# INSTITUTIONS AND THE MIDDLE-INCOME TRAP:
## Implications of cross-country experiences for China

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(*Please do not quote*)

[**Abstract**] *While we agree that institutions matter for economic growth, we also argue that optimal institutions may be different for different stages of economic development. In this study, we assemble a data set of 126 economies during 1980-2010. We find that law and order have significant positive effects on economic growth for all income groups, while democracy is insignificant in all growth equations. The impact of financial repression is insignificant for the low-income group, significantly negative for the middle-income group and significantly positive for the high-income group. We also conduct various robustness checks to validate these findings. These suggest that, in order to avoid the middle-income trap, China should focus on improving law and order and liberalizing the financial system in order to avoid the middle-income trap. Democratization, while useful for reducing social tension and protecting human rights, probably would not be able to promote economic growth.*

## Introduction

Middle-income trap is a term first coined by some World Bank economists to describe the situation in which an economy is stuck in the middle-income range and fails to graduate to high-income status (Gill and Kharas 2007). Between 1960 and 2008, only 13 out of 88 middle-income economies successfully rose to the high-income group (World Bank and DRC 2012). Many Latin American countries experienced successful economic takeoffs after the World War II but fell into the middle-income trap afterwards as their incomes stagnated relative to advanced economies. In East Asia, Japan, Korea, Taiwan, Hong Kong and Singapore all avoided the trap, but Malaysia, the Philippines and Thailand remain as the middle-income economies for several decades (Zhuang, Vandenberg and Huang 2012).

Why some countries succeed but others fail? The middle-income trap is essentially about an economy's ability to sustain growth after reaching the middle-income level. Many economies are able to achieve rapid economic growth by increasing quantity of inputs during the early stage of development. But as the economies develop further, their costs of production also rise, quickly eroding competitiveness of industries built on low costs. Avoiding the middle-income trap, therefore, requires technological innovation and industrial upgrading. Kharas and Kohli (2011) highlight three critical transitions for that purpose – from diversification to specialization in production; from physical accumulation of factors to productivity-led growth; and from centralized to decentralized economic management.

The middle-income trap is the challenge facing the Chinese economy today. After more than three decades of rapid economic growth, China's GDP per capita rose to $6,000 in 2012, from $220 in 1980, and is now a high middle-income country. Recent deceleration of growth, however, caused concerns if China would be able to sustain its rapid growth and become a high-income economy eventually. Some international organizations and Chinese think tanks conducted studies on China's challenge of the middle-income trap (World Bank and DRC2012; Zhuang, Vandenberg and Huang 2012). Academic interest in this subject also increased (Cai 2012; Woo 2012).

There are considerable differences in assessment of sustainability of Chinese growth. Lin (2011), for instance, believes that China still enjoys huge advantages of backwardness and should be able to maintain 8 percent GDP growth for at least another two decades. If Lin is right, China should become both the largest economy in the world and a high-income country in about a decade or so. Meanwhile, some officials and economists worry that China's growth model is unsustainable given the imbalance, inefficiency and inequality problems (Wen 2006; Lardy 2012). According to Pettis (2013), if deleveraging and rebalancing processes are not mismanaged, China's trend growth could fall to around 3 percent during the period 2010-20. If Pettis is right, China would not be able to escape the middle-income trap.

Both optimists and pessimists agree that further reforms are necessary to sustain China's rapid economic growth. There is also a consensus on some necessary reforms, such as strengthening the ability to innovate, further liberalizing the markets, maintaining macroeconomic stability and improving external cooperation (World Bank and DRC 2012; Zhuang, Vandenberg and Huang 2012). But there is also apparent disagreement in some areas. For example, Wu sees 'state capitalism', i.e., the collusion between the state-owned enterprises (SOEs) and government agencies, as the main obstacle to growth sustainability.[1] On the other hand, Lin (2012) advocates proactive roles of the government in promoting structural change and economic growth.

In their recent book *Why Nations Fail*, Acemoglu and Robinson (2012) also weigh in on this debate. They argue that China is experiencing growth under the authoritarian grip of the Communist Party, which has been able to monopolize power and mobilize resources at a scale that has allowed for a burst of economic growth. But this is not sustainable because it does not foster the degree of 'creative destruction' that is so vital for innovation and higher incomes. Acemoglu and Robinson reach this conclusion from their general proposition that politics dictates economic institutions, which, in turn, determine long run growth.

Few economists would challenge the thesis that institutions matter for long-run growth. However, Acemoglu and Robinson appear to believe that there is one set of 'best' institutions for economies at all stages of development. While they try to generalize 'extractive' and 'inclusive' institutions, Acemoglu and his collaborators appear to favor the type of institutions seen in the U.S. and the U.K. This simplification, however, could be problematic. Institutions of the most advanced economies may or may not be the best options for developing countries. In fact, past experiences of transplanting the so-called 'Washington Consensus' into developing countries have largely been unsuccessful.

