm of the World Bank confirmed today that it has committed US$2m to the Chinese mortgage market.[IFC]
2004	Qualified foreign institutional investors (QFII) allowed to invest in A shares.[PW]

Table 1

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Date YYMMDD	Event
20040300	The US government has filed its first official suit against China under the auspices of the World Trade Organization (WTO), claiming that a tax on semi-conductors gives domestic exporters unfair advantage. The suit underlines the US's increasingly har line stance over bilateral trade, the iniquities of which are embodied in the US's trade deficit with China, which ballooned to US$124bn in 2003. [WMA]
20040426	Legislators rule out direct elections for Hong Kong leader in 2007. [IFC]
20040516	Liu Mingkang, head of the China Banking Regulatory Commission, said that China's banks should sue the firms and people whose bad debts are destabilizing the banking system. [IFC]
20040601	China's banking regulator has ordered tighter scrutiny of bank lending as part of a government campaign against reckless investment. [IFC]
20040614	China's Premier Wen Jiabao has stressed the need for local officials to implement policies designed to cool down China's overheating economy. [BBC]

Year	Regulations on Foreign Investors
1998	Restrictions: Foreign investors can only hold Class B shares. Investment amounts must be registered separately with each exchange. Holdings of more than 5% of total issued shares of a company must be reported to the People's Bank of China. Taxation: Rules on capital gains tax are being finalized. Dividends are untaxed. 0.30% stamp duty, 0.50% value transaction fee, 0.10% registration fee. $8 per transaction clearing fee with a custodian bank, and 4$ without a custodian bank, $20 depository
1999	Restrictions: Same. All settlements and income receipts are in USD or HKD, without repatriation difficulty Taxation: No capital gains tax. Dividend income is subject to 20% withholding tax applied at the registration company on the portion of dividends above the PBoC's (the central bank) one-year Renmibi certificate of deposit rate for the same period. [B]
2000	Restrictions: Requirements on foreign-exchange balancing and domestic sales ratios were eliminate
2001	Restrictions: Foreign-funded firms who wish to list on the Shanghai and Shenzhen stock exchanges must have operated in China for 3 years, give details of all foreign shareholders with more than 5% of the firm's stock Taxation: 30% national corporate tax, 3% local corporate tax, 33% capital gains tax
2002	Restrictions: 1. Foreign bank branches must have at least US$72.5 million in operating capital, and they will be able to conduct foreign and domestic currency business. Wholly foreign-owned banks and Sino-foreign joint venture banks must maintain a minimum registered capital of US$120.8 million, 60% of which must be held in local currency and 40% in hard currencies. 2. Non-bank financial institutions, wholly foreign-owned and joint venture firms, are required to have a minimum registered capital of US$84.6 million.
2004	Qualified foreign institutional investors (QFII) allowed to invest in A shares with the following conditions: (a) five years of investment experience and 30 years for insurance companies plus they must manage at least $10 billion in assets and no accounting irregularities over the past three years; (b) bank must be in top 100 of assets under management in world; (c) minimum paid up capital for insurance company or a securities firm of $1 billion; (d) maximum ownership of any company listed in Shanghai or Shenzhen stock exchange is 10% and for any company it cannot exceed 20%; (e) QFII must use local banks and local securities firms. Special renminbi accounts must be set up. (f) Closed-end QFII cannot remit capital until three years have passed from initial investment. Other QFII can remit capital after year. Closed-end QFII cannot remit more than 20% of capital at a time and the minimum time between installments is one month. Other QFII also cannot remit more than 20% of the capital at any time. In this case, the minimum time between remittances is three months. [PW]

References

IFC	International Finance Corporation, *Factbook* (various years)
IMF	International Monetary Fund, *Annual Report of Exchange Arrangements and Exchange Restrictions*, 1980-2000
DT	Department of Treasury, *National Treatment Study* .
BD	Utpal Bhattacharya and Hazem Daouk, *The World Price of Insider Trading* , *Journal of Finance* , 2002
GK	Lei Gao and Gerhard Kling, Regulatory Changes and Market Liquidity in Chinese Stock Markets, *Emerging Markets Review* , 2006.

CSRC	China Securities Regulatory Commission website
BNY	Bank of New York website
SP	Standard and Poors website
BBC	British Broadcasting System, UK Edition
WMA	World Market Research Centre, *World Market Analysis*
PW	Eswar Prasad and Shang-Jin Wei, Capital Flows in China, 2005.
RP	Roger Peng, China Releases Temporary Measures for Investment, Morrison and Foerster, November 200
B	Bridge, *The Bridge Handbook of World Stock, Derivative & Commodity Exchanges*, 2000.
WTO	World Trade Organization, http://www.wto.org/English/thewto_e/countries_e/china_e.htm

Table 2

Description of the Variables

All data are employed at the annual frequency.

Variable	Description
Gross domestic product (GDP) and its subcomponents	Real per capita gross domestic product (and its components: consumption, investment, government expenditures, and exports less imports). Available for all countries from 1980 through 2003. Source: *World Bank Development Indicators* CD-ROM.
Capital Stock and Total Factor Productivity (TFP) Growth	We build per capita physical capital stocks over the 1980–2003 period using the method in King and Levine (1994). We derive an initial estimate of the capital stock, assuming each country is at its steady state capital-output ratio at that time. Then, we use the aggregate real investment series and the perpetual inventory method with a depreciation rate of 7% to compute the capital stock in later years. TFP is calculated as the difference between the GDP growth rate and 0.3 times the capital stock growth rate, assuming a capital share of 0.3.
	Measures of Openness
Quinn Capital account openness indicator	Quinn's capital account openness measure is also created from the text of the annual volume published by the International Monetary Fund (IMF), *Exchange Arrangements and Exchange Restrictions.* Rather than the indicator constructed by the IMF that takes a 1 if any restriction is in place, Quinn's openness measure is scored 0-4, in half integer units, with 4 representing a fully open economy. The measure hence facilitates a more nuanced view of capital account openness, and is available for 48 countries in our study. We transform the measure into a 0 to 1 scale.
Official equity market liberalization indicator	Corresponding to a date of formal regulatory change after which foreign investors officially have the opportunity to invest in domestic equity securities. Official Liberalization dates are based on Bekaert and Harvey (2002) *A Chronology of Important Financial, Economic and Political Events in Emerging Markets*, http://www.duke.edu/~charvey/chronology.htm. This chronology is based on over 50 different source materials. A condensed version of the chronology, along with the selection of dates for a number of countries appears in Bekaert and Harvey (2000). We have extended their official liberalization dates to include Japan, New Zealand, and Spain. For the liberalizing countries, the associated official liberalization indicator takes a value of one when the equity market is officially liberalized and thereafter, and zero otherwise. For the remaining countries, fully segmented countries are assumed to have an indicator value of zero, and fully liberalized countries are assumed to have an indicator value of one.
Intensity equity market openness indicator	Following Bekaert (1995) and Edison and Warnock (2003), the intensity measure is based on the ratio of the market capitalization of the constituent firms comprising the IFC Investable index to those that comprise the IFC Global index for each country. The IFC Global index, subject to some exclusion restrictions, is designed to represent the overall market portfolio for each country, whereas the IFC Investable index is designed to represent a portfolio of domestic equities that are available to foreign investors. A ratio of one means that all of the stocks are available to foreign investors. Fully segmented countries have an intensity measure of zero, and fully liberalized countries have an intensity measure of one.
Initial GDP	Logarithm of real per capita gross domestic product in 1980. Available for all countries. Source: *World Bank Development Indicators* CD-ROM.
Log life expectancy	Life expectancy at birth indicates the number of years a newborn infant would live if prevailing patterns of mortality at the time of its birth were to stay the same throughout its life. Available for all countries. Source: *World Bank Development Indicators* CD-ROM.
Population growth	Growth rate of total population which counts all residents regardless of legal status or citizenship. Available for all countries. Source: *World Bank Development Indicators* CD-ROM.
Trade/GDP	The trade dependency ratio is the sum of exports and imports of goods and services measured as a share of gross domestic product. Available for all countries. Source: *World Bank Development Indicators* CD-ROM.
Inflation	Inflation as measured by the log annual growth rate of the gross domestic product implicit deflator. We use the CPI if the GDP-deflator is not available. Available for all countries. Source: *World Bank Development Indicators* CD-ROM.

Table 2
(Continued)

Variable	Description
Private credit/GDP	Private credit divided by gross domestic product. Credit to private sector refers to financial resources provided to the private sector, such as through loans, purchases of non-equity securities, and trade credits and other accounts receivable that establish a claim for repayment. Available for all countries. Source: *World Bank Development Indicators* CD-ROM. We also construct an *adjusted* private credit measure controlling for state ownership of the banking system. We interpolate the state ownership ratios provided by La Porta, Lopez de Silanes and Shleifer (2002) for two years during our sample to the full sample, and create a new measure of banking development as official private credit to GDP times (1- the ratio of state ownership).
Equity market turnover	The ratio of equity market value traded to the market capitalization. The data are available for 50 countries. Source: Standard and Poor's/International Finance Corporation's *Emerging Stock Markets Factbook.*
MCAP/GDP	The ratio of equity market capitalization to gross domestic product. The data are available for 50 countries. Source: Standard and Poor's/International Finance Corporation's *Emerging Stock Markets Factbook.*
Economic risk rating	The value of the the Political Risk Service (PRS) Group's economic risk indicator (which ranges between 0 and 50). The risk rating is a combination of 5 subcomponents: GDP levels and growth, respectively, inflation, balanced budgets, and the current account. The minimum number of points for each component is zero, while the maximum number of points depends on the fixed weight that component is given in the overall economics risk assessment.
Political risk rating	The value of the the Political Risk Service (PRS) Group's political risk indicator (which ranges between 0 and 100). The risk rating is a combination of 12 subcomponents (documented below). Overall, a political risk rating of 0.0% to 49.9% indicates a Very High Risk; 50.0% to 59.9% High Risk; 60.0% to 69.9% Moderate Risk; 70.0% to 79.9% Low Risk; and 80.0% or more Very Low Risk. The data are available for 75 countries from 1984 through 1997. For each country, we backfill the 1984 value to 1980. Source: Various issues of the *International Country Risk Guide.* There are 12 subcomponents to this index. We create four sub-indices: POL1 (Political Conditions), POL2 (Quality of Institutions), POL3 (Socio-economic conditions), and POL4 (Conflict).
Political Conditions	The sum of ICRG subcomponents: Military in Politics and Democratic Accountability
Military in Politics	ICRG political risk sub-component (6% weight). The military is not elected by anyone. Therefore, its involvement in politics, even at a peripheral level, is a diminution of democratic accountability. However, it also has other significant implications. The military might, for example, become involved in government because of an actual or created internal or external threat. Such a situation would imply the distortion of government policy in order to meet this threat, for example by increasing the defense budget at the expense of other budget allocations. In some countries, the threat of military take-over can force an elected government to change policy or cause its replacement by another government more amenable to the military's wishes. A military takeover or threat of a takeover may also represent a high risk if it is an indication that the government is unable to function effectively and that the country therefore has an uneasy environment for foreign businesses. A full-scale military regime poses the greatest risk.
Democratic Accountability	ICRG political risk sub-component (6% weight). This is a measure of how responsive government is to its people, on the basis that the less responsive it is, the more likely it is that the government will fall, peacefully in a democratic society, but possibly violently in a non-democratic one. However, assessing democratic accountability is more complex than simply determining whether the country has free and fair elections. Even democratically elected governments, particularly those that are apparently popular, can delude themselves into thinking they know what is good for their people even when the people have made it abundantly clear that they do not approve particular policies. Therefore, it is possible for an accountable democracy to have a lower score, i.e. a higher risk, for this component than a less democratic form of government.

Table 2
(Continued)

Variable	Description
Quality of Institutions	The sum of ICRG subcomponents: Corruption, Law and Order, and Bureaucratic Quality.
Corruption	ICRG political risk sub-component (6% weight). This is a measure of corruption within the political system. Such corruption: distorts the economic and financial environment, reduces the efficiency of government and business by enabling people to assume positions of power through patronage rather than ability, and introduces an inherent instability into the political process. The most common form of corruption met directly by business is financial corruption in the form of demands for special payments and bribes connected with import and export licenses, exchange controls, tax assessments, police protection, or loans. Although the PRS measure takes such corruption into account, it is more concerned with actual or potential corruption in the form of excessive patronage, nepotism, job reservations, "favor-for-favors," secret party funding, and suspiciously close ties between politics and business. In PRS's view these sorts of corruption pose risk to foreign business, potentially leading to popular discontent, unrealistic and inefficient controls on the state economy, and encourage the development of the black market.
Law and Order	ICRG political risk sub-component (6% weight). PRS assesses Law and Order separately, with each sub-component comprising zero to three points. The Law sub-component is an assessment of the strength and impartiality of the legal system, while the Order sub-component is an assessment of popular observance of the law. Thus, a country can enjoy a high rating (3.0) in terms of its judicial system, but a low rating (1.0) if the law is ignored for a political aim.
Bureaucratic Quality	ICRG political risk sub-component (4% weight). The institutional strength and quality of the bureaucracy can act as a shock absorber that tends to minimize revisions of policy when governments change. Therefore, high points are given to countries where the bureaucracy has the strength and expertise to govern without drastic changes in policy or interruptions in government services. In these low-risk countries, the bureaucracy tends to be somewhat autonomous from political pressure and to have an established mechanism for recruitment and training. Countries that lack the cushioning effect of a strong bureaucracy receive low points because a change in government tends to be traumatic in terms of policy formulation and day-to-day administrative functions.
Socio-economic Conditions	The sum of ICRG subcomponents: Government Stability, Socioeconomic Conditions, and Investment Profile.
Government stability	ICRG political risk sub-component (12% weight). This is a measure both of the government's ability to carry out its declared program(s), and its ability to stay in office. This will depend on the type of governance, the cohesion of the government and governing party or parties, the closeness of the next election, the government's command of the legislature, and popular approval of government policies.
Socioeconomic Conditions	ICRG political risk sub-component (12% weight). This is an attempt to measure general public satisfaction, or dissatisfaction, with the government's economic policies. In general terms, the greater the popular dissatisfaction with a government's policies, the greater the chances that the government will be forced to change direction, possibly to the detriment of business, or will fall. Socioeconomic conditions cover a broad spectrum of factors ranging from infant mortality and medical provision to housing and interest rates. Within this range different factors will have different weight in different societies. PRS attempts to identify those factors that are important for the society in question, i.e. those with the greatest political impact, and assess the country on that basis.
Investment Profile	ICRG political risk sub-component (12% weight). This is a measure of the government's attitude to inward investment. The investment profile is determined by PRS's assessment of three sub-components: (i) risk of expropriation or contract viability; (ii) payment delays; and (iii) repatriation of profits. Each sub-component is scored on a scale from zero [very high risk] to four [very low risk].
Conflict	The sum of ICRG subcomponents: Internal Conflict, External Conflict, Religious Tensions, Ethnic Tensions.
Internal Conflict	ICRG political risk sub-component (12% weight). This is an assessment of political violence in the country and its actual or potential impact on governance. The highest rating is given to those countries where there is no armed opposition to the government and the government does not indulge in arbitrary violence, direct or indirect, against its own people. The lowest rating is given to a country embroiled in an on-going civil war. The intermediate ratings are awarded on the basis of whether the threat posed is to government and business or only business (e.g. kidnapping for ransom); whether acts of violence are carried out for a political objective (i.e. terrorist operations); whether such groups are composed of a few individuals with little support, or are well-organized movements operating with the tacit support of the people they purport to represent; whether acts of violence are sporadic or sustained; and whether they are restricted to a particular locality or region, or are carried out nationwide.

Table 2
(Continued)

Variable	Description
External Conflict	ICRG political risk sub-component (12% weight). The external conflict measure is an assessment of the risk to both the incumbent government and inward investment. It ranges from trade restrictions and embargoes, whether imposed by a single country, a group of countries, or the whole international community, through geopolitical disputes, armed threats, exchanges of fire on borders, border incursions, foreign-supported insurgency, and full-scale warfare.
Religion in Politics	ICRG political risk sub-component (6% weight). Religious tensions may stem from the domination of society and/or governance by a single religious group that seeks to replace civil law by religious law and to exclude other religions from the political and/or social process; the desire of a single religious group to dominate governance; the suppression of religious freedom; the desire of a religious group to express its own identity, separate from the country as a whole. The risk involved in these situations range from inexperienced people imposing inappropriate policies through civil dissent to civil war.
Ethnic Tensions	ICRG political risk sub-component (6% weight). This component measures the degree of tension within a country attributable to racial, nationality, or language divisions. Lower ratings are given to countries where racial and nationality tensions are high because opposing groups are intolerant and unwilling to compromise. Higher ratings are given to countries where tensions are minimal, even though such differences may still exist.
BERI measures on Privatization, Credit Market and Financial Openness.	Three indices collected from Business Environment Risk Intelligence (BERI). Privatization measures the degree of privatization within each country. The Credit Market index reflects the stability and operating climate of the short-term credit, long-term loans and venture capital markets. Finally, the Financial Openness index reflects the legal framework surrounding remittances and the repatriation of capital with attention to both how the laws are formally written and the actual practices within each country. For each index, a larger number denotes an improvement.
Social Security Index	From Botero, Djankov, La Porta, Lopez-de-Silanes, and Shleifer (2002), measures social security benefits: (i) old age, disability and death benefits; (ii) sickness and health benefits; and (iii) unemployment benefits. The first group covers the risk of old age, disability and death: months of contributions or employment required for normal retirement by law; percentage of the worker's monthly salary deducted by law to cover old-age and disability benefits; and percentage of the pre-retirement salary covered by the old-age cash-benefit pension. The second group covers the risk of sickness: months of contributions or employment required to qualify for sickness benefits by law; percentage of the worker's monthly salary deducted by law to cover sickness and health benefits; waiting period for sickness benefits; and percentage of the salary covered by sickness cash benefits for a two-month sickness spell. The final group covers the risk of unemployment: months of contributions or employment required to qualify for unemployment benefits by law; percentage of the worker's monthly salary deducted by law to cover unemployment benefits; waiting period for unemployment benefits; and percentage of the salary covered by unemployment benefits in case of a one-year unemployment spell. Each subgroup is quantitavely scored, and summed to create the overall index.
Foreign Debt Index	ICRG financial risk sub-component. The contructed index reflects the estimated gross foreign debt in a given year as a percentage of the GDP. The risk points are then assigned so that lower levels of foreign debt denote a higher index level.
Gross FDI/GDP	Gross foreign direct investment is the sum of the absolute values of inflows and outflows of foreign direct investment recorded in the balance of payments financial account. It includes equity capital, reinvestment of earnings, other long-term capital, and short-term capital. The indicator is calculated as a ratio to GDP.

Table 3

Summary Statistics

Panel A: Average (1981-2003)	Consumption Growth	Consumption Growth Standard Deviation	GDP Growth	GDP Growth Standard Deviation
Developed Countries	0.019	0.025	0.020	0.022
Developing Countries	0.009	0.079	0.009	0.050
Africa	0.003	0.090	0.003	0.057
Asia	0.029	0.046	0.030	0.037
Latin America	0.003	0.071	0.001	0.045
China	**0.070**	**0.044**	**0.078**	**0.027**

	Trade/GDP	Private Credit/GDP	Mcap/GDP	Turnover	Official Equity Liberalization	Equity Openness Intensity	Capital Account Openness (Quinn)
Developed Countries	0.600	0.864	0.599	0.509	0.954	0.929	0.855
Developing Countries	0.590	0.326	0.253	0.304	0.267	0.117	0.480
Africa	0.636	0.267	0.289	0.139	0.150	0.033	0.430
Asia	0.486	0.617	0.420	0.499	0.588	0.374	0.511
Latin America	0.418	0.284	0.179	0.225	0.312	0.233	0.564
China	**0.354**	**0.923**	**0.235**	**1.477**	**0.565**	**0.078**	**0.326**

	Political Risk (Composite)	Political Conditions	Quality of Institutions	Socio-economic Conditions	Conflict Risk	Investment Profile
Developed Countries	0.835	0.963	0.923	0.649	0.939	0.675
Developing Countries	0.550	0.520	0.491	0.482	0.699	0.533
Africa	0.532	0.478	0.485	0.480	0.656	0.518
Asia	0.628	0.629	0.610	0.556	0.746	0.583
Latin America	0.553	0.524	0.469	0.446	0.741	0.496
China	**0.658**	**0.440**	**0.571**	**0.612**	**0.815**	**0.707**

Panel B: Most Recent Data (2000-2003)	Consumption Growth	Consumption Growth Standard Deviation	GDP Growth	GDP Growth Standard Deviation
Developed Countries	0.016	0.020	0.016	0.015
Developing Countries	0.004	0.058	0.011	0.027
Africa	-0.009	0.070	0.007	0.026
Asia	0.028	0.048	0.024	0.033
Latin America	-0.004	0.043	-0.004	0.028
China	**0.036**	**0.033**	**0.073**	**0.007**

	Trade/GDP	Private Credit/GDP	Mcap/GDP	Turnover	Official Equity Liberalization	Equity Openness Intensity	Capital Account Openness (Quinn)
Developed Countries	0.746	1.022	1.322	0.832	1.000	0.952	0.923
Developing Countries	0.765	0.366	0.332	0.480	0.493	0.252	0.650
Africa	0.757	0.267	0.316	0.161	0.342	0.123	0.534
Asia	0.716	0.760	0.479	0.996	0.875	0.585	0.617
Latin America	0.532	0.295	0.258	0.126	0.571	0.419	0.821
China	**0.546**	**1.333**	**0.457**	**1.022**	**1.000**	**0.349**	**0.375**

	Political Risk (Composite)	Political Conditions	Quality of Institutions	Socio-economic Conditions	Conflict Risk	Investment Profile
Developed Countries	0.869	0.956	0.908	0.738	0.952	0.754
Developing Countries	0.664	0.546	0.534	0.630	0.793	0.692
Africa	0.631	0.476	0.496	0.625	0.750	0.664
Asia	0.703	0.590	0.670	0.648	0.834	0.680
Latin America	0.663	0.589	0.509	0.601	0.817	0.685
China	**0.658**	**0.281**	**0.469**	**0.688**	**0.826**	**0.917**

We explore averages of trade/gdp, private credit/gdp, market capitalization/gdp, equity market turnover, the official liberalization indicator, Quinn's capital account liberalization indicator, and political risk index (and various subgroups). For the political risk indices, higher numbers denote better conditions. Political conditions reflect the role of the military in politics and democratic accountability. Quality of institutions reflects law and order, corruption, and bureaucratic quality. The third group reflects government stability, socio-economic conditions, and the investment profile for the country (which we also consider separately). Finally, conflict risk reflects both internal and external conflict and religious and ethnic tensions. We also present evidence for consumption and GDP growth and standard deviations. The averages are reported for several country groups: developed, developing, africa, asia, and latin america (as described by the World Bank). In panel A, we report full sample averages, whereas we report only the most recent data in panel B. We also report the associated numbers for China.