In this paper, we argue that optimal institutions might be different for economies at different stages of development. We assemble a data set of 126 economies, including 37 low-income, 62 middle-income and 21 high-income economies, for the period 1980-2010. We try to examine the growth effects of three specific policy or institutional variables – law and order, democracy and financial repression – in addition to a list of usual control variables such as investment ratio, size of the government, education and openness. We run two types of regressions, one relative income equation and the other economic growth equation. We first estimate the equations using the entire sample and then repeat the exercise using low-, middle- and high-income groups separately.

We find that law and order, democracy and financial repression all contribute positively to individual economies' income levels relative to the U.S. In the growth equations, however, only law and order has consistently positive impacts. Democracy is not significant in all groupings. Financial repression has a negative impact on growth for the

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[1]"Fast-track China is on the wrong path", (An interview with Wu Jinglian by Hu Shuli), *The Wall Street Journal*, Asia Edition, July 28, 2011. (http://online.wsj.com/article/SB10001424053111904800304576471393143140106.html)

entire sample, but the impact is insignificant for low-income group, significantly negative for the middle-income group and significantly positive for the high-income group. These results support an important proposition: the policies and institutions that make countries rich in the early stages could be different from those of the rich countries.

These findings also have important implications for China's attempt to avoid the middle-income trap. According to empirical results for the middle-income group, law and order has positive impact, financial repression has negative impact and democracy has no impact on economic growth. These suggest that, at this stage, the policymakers should focus on improving the legal system and liberalizing the financial system as imminent policy priorities. Meanwhile, democratization is not critical for the purpose of sustaining rapid growth. Other pro-growth policies should include reduction of size of the government, continuation of high investment ratio, improvement of education system and maintenance of macroeconomic stability.

These conclusions should not be taken as evidences against democratization, which has social value and benefit, such as protecting human rights, reducing corruption and easing social tension. We are fully supportive of introducing more democratic elements to China's political system. There are also special mechanisms, through which democratic processes could improve efficiency, such as through helping break down monopoly power in certain industries. Overall, however, the cross-country experiences point to no significant contribution of democratic regime to economic growth. Therefore, it should not be used as a priority policy strategy if the purpose is to avoid the middle-income trap. On the other hand, continued economic growth may also lead to greater demand for individual rights by the public and, therefore, accelerate the move toward democratic regimes.

The rest of the paper is organized as follows. The next section reviews the literature and formulates the central research question. Section III introduces the data set and model specifications. Section IV presents the estimation results. Section V discusses implications for China's policy and institutional choices in order to avoid the middle-income trap, followed by some concluding remarks in the final section.

## Literature review and the hypotheses

Although the subject of 'middle-income trap' receives considerable attention from both academics and policymakers, there is still limited consensus on how the trap is defined and what determine outcome of such challenge(Gill and Kharas 2007; Ohno 2009; ADB 2011; Spence 2011). To describe the phenomenon, Woo (2011)constructs a catch-up index and identifies countries caught in the middle-income trap. However, some fundamental questions remain (Eichengreen et al 2011): why do some countries grow faster than others? and why do fast growing economies slow down?

The subject of middle-income trap boils down to the question of growth sustainability. Compared with economic takeoff, which depends more on factor accumulation, overcoming the middle-income trap should involve more innovation and upgrading. Structural change should play an even greater role during this stage of development. IN fact, developed economies appear to follow a similar pattern of structural change, with falling production and employment shares of the agricultural sector, initially rising but eventually falling shares of the industry sector, and rising shares of the service sector (Pandit and Casette 1989; Mokyr 1993; Acemoglu 2009). Structural change is also a central concept in Lin's construction of *new structural economics* (Lin 2012).

Two recent studies by the World Bank and Development Research Center of the State Council and by the Asian Development Bank and the National School of Development of the Peking University, respectively, recommend policies for China to overcome the middle-income trap (Table 1). There are significant overlaps between the two sets of recommendations. They include technological innovation and industrial upgrading, further market liberalization, green growth and macroeconomic stability.

**Table 1**. Policy recommendations by two major studies on China

| The World Bank& Development Research Center Study | The Asian Development Bank& Peking University Study |
| --- | --- |
| Accelerating the pace of innovation and creating an open innovation system | Stepping up innovation and industrial upgrading |
| Implementing structural reforms to strengthen the foundations for market-based economy | Deepening structural reform, especially reforms of enterprises, labor and land markets |
|  | Developing services and scaling up urbanization |
|  | Reducing income inequality |
| Expanding opportunities and promoting social security for all |  |
| Strengthening the fiscal system | Maintaining macroeconomic ad financial stability |
| Seizing the opportunity to "go green" | Promoting green growth to conserve resources and protect the environment |
| Seeking mutually beneficial relations with the world | Strengthening international and regional economic cooperation |

**Source**: "China 2030: Building a modern, harmonious and creative high-income society", the World Bank and the Development Research Center, 2012, Washington DC and Beijing; Zhuang, Vandenberg and Huang, "Growing beyond the low-cost advantage: Can the People's Republic of China avoid the middle income trap?" Asian Development Bank and Peking University, 2012, Manila and Beijing.

One important variable that is surprisingly missing from the above lists is institution, which has been at the center of some growth literature (see, for examples, North 1981; Acemoglu et al 2001). Notable examples of importance of institutions are divergent paths of North and South Korea, or East and West Germany. Countries with better

'institutions', more secure property rights, and less distorted policies will probably invest more in physical and human capital, and will allocate these productive factors more efficiently to achieve a higher productivity and then a greater level of income (North and Thomas 1973; Jones 1981). Some supporting this view have drawn from cross-country correlations between property rights and economic development (Knack and Keefer 1995; Mauro 1995; Hall and Jones 1999; Rodrik 1999), and also from micro level relationship between property rights and investment or output (Besley 1995; Mazingo 1999; Johnson et al. 1999).

One difficulty in examining the impact of institutions on economic performance is lack of reliable estimation due to the causal effect between institution and economic development. It is quite possible that rich countries can choose and afford better institutions. Perhaps more importantly, economies that are different for a variety of reasons will differ both in their institutions and in their income per capita. In an influential paper, Acemoglu et al (2001) estimate the effect of institutions on economic performance by exploiting differences in European mortality rates. In places where the European settlers faced high mortality rates, they could be more likely to set up extractive institutions. The estimates show large effects of institutions on income per capita.

Acemoglu and Robinson (2012) elaborate the effects of extractive and inclusive institutions. Inclusive economic institutions that enforce property rights, create a level playing field, and encourage investment in new technologies and skills are more conducive to economic growth than extractive economic institutions that are structured to extract resources from the many by the few. Inclusive economic institutions are supported by inclusive political institutions, which distribute political power widely in a pluralistic manner and are able to achieve some amount of political centralization. Conversely, extractive political institutions that concentrate power in the hands of a few reinforce extractive economic institutions to hold power.

There is probably not much disagreement among economists that institutions are important for growth. Henry and Miller (2009), however, argue that policies can be equally important in determining economic performance by comparing two Caribbean islands. Barbados and Jamaica are both former British colonies, gaining independence in 1966 and 1962, respectively. Both inherited almost identical economic and political institutions: Westminster Parliamentary democracy, constitutional protection of property rights, and English Common Law. In the 40 years after independence, the standard of living in the two countries diverged – Jamaica recorded average real income growth of 0.8 percent per year during the entire sample period, while Barbados achieved 2.2 percent. The difference, according to Henry and Miller, stemmed almost entirely from differences in macroeconomic policies, not institutions.

Some of the growth literature appear to suggest that there is a set of universally optimal institutions. Acemoglu and Robinson (2012), for instance, argue that only inclusive institutions that widely distribute political power and economic benefits across the

society can support sustainable growth. While this sounds like a plausible thesis, it is not always supported by real world experiences. For instances, both Korea and Taiwan had military dictatorship during much of the time when they were on the way to high-income economies. Institutions in Hong Kong and Singapore can at best be described as semi-inclusive. And the democratic regimes in the Philippines and India are yet to help these economies make the jumps to the high-income group.

Kharas and Kohli (2011) argue that middle-income economies need different growth strategies compared with low-income economies. If the low-income economies could rely on physical accumulation of inputs to support growth, the middle-income economies have to dependent more on productivity growth. The same may also be true when comparing middle- and high-income economies. As Sachs (2012) notices that innovation and diffusion require different types of institutions. Liberal and decentralized political and economic institutions are necessary for developing technological leaders like Microsoft and Apple. Some centralized decision-making may still be helpful for building companies like Samsung and Huawei.

It is possible that optimal policies and institutions are different for economies at different stages of development. Therefore, economies with different levels of income require different growth strategies. For instance, in theory, financial repression is negative for both efficiency and growth. But real world experiences suggest that premature liberalization of the financial system could be even costly (Stiglitz 2000). Again, during the post-War period, international organizations such as the World Bank and IMF try to impose Washington Consensus on developing countries. Most of the economies that succeeded in achieving rapid growth, most notably those in East Asia, however, follow somewhat different strategies.

We attempt to identify determinants of economic growth separately for low-, middle- and high-income economies. Our analysis focuses on three key institutional or policy variables – law and order, democracy and financial repression – in addition to a set of usual control variables such as initial income level, size of the government, education, inflation, investment ratio and economic openness.

What types of institutions are best to help economies overcome the middle-income trap? To answer this question, we formulate three key hypotheses. The first hypothesis is that law and order is critical in supporting economic growth in middle-income economies. In fact, we expect this factor to be important for all economies. Economic growth is result of organized social activity, which requires clear rules about rights, rewards and exchanges and effective enforcement of these rules. In fact, this is similar to the condition of certain amount of political centralization suggested by Acemoglu and Robinson (2012). In the real world, none of the countries with social and political chaos is able to achieve meaningful economic growth.

The second hypothesis is that democracy might not be a fundamental factor determining outcomes of the middle-income trap challenge. We do believe that democracy is important for protecting human rights and reduce social tension. Our

research question here, however, is if democracy can help an economy avoid the middle-income trap. Our tentative answer is unsure. There could be many reasons for this. For example, contrary to the perception that only liberal political system can support innovation, an authoritarian regime may still be able to facilitate technological catch-up. Again, for some reasons, the democratic systems implemented in some low-income countries may not have the same qualities of those in advanced economies.