Table 4

Growth Predictability

Annual Average Real Consumption and GDP Growth in excess of the World (Five-year horizon)

1980-2003

	Official Equity Market Liberalization				Equity Market Openness				Capital Account Openness (Quinn)			
	Consumption Growth		GDP Growth		Consumption Growth		GDP Growth		Consumption Growth		GDP Growth	
Panel A	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error
Constant	-0.0066	0.0020	-0.0057	0.0019	-0.0063	0.0022	-0.0060	0.0023	-0.0042	0.0017	-0.0064	0.0019
Initial GDP	-0.0070	0.0015	-0.0108	0.0009	-0.0072	0.0016	-0.0112	0.0009	-0.0100	0.0015	-0.0147	0.0010
Secondary School	0.0031	0.0037	0.0113	0.0050	0.0032	0.0038	0.0107	0.0047	0.0088	0.0043	0.0198	0.0043
Log(Life Expectancy)	0.0784	0.0123	0.0934	0.0126	0.0806	0.0127	0.0963	0.0123	0.0809	0.0141	0.0976	0.0133
Population Growth	-0.1437	0.0878	-0.2562	0.1072	-0.1623	0.0856	-0.2593	0.1068	-0.3107	0.0879	-0.4186	0.0913
Trade/GDP	0.0073	0.0023	0.0070	0.0017	0.0073	0.0024	0.0074	0.0017	0.0034	0.0020	0.0049	0.0015
Private Credit/GDP	0.0032	0.0027	0.0044	0.0026	0.0035	0.0028	0.0044	0.0029	0.0075	0.0025	0.0062	0.0026
Financial Openness	0.0073	0.0021	0.0063	0.0029	0.0057	0.0022	0.0067	0.0028	0.0133	0.0037	0.0188	0.0037
R^2	0.140		0.225		0.136		0.223		0.154		0.278	

The dependent variable is the overlapping 5-year average growth rate of either real per capita consumption or gross domestic product in excess of the corresponding world growth rate. Initial GDP is the log real per capita GDP level updated every 5 years (1980, 1985, 1990, 2000). Secondary School is the enrollment percentage for that level; Log(Life Expectancy) is the log life expectancy of the total population; Population Growth is the growth rate of total population; Trade/GDP is the ratio of export plus imports to GDP; Private Credit/GDP is the ratio of private credit to GDP. The control variables are all in excess of the world. We report the coefficient on one of three openness indicators (also in excess of the world): the Official Equity Liberalization indicator that takes a value of one when the equity market is liberalized; the Equity Liberalization Intensity measure is the ratio of IFC Investables to Global market capitalization; or the Capital Account Openness (Quinn) indicator that takes a value between 0 and 1 depending upon the intensity of the reported capital account restrictions. The first two sets of regressions includes 96 countries, whereas the last includes 77 countries. All standard errors provide a correction for the overlapping

Table 4 (con't)

China's Experience: Decomposing the Growth Regression

Annual Average Real Consumption and GDP Growth (Five-year horizon)

1980-2003

Panel B	Excess Consumption Growth (5-year)	Initial GDP	Secondary School	Log(Life Expectancy)	Population Growth	Trade/GDP	Private Credit/GDP	Offical Equity Liberalization	Predicted Excess Growth
Developed Countries	0.495%	-1.035%	0.143%	1.289%	0.132%	0.162%	0.132%	0.392%	0.555%
Developing Countries	-0.614%	0.934%	-0.034%	-0.589%	-0.090%	0.201%	-0.037%	-0.110%	-0.384%
Africa	-1.312%	1.206%	-0.065%	-1.397%	-0.163%	0.223%	-0.055%	-0.190%	-1.099%
Asia	1.300%	0.696%	0.015%	0.217%	-0.018%	0.108%	0.055%	0.131%	0.545%
Latin America	-1.050%	0.496%	-0.019%	0.200%	-0.060%	0.034%	-0.050%	-0.071%	-0.130%
China	**5.950%**	**1.742%**	**-0.017%**	**0.449%**	**0.049%**	**-0.048%**	**0.151%**	**0.108%**	**1.774%**
Temporal Dimension									
China - 1980		2.203%	-0.020%	0.499%	0.069%	-0.166%	-0.085%	-0.129%	**1.710%**
China - 2003		1.269%	-0.010%	0.461%	0.079%	0.052%	0.026%	0.289%	**1.505%**

	Excess Consumption Growth (5-year)	Initial GDP	Secondary School	Log(Life Expectancy)	Population Growth	Trade/GDP	Private Credit/GDP	Capital Account Openness (Quinn)	Predicted Excess Growth
Developed Countries	0.495%	-1.479%	0.403%	1.331%	0.284%	0.075%	0.317%	0.362%	0.871%
Developing Countries	-0.614%	1.335%	-0.095%	-0.608%	-0.194%	0.093%	-0.089%	-0.136%	-0.115%
Africa	-1.312%	1.723%	-0.182%	-1.442%	-0.352%	0.104%	-0.131%	-0.193%	-0.895%
Asia	1.300%	0.994%	0.042%	0.224%	-0.038%	0.050%	0.132%	-0.085%	0.899%
Latin America	-1.050%	0.709%	-0.054%	0.206%	-0.130%	0.016%	-0.118%	-0.015%	0.191%
China	**5.950%**	**2.489%**	**-0.049%**	**0.464%**	**0.106%**	**-0.022%**	**0.361%**	**-0.339%**	**2.588%**
Temporal Dimension									
China - 1980		3.147%	-0.056%	0.515%	0.150%	-0.077%	-0.204%	-0.676%	**2.377%**
China - 2003		1.813%	-0.030%	0.475%	0.171%	0.024%	0.062%	-0.463%	**1.631%**

This table reports the decomposition of the first and third regressions in Panel A, where the dependent variable is the overlapping 5-year average growth rate of real per capita consumption in excess of the corresponding world growth rate. This table shows the case for the official equity liberalization and capital account openness (Quinn) indicators. The values are reported for several country groups: Developed, Developing, Africa, Asia, and Latin America (as described by the World Bank). We also report the associated numbers for China, including the comparison of predicted growth across the sample from 1980-2003. Each entry shows the average for that country group multiplied by the coefficient reported in Panel A.

Table 5

Decomposing the Growth Predictability and Political Risk

Annual average real consumption and GDP growth in excess of the world (five-year horizon) 1980-2003

Panel A

Official Equity Market Liberalization

	Political Risk (composite)	Political Conditions	Quality of Institutions	Socio-economic Conditions	Conflict	Investment Profile
Coefficient Estimate	0.040	0.008	0.014	0.051	0.013	0.046
Standard Error	0.012	0.006	0.007	0.010	0.008	0.009

		Predicted Excess Growth		Predicted Excess Growth		Predicted Excess Growth		Predicted Excess Growth		Predicted Excess Growth		Predicted Excess Growth	
	Excess Consumption Growth (5-year)	Total	Contribution	Total	Contribution	Total	Contribution	Total	Contribution	Total	Contribution	Total	Contribution
Developed Countries	0.495%	0.602%	0.863%	0.600%	0.258%	0.555%	0.469%	0.498%	0.644%	0.604%	0.238%	0.435%	0.488%
Developing Countries	-0.614%	-0.559%	-0.279%	-0.451%	-0.083%	-0.500%	-0.152%	-0.598%	-0.208%	-0.409%	-0.077%	-0.523%	-0.158%
Africa	-1.312%	-1.235%	-0.352%	-1.186%	-0.116%	-1.201%	-0.159%	-1.225%	-0.221%	-1.172%	-0.131%	-1.210%	-0.206%
Asia	1.300%	0.444%	0.036%	0.507%	0.006%	0.479%	0.020%	0.444%	0.167%	0.551%	-0.011%	0.445%	0.108%
Latin America	-1.050%	-0.389%	-0.270%	-0.191%	-0.082%	-0.300%	-0.182%	-0.574%	-0.398%	-0.111%	-0.017%	-0.448%	-0.315%
China	**5.950%**	**2.105%**	**0.165%**	**1.749%**	**-0.099%**	**1.894%**	**-0.035%**	**2.006%**	**0.358%**	**2.048%**	**0.075%**	**2.379%**	**0.647%**

Panel B

Capital Account Openness (Quinn)

	Political Risk (composite)	Political Conditions	Quality of Institutions	Socio-economic Conditions	Conflict	Investment Profile
Coefficient Estimate	0.043	0.018	0.021	0.044	0.013	0.038
Standard Error	0.012	0.006	0.007	0.010	0.007	0.009

		Predicted Excess Growth		Predicted Excess Growth		Predicted Excess Growth		Predicted Excess Growth		Predicted Excess Growth		Predicted Excess Growth	
	Excess Consumption Growth (5-year)	Total	Contribution	Total	Contribution	Total	Contribution	Total	Contribution	Total	Contribution	Total	Contribution
Developed Countries	0.495%	1.053%	0.930%	1.194%	0.591%	1.069%	0.685%	0.980%	0.557%	1.191%	0.241%	0.912%	0.407%
Developing Countries	-0.614%	-0.390%	-0.301%	-0.261%	-0.191%	-0.361%	-0.221%	-0.453%	-0.180%	-0.223%	-0.078%	-0.366%	-0.131%
Africa	-1.312%	-1.161%	-0.379%	-1.116%	-0.266%	-1.158%	-0.232%	-1.225%	-0.192%	-1.138%	-0.133%	-1.185%	-0.172%
Asia	1.300%	0.986%	0.039%	1.147%	0.015%	1.051%	0.029%	0.963%	0.145%	1.172%	-0.012%	0.961%	0.090%
Latin America	-1.050%	-0.272%	-0.291%	-0.093%	-0.188%	-0.233%	-0.266%	-0.419%	-0.345%	0.047%	-0.018%	-0.283%	-0.263%
China	**5.950%**	**3.317%**	**0.178%**	**3.096%**	**-0.228%**	**3.193%**	**-0.052%**	**3.086%**	**0.310%**	**3.373%**	**0.076%**	**3.383%**	**0.539%**

This table reports the decomposition of the regressions, where the dependent variable is the overlapping 5-year average growth rate of real per capita consumption in excess of the corresponding world growth rate. The regressions have the same controls as employed in Table 4, but add separately one-by-one Political Risk, Political Conditions, Quality of Institutions, Socio-economic Conditions, Conflict, and Investment Profile indices. For each case, we report the associated prediction for excess consumption growth and the contribution from the added variable (along with the estimate coefficient and standard error for the added variable). This table shows the case for the official equity liberalization indicator (Panel A) covering 86 countries and capital account openness (Quinn) (Panel B) covering 72 countries. The values are reported for several country groups: developed, developing, africa, asia, and latin america (as described by the World Bank). We also report the associated numbers for China, including the comparison of predicted growth across the sample from 1980-2003.

Table 6

Other Growth Determinants: Privatization, Financial Development, and Financial Openness

Annual Average Real Consumption and GDP Growth in excess of the World (Five-year horizon)

1980-2003

44 countries	Consumption Growth		GDP Growth	
	Estimate	Standard Error	Estimate	Standard Error
Constant	-0.0096	0.0024	-0.0098	0.0012
Initial GDP	-0.0161	0.0016	-0.0215	0.0010
Secondary School	0.0080	0.0044	0.0148	0.0053
Log(Life Expectancy)	0.1408	0.0162	0.1644	0.0151
Population Growth	-0.4124	0.1142	-0.5434	0.1308
Trade/GDP	-0.0028	0.0024	0.0011	0.0023
Privatization (BERI)	**0.0213**	**0.0109**	**0.0353**	**0.0062**
Credit Market (BERI)	**0.0045**	**0.0098**	**-0.0001**	**0.0081**
Openness (BERI)	**0.0196**	**0.0046**	**0.0184**	**0.0045**
R^2	0.247		0.352	

	Predicted Excess Consumption Growth				
	Actual Growth	Total	Privatization Contribution	Credit Market Contribution	Openness Contribution
Developed Countries	0.561%	0.411%	0.327%	0.081%	0.341%
Developing Countries	-0.034%	-0.647%	-0.130%	-0.040%	-0.187%
Africa	-1.147%	-1.706%	-0.082%	-0.024%	-0.183%
Asia	1.623%	1.198%	0.061%	0.013%	0.148%
Latin America	-0.729%	-0.268%	-0.170%	-0.074%	-0.330%
China	**5.950%**	**3.318%**	**-0.328%**	**-0.033%**	**-0.285%**

53 countries	Consumption Growth		GDP Growth	
	Estimate	Standard Error	Estimate	Standard Error
Constant	-0.0058	0.0021	-0.0031	0.0020
Initial GDP	-0.0165	0.0010	-0.0180	0.0010
Secondary School	0.0132	0.0039	0.0154	0.0039
Log(Life Expectancy)	0.1185	0.0108	0.1136	0.0148
Population Growth	-0.3942	0.1179	-0.3707	0.1222
Trade/GDP	-0.0031	0.0022	0.0027	0.0017
Private Credit/GDP	0.0092	0.0025	0.0118	0.0026
Financial Openness (Quinn)	0.0158	0.0033	0.0174	0.0036
Social Security	**0.0151**	**0.0032**	**0.0189**	**0.0039**
R^2	0.210		0.226	

	Predicted Excess Consumption Growth		
	Actual Growth	Total	Social Security Contribution
Developed Countries	0.522%	1.487%	0.858%
Developing Countries	0.100%	-0.446%	-0.440%
Africa	-0.866%	-1.980%	-0.933%
Asia	1.558%	1.169%	-0.252%
Latin America	-0.474%	0.798%	0.328%
China	**5.950%**	**5.041%**	**0.706%**

51 countries	Consumption Growth		GDP Growth	
	Estimate	Standard Error	Estimate	Standard Error
Constant	-0.0061	0.0021	-0.0049	0.0018
Initial GDP	-0.0165	0.0011	-0.0191	0.0012
Secondary School	0.0150	0.0041	0.0184	0.0045
Log(Life Expectancy)	0.1156	0.0138	0.1262	0.0139
Population Growth	-0.4488	0.1464	-0.4466	0.1348
Trade/GDP	-0.0078	0.0023	-0.0043	0.0020
Private Credit/GDP	0.0044	0.0031	0.0056	0.0030
Financial Openness (Quinn)	0.0218	0.0039	0.0259	0.0040
Mcap	**0.0027**	**0.0031**	**0.0034**	**0.0028**
R^2	0.230		0.280	

	Predicted Excess Consumption Growth		
	Actual Growth	Total	Mcap Contribution
Developed Countries	0.522%	0.475%	0.435%
Developing Countries	0.045%	-0.296%	-0.283%
Africa	-1.029%	-1.189%	-0.186%
Asia	1.435%	1.393%	0.081%
Latin America	-0.573%	0.065%	-0.401%
China	**5.950%**	**3.753%**	**-0.664%**

51 countries	Consumption Growth		GDP Growth	
	Estimate	Standard Error	Estimate	Standard Error
Constant	-0.0062	0.0018	-0.0051	0.0015
Initial GDP	-0.0162	0.0011	-0.0188	0.0014
Secondary School	0.0150	0.0039	0.0187	0.0041
Log(Life Expectancy)	0.1110	0.0141	0.1209	0.0144
Population Growth	-0.4005	0.1250	-0.3748	0.1195
Trade/GDP	-0.0061	0.0025	-0.0022	0.0021
Private Credit/GDP	0.0041	0.0022	0.0053	0.0021
Financial Openness (Quinn)	0.0208	0.0039	0.0251	0.0043
Turnover	**0.0113**	**0.0025**	**0.0135**	**0.0030**
R^2	0.252		0.313	

	Predicted Excess Consumption Growth		
	Actual Growth	Total	Turnover Contribution
Developed Countries	0.522%	0.444%	0.228%
Developing Countries	0.045%	-0.185%	-0.147%
Africa	-1.029%	-1.520%	-0.522%
Asia	1.435%	1.473%	0.244%
Latin America	-0.573%	0.166%	-0.279%
China	**5.950%**	**4.888%**	**0.847%**

The dependent variable is the overlapping 5-year average growth rate of either real per capita consumption or gross domestic product in excess of the corresponding world growth rate. Initial GDP is the log real per capita GDP level updated every 5 years (1980, 1985, 1990, 2000). Secondary School is the enrollment percentage for that level; Log(Life Expectancy) is the log life expectancy of the total population; Population Growth is the growth rate of total population; Trade/GDP is the ratio of export plus imports to GDP; Private Credit/GDP is the ratio of private credit to GDP. The control variables are all in excess of the world. The first regression includes three indices reflecting the level of privatization, credit market quality, and financial openness provided by BERI. The second regression includes an index of the quality of the social security system. The last two regressions also include measures of equity market size (MCAP/GDP) and equity market turnover (Turnover). These regression also include the Quinn capital account openness indicator. Finally, for a collection of geographical regions and China, we report the contribution towards predicted excess consumption growth provided by each of these additional explanatory variables, total predicted excess growth from the regression, and actual excess growth.

Table 7

The Impact of FDI and Foreign Debt

Annual Average Real Consumption and GDP Growth (Five-year horizon)

1980-2003

Capital Account Openness (Quinn, 72 countries)

	Consumption Growth		GDP Growth	
	Estimate	Standard Error	Estimate	Standard Error
Constant	-0.007861	0.002087	-0.010309	0.001787
Initial GDP	-0.0109	0.0015	-0.0156	0.0010
Secondary School	0.0016	0.0041	0.0149	0.0046
Log(Life Expectancy)	0.0785	0.0140	0.0986	0.0122
Population Growth	-0.4177	0.1052	-0.4311	0.0865
Trade/GDP	0.0022	0.0024	0.0046	0.0020
Private Credit/GDP	0.0018	0.0031	0.0009	0.0023
Foreign Debt Index	**0.0381**	**0.0091**	**0.0382**	**0.0077**
Financial Openness	**0.0053**	**0.0044**	**0.0089**	**0.0040**
R^2	0.197		0.330	

Average	Foreign Debt Index (1981-2003)	Foreign Debt Index (2000-2003)
Developed Countries	0.850	0.787
Developing Countries	0.519	0.510
Africa	0.490	0.458
Asia	0.657	0.592
Latin America	0.501	0.545
China	**0.711**	**0.900**

Capital Account Openness (Quinn, 49 countries)

	Consumption Growth		GDP Growth	
	Estimate	Standard Error	Estimate	Standard Error
Constant	-0.009448	0.00245	-0.007559	0.001886
Initial GDP	-0.0164	0.0011	-0.0191	0.0012
Secondary School	0.0107	0.0040	0.0160	0.0044
Log(Life Expectancy)	0.1079	0.0146	0.1201	0.0146
Population Growth	-0.4439	0.1373	-0.4061	0.1213
Private Credit/GDP	0.0023	0.0028	0.0041	0.0024
Gross FDI/GDP	**0.0541**	**0.0255**	**0.0487**	**0.0199**
Foreign Debt Index	**0.0256**	**0.0097**	**0.0236**	**0.0085**
Financial Openness	**0.0136**	**0.0048**	**0.0186**	**0.0051**
R^2	0.239		0.293	

Average	Gross FDI/GDP (1981-2003)	Gross FDI/GDP (2000-2003)
Developed Countries	0.060	0.134
Developing Countries	0.022	0.036
Africa	0.016	0.030
Asia	0.031	0.043
Latin America	0.026	0.052
China	**0.030**	**0.046**

	Excess Consumption Growth (5-year)	Initial GDP	Secondary School	Log(Life Expect)	Population Growth	Private Credit/GDP	Gross FDI/GDP	Foreign Debt Index	Capital Account Openness (Quinn)	Predicted Excess Growth
Developed Countries	0.522%	-2.402%	0.487%	1.775%	0.421%	0.096%	0.157%	0.663%	0.404%	0.655%
Developing Countries	0.045%	1.624%	-0.014%	0.014%	-0.170%	-0.027%	-0.050%	-0.091%	-0.169%	0.173%
Africa	-1.029%	2.105%	-0.084%	-0.967%	-0.490%	-0.039%	-0.072%	-0.222%	-0.252%	-0.966%
Asia	1.435%	1.386%	0.075%	0.461%	-0.049%	0.040%	0.005%	0.146%	-0.049%	1.070%
Latin America	-0.573%	0.224%	0.000%	0.854%	-0.105%	-0.036%	-0.019%	-0.039%	-0.100%	-0.166%
China	**5.950%**	**4.072%**	**-0.060%**	**0.621%**	**0.151%**	**0.109%**	**-0.005%**	**0.260%**	**0.062%**	**4.264%**
Temporal Dimension										
China - 1980		**5.148%**	**-0.069%**	**0.687%**	**0.214%**	**-0.061%**	**-0.061%**	**0.211%**	**-0.694%**	**4.432%**
China - 2003		**2.966%**	**-0.036%**	**0.619%**	**0.225%**	**-0.012%**	**-0.065%**	**0.834%**	**-0.475%**	**3.110%**

The dependent variable is the overlapping 5-year average growth rate of either real per capita consumption or gross domestic product in excess of the corresponding world growth rate. Initial GDP is the log real per capita GDP level updated every 5 years (1980, 1985, 1990, 2000). Secondary School is the enrollment percentage for that level; Log(Life Expectancy) is the log life expectancy of the total population; Population Growth is the growth rate of total population; Trade/GDP is the ratio of export plus imports to GDP; Private Credit/GDP is the ratio of private credit to GDP. The control variables are all in excess of the world. The first regression includes an index reflecting the reliance on foreign debt. The second regression includes the foreign debt index and the gross level of foreign direct investment relative to GDP. These regression also include the Quinn capital account openness indicator. We report a geographical breakdown of the Foreign Debt Index and the ratio of gross FDI to GDP. Finally, for a collection of geographical regions and China, we report the growth decomposition detailing the contribution of each variable towards predicted excess growth.

Table 8

Growth, Investment, and Total Factor Productivity

	GDP Growth	Consumption Growth	Investment/GDP	Capital Stock Growth	Total Factor Productivity Growth
Developed Countries	0.020	0.019	0.225	0.021	0.014
Developing Countries	0.009	0.009	0.216	0.019	0.003
Africa	0.003	0.003	0.204	0.012	-0.001
Asia	0.030	0.029	0.260	0.042	0.018
Asia (Young adjusted)					0.017
Latin America	0.001	0.003	0.203	0.015	-0.004
China	**0.078**	**0.070**	**0.375**	**0.087**	**0.052**
China (Young adjusted)	**0.051**	**0.061**		**0.079**	**0.020**

We explore averages of real per capita GDP growth (US$), real per capita consumption growth (US$), the investment/GDP ratio, capital stock growth, and total factor productivity growth. The averages are reported for several country groups: developed, developing, Africa, Asia, and Latin America (as described by the World Bank). We also report the associated numbers for China, both official and Young (2003) adjusted data.