And the third hypothesis is that financial liberalization should form an important part of the strategy to avoid the middle-income trap. As Stiglitz (2000) notices, financial repression may actually have a positive impact on economic growth in underdeveloped countries since it helps allocate financial resources, in absence of well-developed markets, and supports financial stability. But financial repression has its costs in terms of efficiency, which could grow over time and eventually outweigh the benefits. Financial repression would probably not be compatible with technological catch-up and productivity growth, after the initial stage of economic growth relying on factor accumulation.
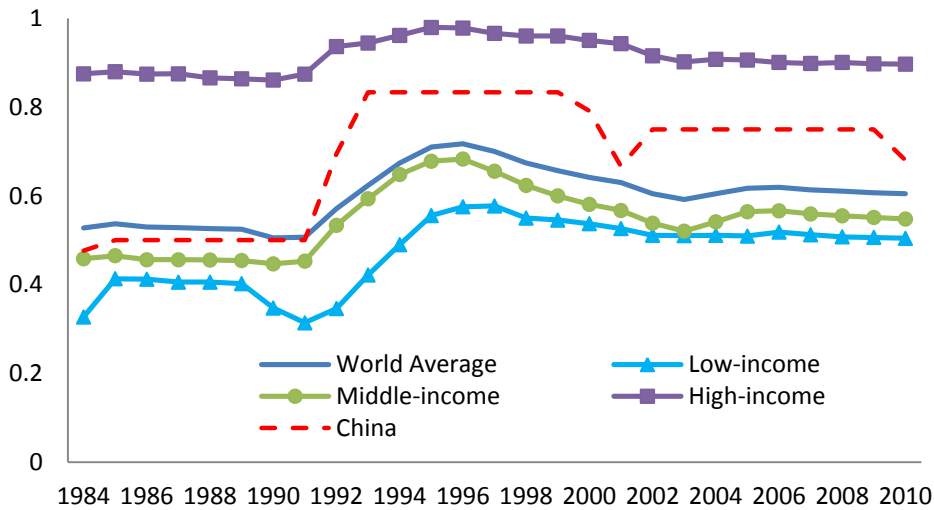
## Data and empirical estimation

### The data set

In order to test the above hypotheses, we assemble a panel data set of 126 economies over the period 1980-2010. The economies are categorized into low-, middle- and high-income groups according to classifications of the World Bank's *World Development Report* in 1980. Table A1 in the Appendix lists all the economies covered in the data set, Table A2 details definitions and sources of individual variables, and Table A3 provides statistical summary of the data set.

We focus on three policy and institutional variables: Law and order, democracy and financial repression. Law and order (*LAW*) is a proxy for security of property and contract rights (Knack and Keefer 1995). Data are obtained from *International Country Risk Guide* (ICRG). It measures both the strength and impartiality of the legal system and the popular observance of the law on a scale from 0 to 6, where higher score implies better mechanisms for adjudicating disputes. The measure is converted to a scale from 0 to 1. Data show higher income economies with higher degrees of law and order (Figure 1). It was somewhat surprising that, from the early 1990s, the value of *LAW* for China is higher than not only the middle-income group but also the world average.
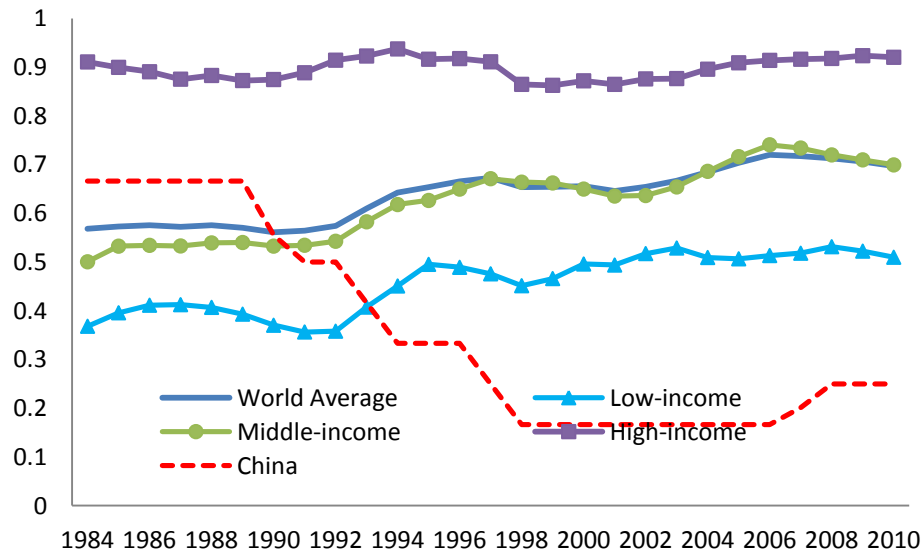
**Figure 1**. Law and order

The variable democracy (*DEMC*)is also from ICRG and reflects political freedom (La Porta et al. 1999). It measures types of governance enjoyed by the country on a scale from 0 to 6.The score gets higher as the regime moves from Autarchy, *De Jure* One-Party State, *De Facto* One-Party State, Dominated Democracy to Alternating Democracy. The measure is normalized to 0-1. Data show higher degrees of democracy for higher income economies (Figure 2). There was a significant decline in the reading for China after 1988, probably related to the Tiananmen Incident in the following year.

**Figure 2**. Democracy

And, finally, data for financial repression (*FREP*) are from Abiad et al. (2008).They capture repressive financial policies in seven dimensions: credit controls and reserve requirements, interest rate controls, entry barriers, state ownership, policies on securities markets, banking regulations, and restrictions on the capital account. Each indicator is assigned a score between 0 and 3, with lower score indicating greater repression. We normalize the sum of these scores to between 0 and 1. Data show very clear trend of financial liberalization across different income groups (Figure 3). Again, higher income economies generally have less repressive financial systems. China is also on a steady trajectory of financial liberalization, although its financial system appears to be even more repressive than the low-income economies.

**Figure 3**. Financial repression
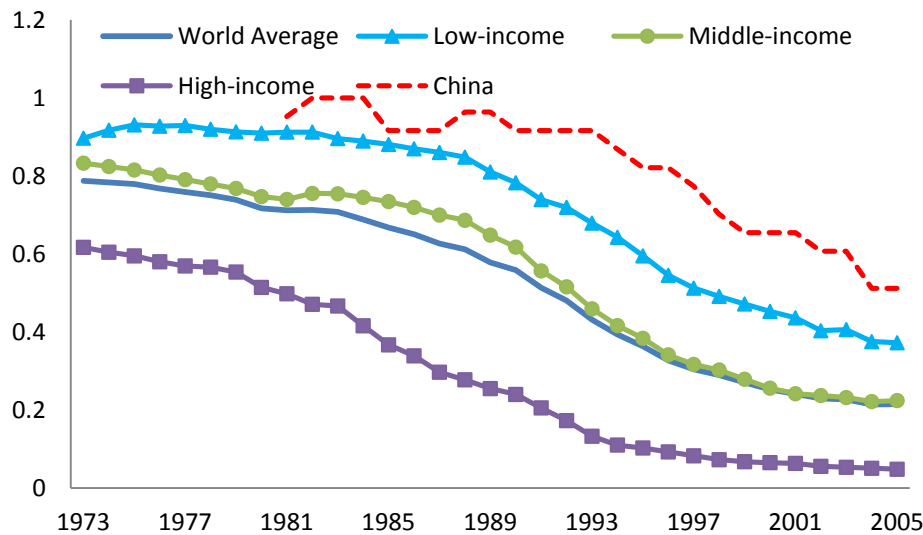


Source: Abiad et al. (2008) and authors' calculation.

Estimation results

We estimate two types of equations – the first is the relative income equation and the second is the economic growth equation. The relative income equation can be formulated as follows:

$$\text{GDPR}_{it} = \beta_0 + \beta_1 * Z_{it} + \beta_2 * X_{it} + \alpha_i + \gamma_i + \varepsilon_{it} \tag{1}$$

Where $GDPR_{it}$ is GDP per capita of country $i$ relative to that of the U.S. in year $t$. $Z_{it}$ refers to the institutional variables for country $i$ in year $t$, including $LAW_{it}$, $DEMC_{it}$ and $FREP_{it}$. $X_{it}$ is a series of control variables, including size of the government ($GOVN_{it}$) measured as the share of general government consumption in GDP; Education($EDU_{it}$), defined as the gross tertiary schooling enrollment ratio; Inflation ($CPI_{it}$) the consumer price index; Investment ratio($INVR_{it}$)illustrated as the ratio of gross fixed capital formation to GDP; trade openness ($OPEN_{it}$) defined as the ratio of total trade to GDP.

Coefficient estimates of equation (1) applying the full sample all have significant and expected signs, with exceptions of *FREP* and *CPI* (Table 2). *FREP* is positively correlated with relative income, implying thathigher relative income is positively correlated with more repressive financial policies. *CPI*, which is included as a measure of macroeconomic stability, however, is insignificant. Otherwise, better law and order and greater democracy are associated with higher relative income. And income levels are also positively correlated with education, investment ratio and openness of the economy but are negatively correlated with size of the government. These are generally consistent with theoretical prediction.