Table 9

Growth Predictability including Investment

Annual Average Real Consumption and GDP Growth in excess of the World (Five-year horizon)

1980-2003

Panel A:

	Official Equity Market Liberalization				Equity Market Openness				Capital Account Openness (Quinn)			
	Consumption Growth		GDP Growth		Consumption Growth		GDP Growth		Consumption Growth		GDP Growth	
	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error
Constant	-0.0066	0.0020	-0.0059	0.0019	-0.0065	0.0022	-0.0063	0.0023	-0.0057	0.0017	-0.0073	0.0017
Initial GDP	-0.0059	0.0016	-0.0102	0.0010	-0.0060	0.0017	-0.0105	0.0011	-0.0089	0.0014	-0.0140	0.0010
Secondary School	0.0036	0.0038	0.0120	0.0049	0.0033	0.0039	0.0113	0.0047	0.0085	0.0043	0.0197	0.0045
Log(Life Expectancy)	0.0667	0.0130	0.0875	0.0127	0.0683	0.0134	0.0899	0.0126	0.0666	0.0152	0.0882	0.0138
Population Growth	-0.1740	0.0819	-0.2561	0.1086	-0.1884	0.0807	-0.2578	0.1083	-0.3811	0.0907	-0.4679	0.0994
Trade/GDP	0.0037	0.0024	0.0049	0.0017	0.0036	0.0025	0.0053	0.0019	0.0002	0.0020	0.0029	0.0018
Private Credit/GDP	0.0001	0.0031	0.0026	0.0026	0.0001	0.0031	0.0024	0.0028	0.0020	0.0029	0.0029	0.0022
Investment/GDP	0.0546	0.0178	0.0334	0.0163	0.0575	0.0177	0.0358	0.0167	0.0803	0.0222	0.0547	0.0213
Financial Openness	0.0061	0.0020	0.0056	0.0027	0.0053	0.0023	0.0064	0.0028	0.0150	0.0035	0.0199	0.0036
R^2	0.154		0.233		0.152		0.233		0.183		0.293	

Panel B:

	Predicted Excess Growth		Predicted Excess Growth		Predicted Excess Growth	
	Total	Contribution	Total	Contribution	Total	Contribution
Developed Countries	0.307%	0.000%	0.136%	0.000%	0.453%	0.000%
Developing Countries	-0.566%	-0.055%	-0.531%	-0.058%	-0.471%	-0.081%
Africa	-1.264%	-0.113%	-1.204%	-0.119%	-1.254%	-0.167%
Asia	0.455%	0.182%	0.338%	0.191%	0.698%	0.267%
Latin America	-0.335%	-0.127%	-0.276%	-0.133%	-0.218%	-0.186%
China	**2.084%**	**0.787%**	**1.950%**	**0.829%**	**2.968%**	**1.156%**

In Panel A, the dependent variable is the overlapping 5-year average growth rate of either real per capita consumption or gross domestic product in excess of the corresponding world growth rate. Initial GDP is the log real per capita GDP level updated every 5 years (1980, 1985, 1990, 2000). Secondary School is the enrollment percentage for that level; Log(Life Expectancy) is the log life expectancy of the total population; Population Growth is the growth rate of total population; Trade/GDP is the ratio of export plus imports to GDP; Private Credit/GDP is the ratio of private credit to GDP, and Investment/GDP represented the ratio of Investment to GDP. The control variables are all in excess of the world. We report the coefficient on one of three openness indicators (also in excess of the world): the Official Equity Liberalization indicator that takes a value of one when the equity market is liberalized; the Equity Liberalization Intensity measure is the ratio of IFC Investables to Global market capitalization; or the Capital Account Liberalization (Quinn) indicator that takes a value between 0 and 1 depending upon the intensity of the reported capital account restrictions. The first two sets of regressions includes 96 countries, whereas the last includes 77 countries.

Panel B reports the decomposition of the consumption growth regressions in Panel A, where the dependent variable is the overlapping 5-year average growth rate of real per capita consumption in excess of the corresponding world growth rate. The values are reported for several country groups: developed, developing, africa, asia, and latin america (as described by the World Bank). We also report the associated numbers for China. Each entry shows the average for that country group multiplied by the coefficient reported in Panel A. All standard errors provide a correction for the overlapping nature of the data.

Table 10

Growth Predictability (Young adjusted Chinese GDP data)

Annual Average Real GDP Growth in excess of the World (Five-year horizon)
63 countries
1980-2003

A. Benchmark regression

	Consumption Growth		GDP Growth	
	Estimate	Standard Error	Estimate	Standard Error
Constant	-0.0069	0.0015	-0.0101	0.0016
Initial GDP	-0.0100	0.0017	-0.0165	0.0016
Secondary School	0.0042	0.0048	0.0159	0.0050
Log(Life Expectancy)	0.0645	0.0173	0.0996	0.0166
Population Growth	-0.6341	0.1180	-0.5657	0.1096
Private Credit/GDP (adjusted)	0.0005	0.0026	0.0049	0.0022
Investment/GDP	0.0643	0.0208	0.0143	0.0243
Political Risk (composite)	0.0217	0.0109	0.0332	0.0089
Financial Openness (Quinn)	0.0070	0.0037	0.0119	0.0038
R^2	0.189		0.278	

The dependent variable is the overlapping 5-year average growth rate of either real per capita consumption or gross domestic product in excess of the corresponding world growth rate. Per capita consumption and GDP growth for China are adjusted following Young (2003). Initial GDP is the log real per capita GDP level updated every 5 years (1980, 1985, 1990, 2000). Secondary School is the enrollment percentage for that level; Log(Life Expectancy) is the log life expectancy of the total population; Population Growth is the growth rate of total population; Private Credit/GDP (adjusted) is the ratio of private credit to GDP adjusted for state ownership; Investment/GDP represented the ratio of Investment to GDP; and Political Risk is the ICRG composite political risk index. The control variables are all in excess of the world. We also report the coefficient on the the Capital Account Openness (Quinn) indicator that takes a value between 0 and 1 (also in excess of the world) depending upon the intensity of the reported capital account restrictions. All standard errors provide a correction for the overlapping nature of the data.

Table 10

Growth Predictability (Young adjusted Chinese GDP data)

Annual Average Real GDP Growth in excess of the World (Five-year horizon)
63 countries
1980-2003

B. Growth Decomposition	Excess Growth (5-year) (Young Adjusted)	Initial GDP	Secondary School	Log(Life Expectancy)	Population Growth	Private Credit/GDP (adjusted)	Investment/ GDP	Pol (Political Risk -- composite)	Openness (Capital Account - Quinn)	Predicted Excess Growth
Developed Countries	0.495%	-1.479%	0.193%	1.060%	0.581%	0.017%	0.000%	0.468%	0.192%	0.345%
Developing Countries	-0.294%	1.334%	-0.046%	-0.484%	-0.397%	-0.008%	-0.065%	-0.151%	-0.072%	-0.577%
Africa	-1.292%	1.722%	-0.088%	-1.149%	-0.719%	-0.005%	-0.137%	-0.189%	-0.103%	-1.356%
Asia	1.489%	0.994%	0.020%	0.179%	-0.078%	0.005%	0.218%	0.018%	-0.045%	0.622%
Latin America	-0.813%	0.708%	-0.026%	0.164%	-0.266%	-0.012%	-0.148%	-0.144%	-0.008%	-0.420%
China	**5.051%**	**2.594%**	**-0.027%**	**0.380%**	**0.187%**	**-0.018%**	**0.907%**	**0.090%**	**-0.157%**	**3.265%**
Temporal Dimension										
China - 1980		**3.145%**	**-0.027%**	**0.410%**	**0.306%**	**-0.013%**	**0.657%**	**0.206%**	**-0.359%**	**3.636%**
China - 2003		**1.812%**	**-0.014%**	**0.370%**	**0.321%**	**-0.024%**	**1.267%**	**-0.022%**	**-0.246%**	**2.797%**
GDP										
Developed Countries	0.760%	-2.436%	0.728%	1.637%	0.518%	0.156%	0.000%	0.715%	0.325%	0.638%
Developing Countries	-0.180%	2.198%	-0.172%	-0.748%	-0.354%	-0.071%	-0.014%	-0.231%	-0.122%	-0.520%
Africa	-1.292%	2.837%	-0.330%	-1.774%	-0.642%	-0.050%	-0.030%	-0.289%	-0.173%	-1.456%
Asia	1.786%	1.637%	0.076%	0.276%	-0.070%	0.048%	0.048%	0.028%	-0.076%	0.962%
Latin America	-0.826%	1.167%	-0.098%	0.254%	-0.237%	-0.106%	-0.033%	-0.220%	-0.013%	-0.293%
China	**3.965%**	**4.273%**	**-0.102%**	**0.587%**	**0.166%**	**-0.166%**	**0.202%**	**0.137%**	**-0.265%**	**3.826%**
Temporal Dimension										
China - 1980		**5.181%**	**-0.102%**	**0.634%**	**0.273%**	**-0.115%**	**0.146%**	**0.314%**	**-0.607%**	**5.035%**
China - 2003		**2.985%**	**-0.054%**	**0.571%**	**0.286%**	**-0.217%**	**0.282%**	**-0.033%**	**-0.416%**	**2.433%**

This table reports the decomposition of the regressions in Panel A, where the dependent variable is the overlapping 5-year average growth rate of real per capita consumption or GDP in excess of the corresponding world growth rate. Per capita consumption and GDP growth for China are adjusted following Young (2003). The values are reported for several country groups: Developed, Developing, Africa, Asia, and Latin America (as described by the World Bank). We also report the associated numbers for China, including the comparison of predicted growth across the sample from 1980-2003. Each entry shows the average for that country group multiplied by the coefficient reported in Panel A.

Table 11

Idiosyncratic Volatility Predictability

Annual Real Consumption Squared Growth Residuals

1980-2003

Panel A: Volatility model estimates

	Official Equity Market Liberalization		Equity Market Openness		Capital Account Openness (Quinn)	
	Estimate	Standard Error	Estimate	Standard Error	Estimate	Standard Error
Constant	0.00076	0.00010	0.00085	0.00011	0.00069	0.00008
Initial GDP	0.00002	0.00006	0.00005	0.00006	0.00008	0.00007
Secondary School	-0.00061	0.00029	-0.00047	0.00030	-0.00050	0.00022
Log(Life Expectancy)	-0.00031	0.00050	-0.00052	0.00049	-0.00149	0.00063
Population Growth	0.01175	0.00510	0.01122	0.00514	0.01416	0.00512
Trade/GDP	0.00048	0.00021	0.00041	0.00022	0.00065	0.00016
Gov/GDP	0.00411	0.00165	0.00412	0.00167	0.00153	0.00126
Private Credit/GDP	0.00017	0.00013	0.00024	0.00014	0.00011	0.00014
Financial Openness	-0.00027	0.00016	-0.00052	0.00015	-0.00008	0.00018
R^2	0.071		0.074		0.088	

	Observed Growth Volatility (residual)	Predicted Growth Volatility	Observed Growth Volatility (residual)	Predicted Growth Volatility	Observed Growth Volatility (residual)	Predicted Growth Volatility
Developed Countries	1.292%	2.220%	1.296%	2.230%	1.315%	2.033%
Developing Countries	3.032%	3.114%	3.038%	3.217%	3.008%	3.143%
Africa	3.250%	3.526%	3.251%	3.614%	3.253%	3.584%
Asia	2.506%	2.413%	2.553%	2.548%	2.385%	2.485%
Latin America	2.777%	2.528%	2.766%	2.614%	2.787%	2.505%
China	**4.743%**		**4.846%**		**4.192%**	
China (mean-adjusted)	**1.752%**	**2.346%**	**1.783%**	**2.694%**	**1.780%**	**1.914%**

Table 11 (continued)

Do the Growth and Volatility Effects Differ Across Countries?

Annual Average Real Excess Consumption Growth (Five-year horizon)
1980-2003

Panel B: Variance decomposition: What happens to growth volatility when a variable is omitted

	Secondary School	Log(Life Expectancy)	Population Growth	Trade/GDP	Gov/GDP	Private Credit/GDP	Openness (Quinn)
Developed Countries	-0.407	-0.478	-0.297	0.334	0.114	0.143	0.005
Developing Countries	0.040	0.091	0.085	0.173	-0.036	-0.017	-0.001
Africa	0.060	0.169	0.120	0.151	0.002	-0.019	-0.001
Asia	-0.027	-0.051	0.025	0.140	-0.120	0.038	-0.001
Latin America	0.036	-0.049	0.090	0.046	-0.139	-0.035	0.000
China	0.039	-0.132	-0.088	-0.078	-0.124	0.129	-0.004

In Panel A, the dependent variable is the squared residual (idiosyncratic volatility) from the associated growth regressions. Initial GDP is the log real per capita GDP level updated every 5 years (1980, 1985, 1990, 2000). Secondary School is the enrollment percentage for that level; Log(Life Expectancy) is the log life expectancy of the total population; Population Growth is the growth rate of total population; Trade/GDP is the ratio of export plus imports to GDP; Gov/GDP is ratio of government consumption to GDP; and Private Credit/GDP is the ratio of private credit to GDP. The control variables are all in excess of the world. We report the coefficient on one of three openness indicators (also in excess of the world): the Official Equity Liberalization indicator that takes a value of one when the equity market is liberalized; the Equity Liberalization Intensity measure is the ratio of IFC Investables to Global market capitalization; or the Capital Account Liberalization (Quinn) indicator that takes a value between 0 and 1 depending upon the intensity of the reported capital account restrictions. The first two sets of regressions includes 96 countries, whereas the last includes 77 countries. We compare the predicted level of growth volatility with the observed residual volatility; for China, we also consider the volatility of the de-meaned growth residual. In Panel B, we set the coefficient on the particular variable equal to zero. We then report the proportional change in the predicted variance when we set the variable back to its original value, i.e. (actual predicted variance - new predicted variance)/(actual predicted variance). This exercise omits initial GDP from the regression.

Table 12

Do the Growth and Volatility Effects Differ Across Countries?

Annual Average Real Excess Consumption Growth (Five-year horizon)

1980-2003

Panel A: Official Equity Liberalization	Mean			Volatility			# of countries	Low versus high separating value	China average value
	Estimate	Standard Error	Wald Test	Estimate	Standard Error	Wald Test			
Priv/GDP	0.00291	0.00261		0.00027	0.00014		96	0.36	0.92
Fully Liberalized	0.00775	0.00173		-0.00058	0.00009				
Low value	0.00249	0.00326		0.00011	0.00022				
High Value	0.01214	0.00424	4.03**	-0.00044	0.00019	5.66**			
Priv/GDP (adjusted)	0.00129	0.00230		-0.00010	0.00016		67	0.31	0.004
Fully Liberalized	0.00964	0.00146		-0.00028	0.00009				
Low value	0.00022	0.00235		0.00009	0.00024				
High Value	0.01489	0.00554	7.72***	-0.00030	0.00024	1.22			
Turnover	0.01107	0.00274		0.00010	0.00007		51	0.12	1.48
Fully Liberalized	0.01008	0.00210		-0.00022	0.00007				
Low value	-0.01106	0.00574		0.00001	0.00019				
High Value	0.00479	0.00422	8.55***	-0.00006	0.00011	0.10			
MCAP/GDP	0.00325	0.00303		-0.00012	0.00009		51	0.13	0.24
Fully Liberalized	0.00968	0.00217		-0.00031	0.00007				
Low value	-0.00842	0.00468		0.00040	0.00015				
High Value	0.00515	0.00457	8.22***	-0.00031	0.00015	10.25***			
Privatization	0.02996	0.00879		0.00015	0.00031		44	0.55	0.44
Fully Liberalized	0.00774	0.00233		-0.00033	0.00010				
Low value	-0.00613	0.00373		-0.00001	0.00015				
High Value	0.00618	0.00565	3.83*	-0.00031	0.00019	1.39			
Social Security	0.01173	0.00445		-0.00068	0.00022		59	1.60	2.06
Fully Liberalized	0.00787	0.00268		-0.00016	0.00008				
Low value	-0.00294	0.00533		0.00025	0.00016				
High Value	-0.00099	0.00341	0.12	-0.00008	0.00013	2.54			
Gov/GDP	0.00832	0.01577		0.00411	0.00168		96	0.13	0.13
Fully Liberalized	0.00762	0.00180		-0.00067	0.00013				
Low value	0.00478	0.00460		0.00015	0.00013				
High Value	0.00857	0.00267	0.67	-0.00023	0.00028	2.04			
Quality of Inst.	0.01379	0.00645		-0.00157	0.00039		86	0.56	0.57
Fully Liberalized	0.00370	0.00162		-0.00021	0.00011				
Low value	0.00782	0.00353		0.00022	0.00026				
High Value	0.00334	0.00378	1.04	-0.00021	0.00019	4.13**			
Socio-eco Conditions	0.05110	0.01084		-0.00081	0.00044		86	0.53	0.57
Fully Liberalized	0.00225	0.00219		-0.00042	0.00011				
Low value	-0.00045	0.00257		0.00018	0.00022				
High Value	0.01178	0.00547	3.98**	-0.00057	0.00026	10.78***			
Investment Profile	0.04528	0.00878		-0.00050	0.00034		86	0.50	0.71
Fully Liberalized	0.00204	0.00210		-0.00041	0.00010				
Low value	0.00462	0.00322		0.00034	0.00022				
High Value	0.00314	0.00379	0.10	-0.00060	0.00023	24.06***			

Table 12 (continued)

Do the Growth and Volatility Effects Differ Across Countries?

Annual Average Real Excess Consumption Growth (Five-year horizon)

1980-2003

Panel B: Capital Account Openness (Quinn)	Mean			Volatility				Low versus high separating value	China average value
	Estimate	Standard Error	Wald Test	Estimate	Standard Error	Wald Test	# of countries		
Priv/GDP	0.00899	0.00264		0.00015	0.00014		77	0.35	0.92
Fully Liberalized	0.00456	0.00129		-0.00018	0.00007				
Low value	-0.00148	0.00540		0.00062	0.00032				
High Value	0.01464	0.00455	6.81***	-0.00013	0.00026	2.94*			
Priv/GDP (adjusted)	0.00676	0.00201		-0.00013	0.00011		63	0.30	0.004
Fully Liberalized	0.00591	0.00132		-0.00009	0.00005				
Low value	-0.00701	0.00582		0.00080	0.00026				
High Value	0.02462	0.00430	18.09***	-0.00048	0.00013	20.11***			
Turnover	0.01108	0.00264		0.00000	0.00007		49	0.22	1.48
Fully Liberalized	0.00455	0.00162		-0.00003	0.00006				
Low value	0.03273	0.00535		0.00049	0.00032				
High Value	0.02298	0.00418	3.02*	-0.00004	0.00012	3.51*			
MCAP/GDP	0.00226	0.00314		-0.00014	0.00008		49	0.21	0.24
Fully Liberalized	0.00740	0.00160		-0.00005	0.00006				
Low value	0.02281	0.00476		0.00050	0.00025				
High Value	0.03077	0.00534	1.37	-0.00021	0.00016	10.24***			
Privatization	0.03000	0.00960		0.00003	0.00031		44	0.58	0.44
Fully Liberalized	0.00132	0.00151		0.00002	0.00006				
Low value	0.00425	0.00621		0.00035	0.00018				
High Value	0.01798	0.00410	3.06*	0.00002	0.00022	1.60			
Social Security	0.01230	0.00343		-0.00048	0.00017		59	1.98	2.06
Fully Liberalized	0.00514	0.00183		-0.00008	0.00006				
Low value	0.02505	0.00454		0.00061	0.00025				
High Value	0.00200	0.00486	12.47***	-0.00008	0.00021	3.45*			
Gov/GDP	-0.00953	0.01560		0.00185	0.00127		77	0.14	0.13
Fully Liberalized	0.00365	0.00135		-0.00008	0.00008				
Low value	0.00833	0.00607		0.00003	0.00029				
High Value	0.00989	0.00469	0.04	0.00029	0.00036	0.25			
Quality of Inst.	0.02136	0.00666		-0.00140	0.00032		72	0.56	0.57
Fully Liberalized	0.00280	0.00118		-0.00012	0.00006				
Low value	0.00032	0.00566		0.00056	0.00029				
High Value	0.01314	0.00381	4.35**	-0.00001	0.00012	3.29*			
Socio-eco Conditions	0.04590	0.00991		-0.00051	0.00035		72	0.53	0.57
Fully Liberalized	-0.00026	0.00142		-0.00010	0.00008				
Low value	0.00302	0.00466		0.00062	0.00027				
High Value	0.00943	0.00435	1.52	-0.00044	0.00015	16.68***			
Investment Profile	0.03994	0.00833		-0.00049	0.00030		72	0.58	0.71
Fully Liberalized	0.00014	0.00163		-0.00017	0.00007				
Low value	0.00263	0.00447		0.00066	0.00026				
High Value	0.00901	0.00552	1.05	-0.00074	0.00019	19.46***			

The dependent variable is either the overlapping 5-year average growth rate of real per capita excess consumption growth or the associated squared growth residual (idiosyncratic volatility). In each regression, the standard control variables are included (as in Tables 4, but not reported for space). For each interaction variable, we separately conduct regressions. We also separate the official equity liberalization effect (panel A) and the capital account openness effect (panel B) for fully open and liberalizing countries. For capital account openness, we denote a liberalization country as one that experiences at least a 0.25 increase in the Quinn index value. For liberalizing countries, we estimate interaction effects with the financial development, legal, and investment condition variables; we report the associated impact on consumption growth and volatility for a liberalizing country for a low level (below the median of the associated interaction variable for liberalizing countries) and for a liberalizing country at a high level (above the median of the associated interaction variable for liberalizing countries).

The financial development variables we consider are the ratio of private credit to GDP, equity market turnover, market capitalization/GDP, and the degree of privatization. We also consider the social security index and the size of the government sector/GDP. Finally, we also consider the quality of institutions, socio-economic conditions, and the investment profile. The number of countries for which the interaction variable is available is also provided. Finally, we provide the cutoff value for what is considered a below or above median country, and report the associated average for China. All standard errors provide a correction for the overlapping nature of the data. Wald tests are conducted for which the null hypothesis is the high and low coefficients are equal; test statistics are provided and *, **, and *** denote significance of the test at the 10, 5, and 1% levels, respectively.

Figure 1

Macroeconomic Growth: China

(Real Per Capita US$)