**Table2**. Determinants of relative income: Full sample

|  | Full sample | Low-income | Middle-income | High-income |
|---|---|---|---|---|
| LAW | 0.0563*** | 0.0195*** | 0.0384*** | 0.189*** |
|  | (0.009) | (0.004) | (0.009) | (0.026) |
| DEMC | 0.0192** | -0.0215*** | 0.0291*** | -0.0542** |
|  | (0.008) | (0.003) | (0.008) | (0.027) |
| FREP | 0.0476*** | 0.00565 | 0.0460*** | 0.0407 |
|  | (0.011) | (0.006) | (0.013) | (0.025) |
| GOVN | -0.204*** | 0.000538 | 0.00600 | -0.179 |
|  | (0.051) | (0.021) | (0.051) | (0.214) |
| EDU | 0.0346*** | 0.00980*** | 0.0499*** | 0.0614*** |
|  | (0.005) | (0.002) | (0.006) | (0.015) |
| CPI | -0.00139 | 0.00567*** | -0.000447 | 0.0108 |
|  | (0.001) | (0.002) | (0.001) | (0.011) |
| INVR | 0.286*** | -0.00996 | 0.216*** | 1.192*** |
|  | (0.029) | (0.013) | (0.029) | (0.096) |
| OPEN | 0.000950*** | 0.000583*** | 0.000166 | 0.00397*** |
|  | (0.0001) | (0.0001) | (0.0002) | (0.0005) |
| Constant | 0.147*** | 0.0144* | -0.0249 | 0.0610 |
|  | (0.021) | (0.007) | (0.023) | (0.081) |
| Year Effect | YES | YES | YES | YES |
| Country Effect | YES | YES | YES | YES |
| R-square | 0.233 | 0.606 | 0.293 | 0.603 |
| Observations | 1,186 | 202 | 610 | 374 |
| Countries | 80 | 15 | 46 | 19 |

Note: Standard errors in parentheses, *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Estimation results using different sample groups based on income levels also reveal some interesting findings. The positive correlations between law and order and relative income are significant across all groups. Interestingly, democracy is negatively correlated with relative incomes in both low- and high-income groups. But the correlation is positive for the middle-income group. And, finally, financial repression is positively correlated with relative incomes in the middle-income group but the correlation is insignificant for both low- and high-income groups.

While the relative income equation reveals interesting correlations, it does not offer insights on how the economies get to higher income levels. For instance, in the estimation results for the middle-income group, the variable democracy is positively correlated with income levels. Is democracy a cause or a result of higher income? This is an important question for this study as we attempt to look into the question of how do countries fall into or avoid the middle-income trap. For this purpose, we formulate the growth equation, following Barro (1996), Barro and sala-i-Martin (1992), Mankiw, Romer and Weil ( 1992) and others, we establish the following benchmark growth equation:

$$\text{GGDP}_{it} = \beta_0 + \beta_1 * Z_{it} + \beta_2 * \text{Log(GDP)}_{it} + \beta_3 * X_{it} + \alpha_i + \gamma_i + \varepsilon_{it} \qquad (2)$$

Where $\text{G}GDP_{it}$ is the growth rate of real GDP per capita of country *i* in year *t*, and $Log(GDPP)_{it}$ is the initial level of GDP per capita, which is included to capture the so-called convergence effect. All other variables are the same as defined in relative income equation (1). When estimating the growth equation, however, we take three-year averages for all variables, for 1981-83, 1984-86, …, 2008-10. For *log(GDPP)*, we use the value for the year before the period, i.e., GDP per capita in logarithm form for 1980 is used as the initial value for the period 1981-1983.

We first add the three institutional variables separately to the equation with the basic control variables and then combine them all in one regression, using the whole sample (Table 3). The findings are quite stable across all the regressions. Law and order (*LAW*) has very significant and positive contribution to economic growth. However, financial repression (*FREP*) actually lowers pace of economic growth. This is different from the finding from the relative income equation. Contribution of democracy (*DEMC*) is insignificant.While this is different from the positive effect found in relative income equation, it is actually in line with Barro's finding that democracy has no strong significant effect on growth(Barro 1996). However, we do not find an inversed U-shaped relationship between democracy and growth discovered by Barro.

The initial income (*log(GDPP)*) consistently has negative impact on economic growth in all regressions. These confirm the so-called 'convergence effect' or 'advantages of backwardness', i.e., other things being equal, the lower-income economies should be able to achieve faster economic growth. Other findings are also pretty standard. For instance, both size of the government (*GOVN*) and inflation (*CPI*) have negative impact on economic growth. In the meantime, education (*EDU*), investment ratio (*INVR*) and trade openness (*OPEN*) all have positive contributions to economic growth. Policy implications from these results are quite straightforward, in line with predictions of economic theory.

**Table 3**. Determinants of Economical Growth: Full sample

|  | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| LAW | 0.0366*** |  |  | 0.0370*** |
|  | (0.009) |  |  | (0.009) |
| DEMC |  | 0.00467 |  | -0.00734 |
|  |  | (0.008) |  | (0.008) |
| FREP |  |  | -0.0545*** | -0.0377*** |
|  |  |  | (0.013) | (0.012) |
| LogGDPP | -0.0924*** | -0.0861*** | -0.0993*** | -0.101*** |
|  | (0.007) | (0.007) | (0.009) | (0.008) |
| GOVN | -0.251*** | -0.271*** | -0.250*** | -0.317*** |
|  | (0.040) | (0.041) | (0.055) | (0.052) |
| EDU | 0.0240*** | 0.0244*** | 0.0176*** | 0.0190*** |
|  | (0.004) | (0.004) | (0.006) | (0.005) |
| CPI | -0.00507*** | -0.00509*** | -0.00737*** | -0.00389*** |
|  | (0.0009) | (0.0009) | (0.0009) | (0.0009) |
| INVR | 0.192*** | 0.200*** | 0.224*** | 0.214*** |
|  | (0.025) | (0.025) | (0.034) | (0.031) |
| OPEN | 0.000512*** | 0.000430*** | 0.000720*** | 0.000717*** |
|  | (0.0001) | (0.0001) | (0.0002) | (0.0002) |
| Constant | 0.713*** | 0.680*** | 0.826*** | 0.843*** |
|  | (0.057) | (0.057) | (0.073) | (0.068) |
| Year Effect | YES | YES | YES | YES |
| Country Effect | YES | YES | YES | YES |
| R-square | 0.472 | 0.457 | 0.484 | 0.498 |
| Observations | 686 | 686 | 572 | 504 |
| Countries | 101 | 101 | 81 | 80 |