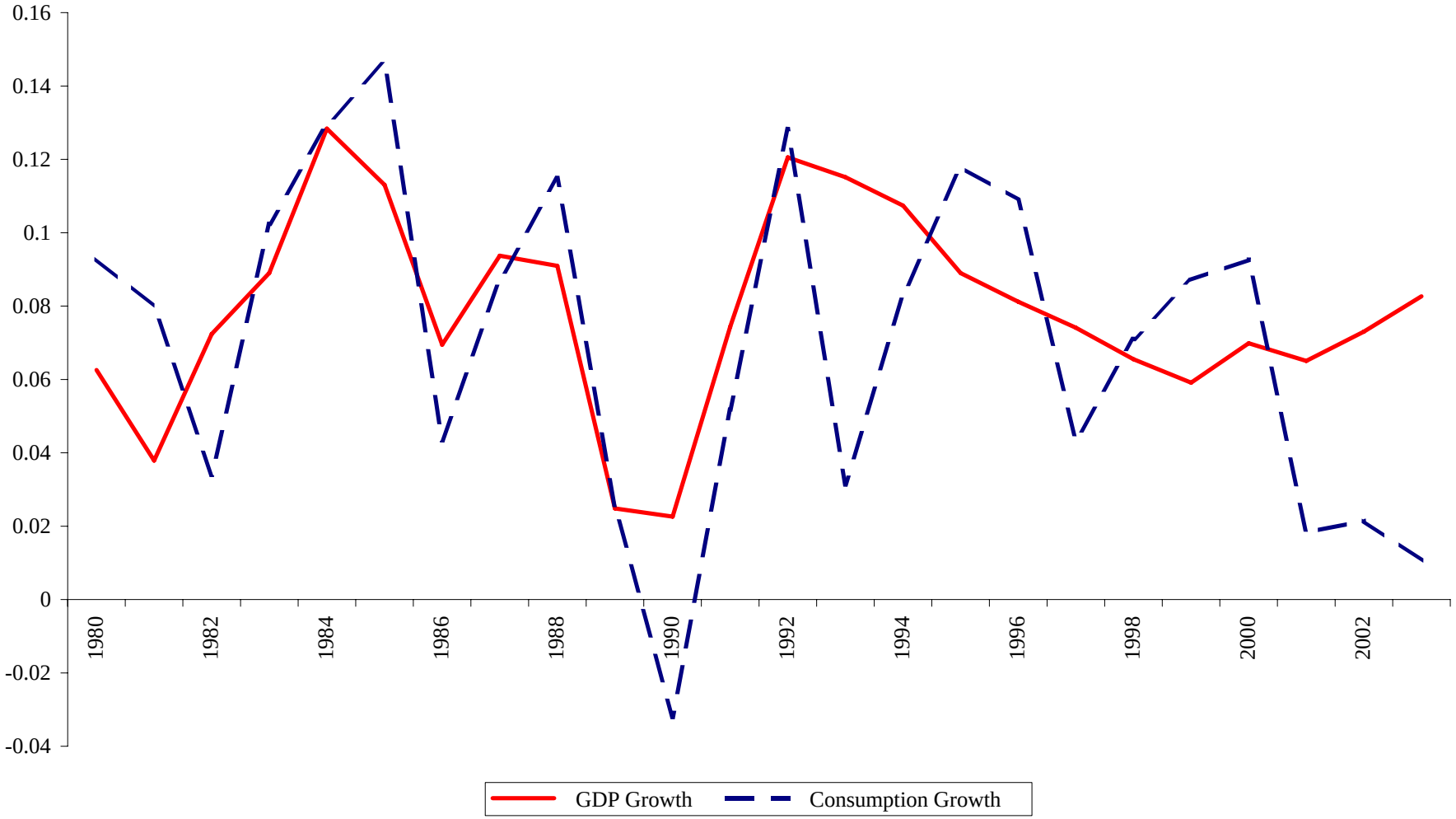


Figure 2

GDP Components: China

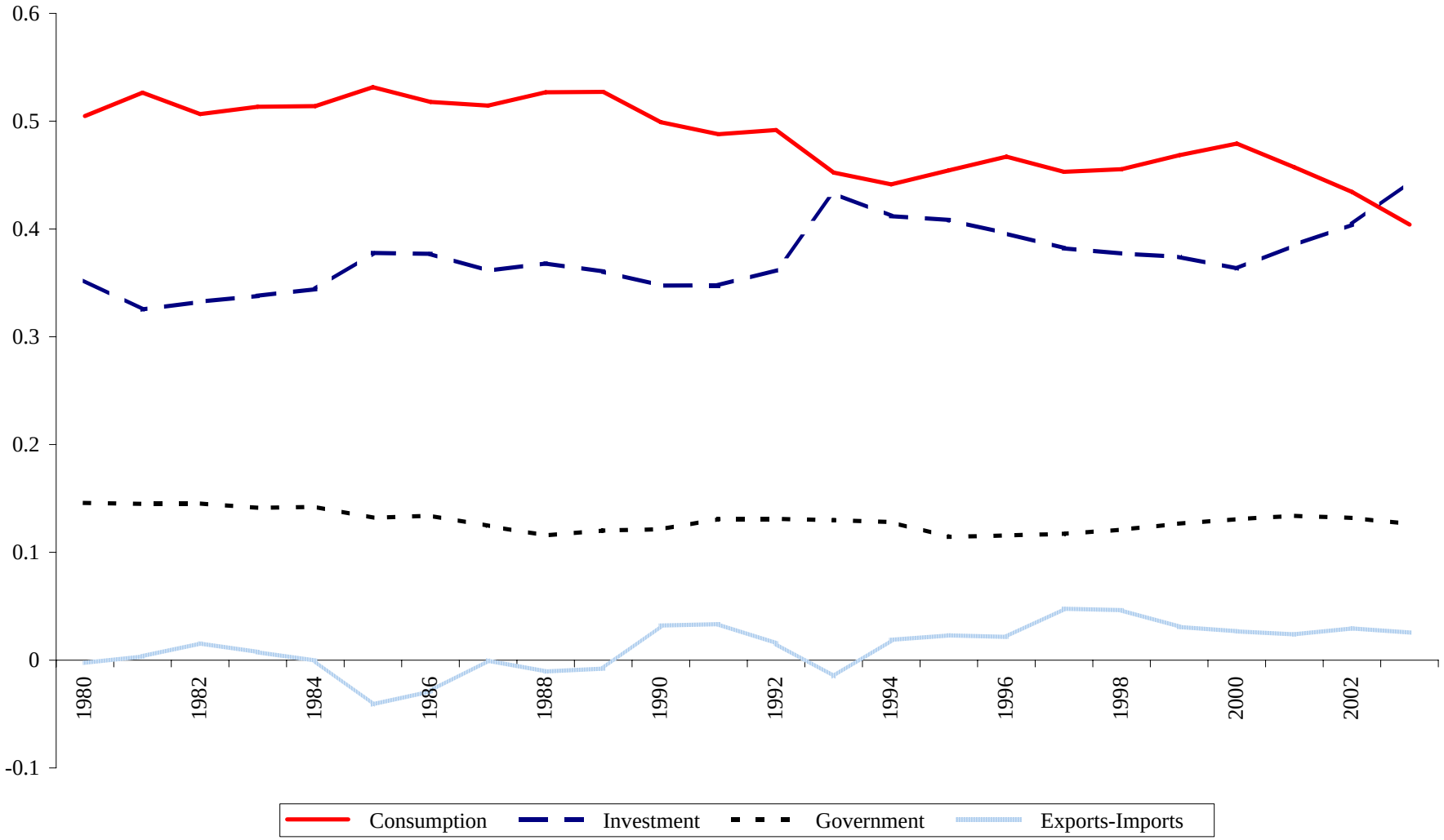
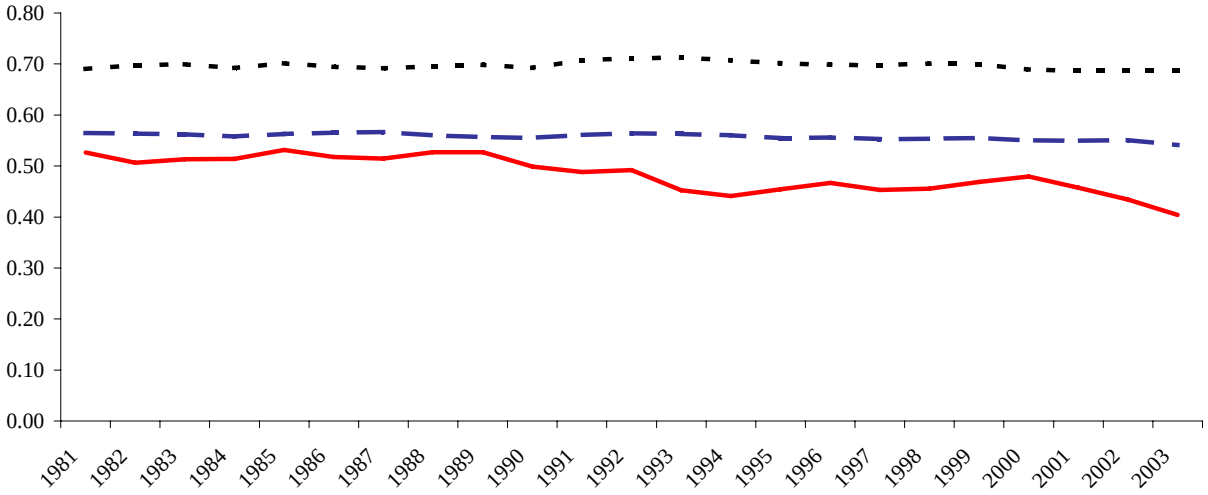
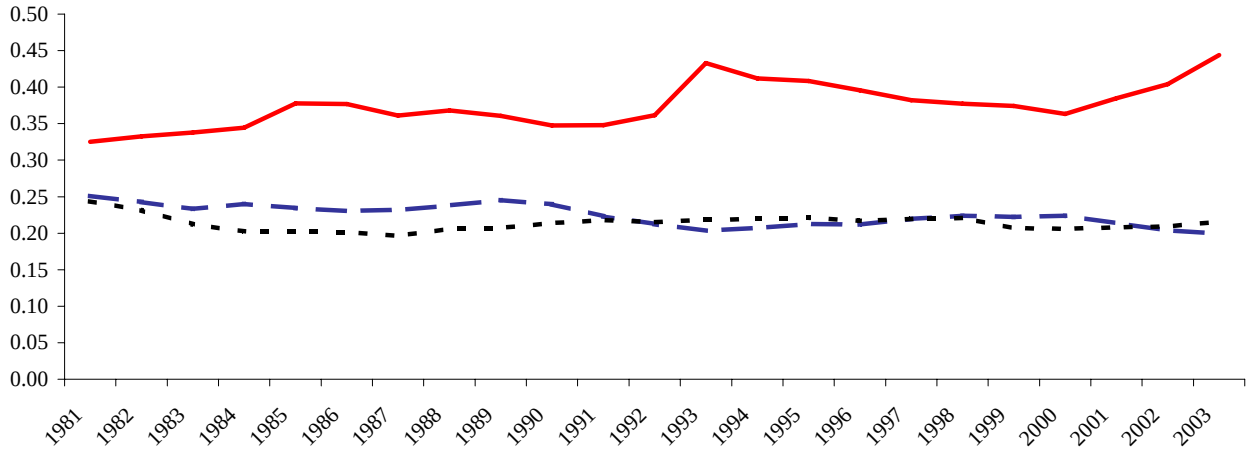


Figure 3

Consumption/GDP



Investment/GDP



(Exports-Imports)/GDP

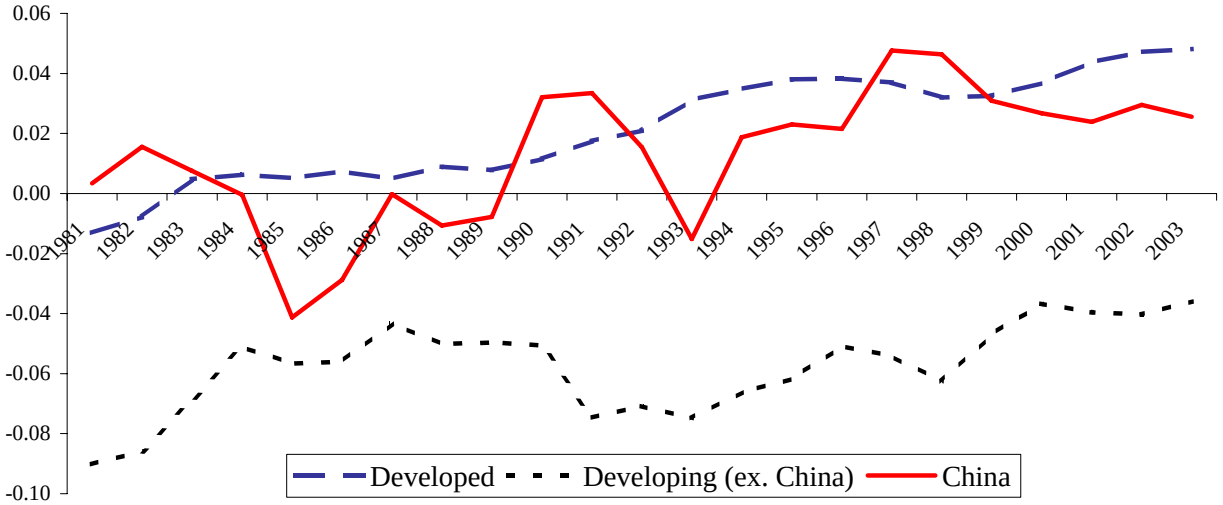


Figure 4

Macro-economic Volatility: China

(5-year rolling standard deviation)

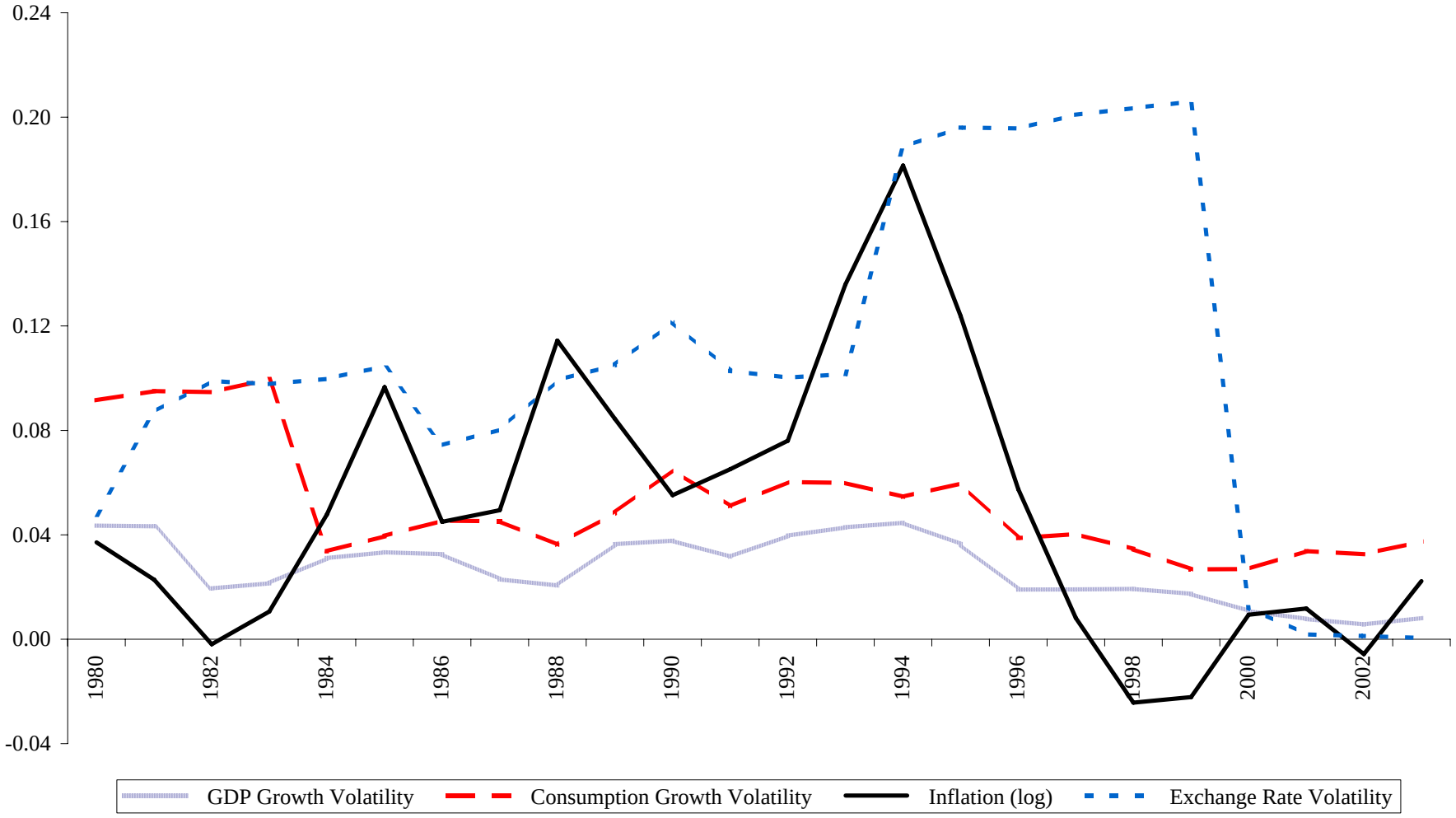


Figure 5

Trade and Financial Development: China

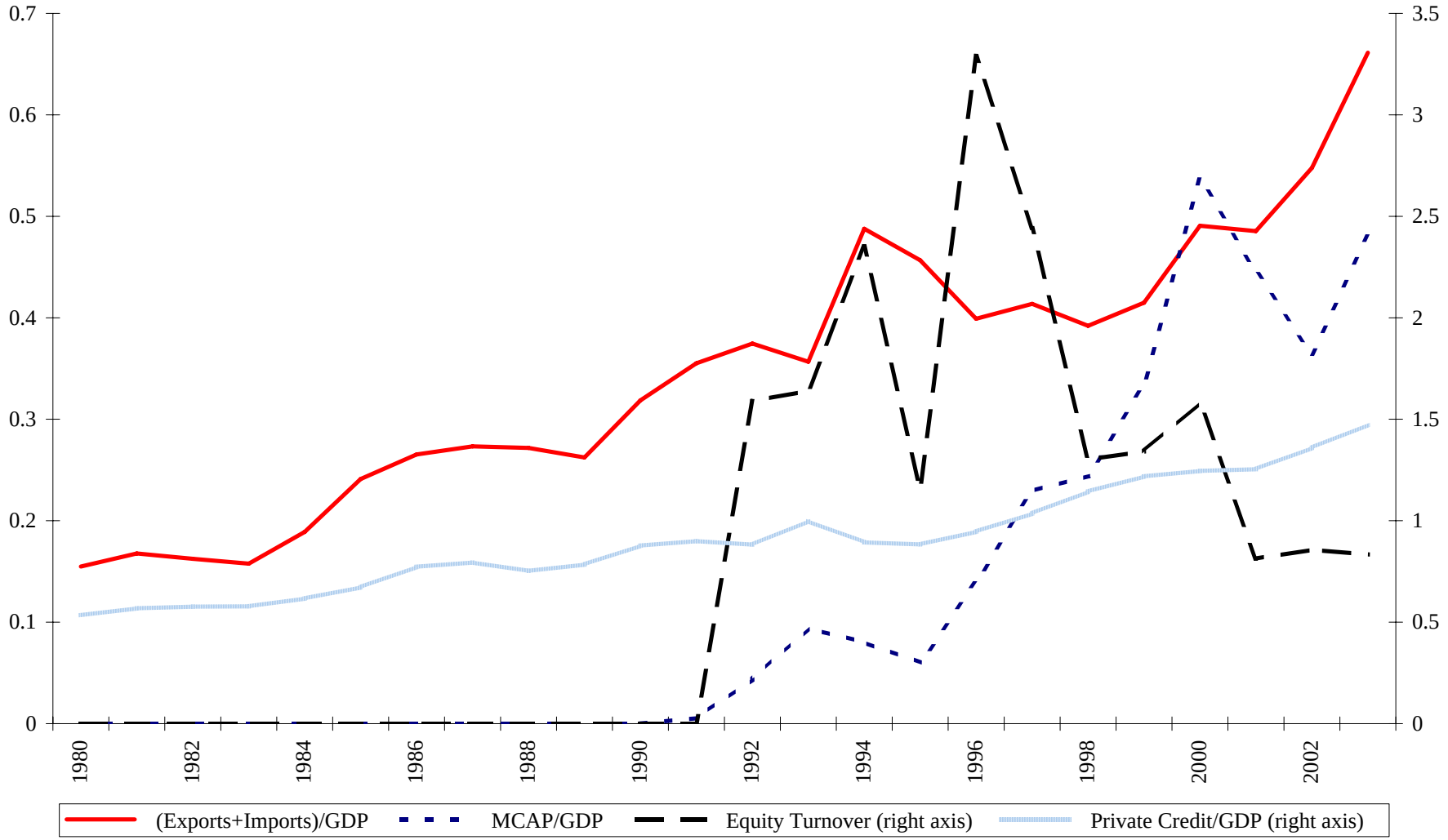


Figure 6

Political, Financial, and Economic Risk in China

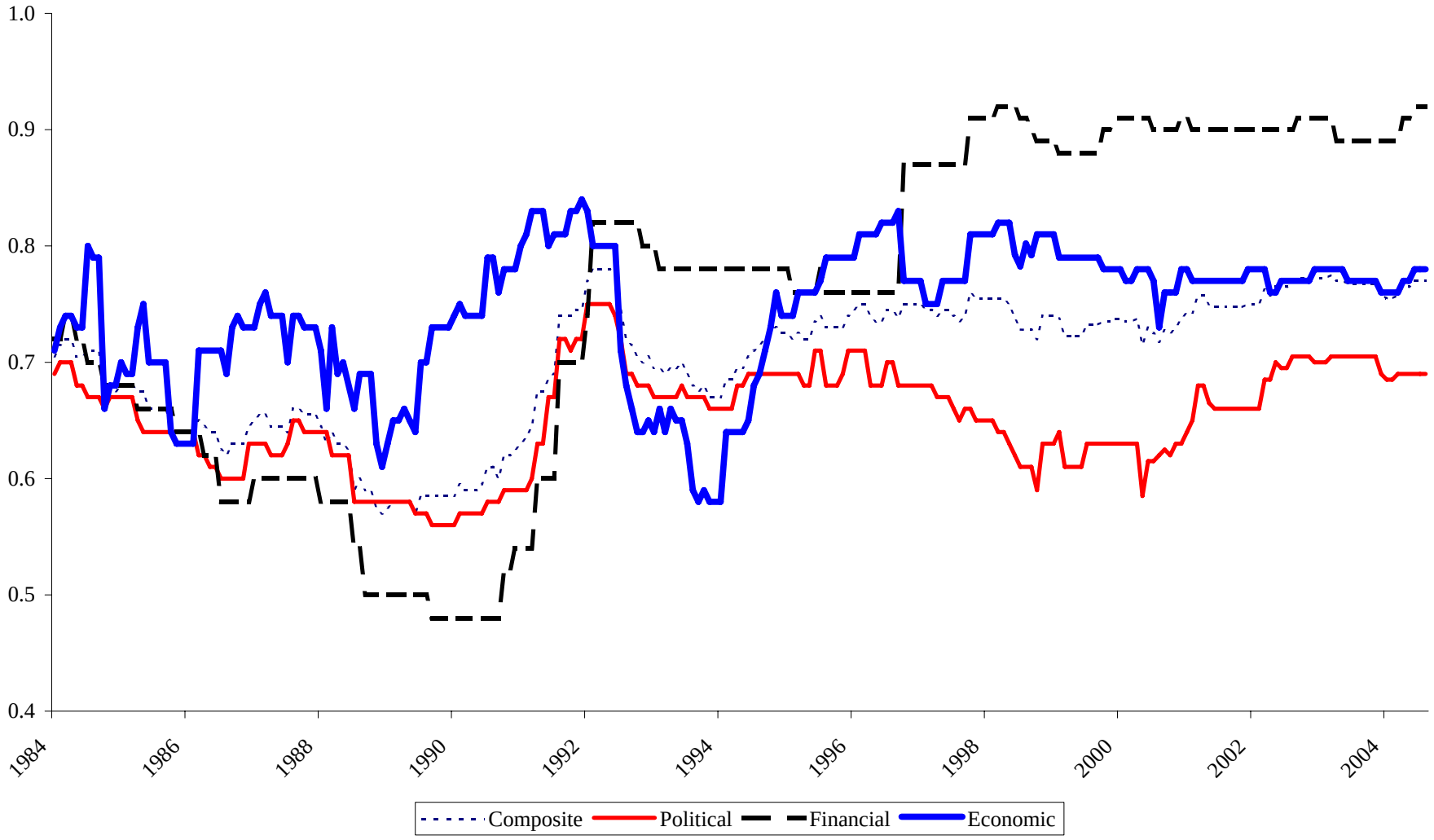


Figure 7

The Components of Political Risk in China