Note: Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

In order to analyze specific factors contributing to growth of middle-income economies, we estimate the growth equation for the low-, middle- and high-income groups separately (Table 4). Indeed, we find important differences in the results. Here the law and order variable (*LAW*) is again positive and significant for all groups and in all regressions. Democracy (*DEMC*) is insignificant in all regressions. But the sign of the estimated coefficient is positive for the low-income group and negative for the middle- and high-income groups. This finding, however, should not be used as a case to undermine importance of democracy, as democracy also has some other purposes, such as protection of human rights.

The impact of financial repression (*FREP*) is insignificant for the low-income group, significantly negative for the middle-income group and significantly positive for the high-income group. These results are somewhat different from the results of the income equation. But in essence they suggest that financial repression poses serious constraint on economic growth in middle-income economies. Financial repression is at least not an

important burden among the low-income economies. These are generally in line with findings by Huang and Wang (2011) that financial repression accelerated economic growth in China in the 1980s and the 1990s but slowed it in the 2000s. Financial liberalization is not essential for economies trying to rise from low- to middle-income groups but is critical for economies trying to avoid the middle-income trap. The significant positive impact of financial repression on growth among high-income economies is somewhat puzzling, probably suggesting that financial liberalization went too far in some of these countries.

**Table 4**. Determinants of Economical Growth: By income groups

| | Low-income | Middle-income | | | | High-income |
| --- | --- | --- | --- | --- | --- | --- |
| | | (1) | (2) | (3) | (4) | |
| LAW | 0.0877*** | 0.0244* | | | 0.0223* | 0.0244* |
| | (0.025) | (0.013) | | | (0.014) | (0.014) |
| DEMC | 0.0100 | | -0.000310 | | -0.00784 | -0.0185 |
| | (0.022) | | (0.011) | | (0.012) | (0.015) |
| FREP | 0.00295 | | | -0.0943*** | -0.0867*** | 0.0378*** |
| | (0.033) | | | (0.021) | (0.020) | (0.012) |
| LogGDPP | -0.0546** | -0.112*** | -0.108*** | -0.118*** | -0.110*** | -0.130*** |
| | (0.022) | (0.011) | (0.011) | (0.013) | (0.013) | (0.016) |
| GOVN | -0.0583 | -0.312*** | -0.321*** | -0.222*** | -0.376*** | -0.368*** |
| | (0.128) | (0.058) | (0.058) | (0.079) | (0.075) | (0.107) |
| EDU | 0.00455 | 0.0165** | 0.0155** | 0.0183** | 0.0125 | 0.0200*** |
| | (0.010) | (0.007) | (0.007) | (0.008) | (0.008) | (0.006) |
| CPI | -0.00745 | -0.00451*** | -0.00446*** | -0.00538*** | -0.00323*** | -0.000534 |
| | (0.015) | (0.001) | (0.001) | (0.001) | (0.001) | (0.006) |
| INVR | 0.0825 | 0.200*** | 0.198*** | 0.231*** | 0.217*** | 0.226*** |
| | (0.078) | (0.035) | (0.036) | (0.049) | (0.047) | (0.054) |
| OPEN | 0.000425 | 0.000410** | 0.000334* | 0.000491** | 0.000747*** | 0.00127*** |
| | (0.0006) | (0.0002) | (0.0002) | (0.0002) | (0.0002) | (0.0002) |
| Constant | 0.325** | 0.910*** | 0.894*** | 1.000*** | 0.971*** | 1.213*** |
| | (0.149) | (0.087) | (0.087) | (0.103) | (0.099) | (0.145) |
| Year Effect | YES | YES | YES | YES | YES | YES |
| Country Effect | YES | YES | YES | YES | YES | YES |
| R-square | 0.578 | 0.517 | 0.511 | 0.531 | 0.569 | 0.665 |
| Observations | 94 | 362 | 362 | 299 | 265 | 145 |
| Countries | 16 | 57 | 57 | 45 | 45 | 19 |

Note: Standard errors in parentheses,  *** p<0.01, ** p<0.05, * p<0.1.

Again, almost all the control variables have expected signs in these regressions. The only exception is the education variable (*EDU*), which is insignificant in the final regression when all three policy or institutional variables are included simultaneously. But it is actually significant when law and order (*LAW*), democracy (*DEMC*) and financial repression (*FREP*) are included in the regressions one by one. Therefore, we should not

draw the wrong implication that education is unimportant for growth among middle-income economies.

## Robustness checks

In order to validate the above findings, we conduct robustness checks. Our first concern is that the baseline results may not reflect the causal effect between institution and economic growth. To deal with the potential endogeneity problem, we apply instrument variable approach and employ the legal origin of a country as the instrumental variable of its institutions, following La Porta et al. (1999) and Acemoglu and Johnson (2005). Countries with civil law traditions, like France, Germany and Scandinavian countries, have more interventionist governments and thus have less political freedom than common law countries, such as England and the British Colonies (La Porta et al., 1999). In addition, legal origin can be treated as exogenous variable because it was determined before World War II, far earlier than our sample period. Therefore, legal origin is a valid instrument variable. We construct a binary variable CIV_COM to define legal origin, which equals one for civil law countries and zero otherwise. We expect that civil law countries intent to have less protection of property and contract right by law, less political freedom while more financial repression than common law countries.

Empirical results reveal that civil law countries have significantly lower degrees of law and higher degrees of financial repression (Table 5). The first-stage F-statistics for the null of weak instruments are rejected at 1% significance level for the law and financial repression equations. While for democracy, even though civil law countries have lower political freedom, it is insignificant, and the null of weak instruments can't be rejected. The second stage regressions show robustness of our baseline estimation in the growth equation, focusing on both sign and significance of the estimated coefficients for the institutional variables. All specifications pass the under-identification and weak-identification tests except the democracy equation.

We further adopt a five-type definition of legal origin (England common law, Germany civil law, French civil law, Scandinavian law and socialist law) as the instrument for democracy. The results show that the refining legal origin variable rejects the null of weak instrument and passes all the identification tests. The effect of democracy on growth is still positive while insignificant, which supports the robustness of our baseline result. To save space, results of this specification are not reported here.

**Table 5**. Robustness check for determinants of economical growth, the first-stage of 2SLS

| | (1) | (2) | (3) |
|---|---|---|---|
| | LAW | DEMC | FREP |
| CIV_COM | -0.0380*** | -0.0006 | 0.0563*** |
| | (0.0142) | (0.0185) | (0.0140 ) |
| LogGDPP | 0.1219*** | 0.0677 | -0.1209*** |
| | (0.0095) | (0.0123) | (0.0101) |
| GOVN | 0.6373*** | 0.1259 | -0.2862** |
| | (0.1260) | (0.1640) | (0.1232) |
| EDU | -0.0202** | 0.0595 | 0.0021 |
| | (0.0087) | (0.0113) | (0.0099) |
| CPI | -0.0130** | -0.0138 | 0.0255*** |
| | (0.0058) | (0.0075) | (0.0043) |
| INVR | 0.3874*** | -0.2293 | 0.3192*** |
| | (0.1036) | (0.1348) | (0.1081) |
| OPEN | -0.0004 | -0.0015 | -0.0008*** |
| | (0.0003) | (0.0004) | (0.0003) |
| Constant | -0.5256*** | 0.0108 | 1.2393*** |
| | (0.0653) | (0.0850) | (0.0673) |
| Year Effect | YES | YES | YES |
| R-square | 0.472 | - | 0.752 |
| F-stat. | F( 15,  773) =   15.36*** | F( 15,  773) =    0.00 | F( 15,  562) = 113.40*** |
| Observations | 789 | 789 | 578 |

Note: Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

**Table 6**. Robustness check for determinants of economical growth, 2SLS

|  | (1) | (2) | (3) |
|---|---|---|---|
| *LAW* | 0.140* | | |
|  | (0.0722) | | |
| *DEMC* | | 8.687 | |
|  | | (260.2) | |
| *FREP* | | | -0.0973* |
|  | | | (0.0528) |
| *LogGDPP* | -0.0249*** | -0.596 | -0.0192*** |
|  | (0.00924) | (17.62) | (0.00684) |
| *GOVN* | -0.251*** | -0.271*** | -0.250*** |
|  | (0.040) | (0.041) | (0.055) |
| *EDU* | 0.0240*** | 0.0244*** | 0.0176*** |
|  | (0.004) | (0.004) | (0.006) |
| *CPI* | -0.00507*** | -0.00509*** | -0.00737*** |
|  | (0.0009) | (0.0009) | (0.0009) |
| *INVR* | 0.192*** | 0.200*** | 0.224*** |
|  | (0.025) | (0.025) | (0.034) |
| *OPEN* | 0.000512*** | 0.000430*** | 0.000720*** |
|  | (0.0001) | (0.0001) | (0.0002) |
| Constant | 0.0965** | -0.0703 | 0.160** |
|  | (0.0427) | (2.722) | (0.0694) |
| Year Effect | YES | YES | YES |
| R-square | 0.3040 | 0.457 | 0.473 |
| Cragg-Donald Wald F statistic | 7.152*** | 0.0010 | 16.0870 |
| Anderson LM test | 7.2330*** | 0.0010 | 16.0850 |
| Observations | 789 | 789 | 578 |

Note: Standard errors in parentheses, *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Our second concern is uncertainty about the choice of explanatory variables in regression equations. In the growth literature, a substantial variables are found to have partial correlation with economic growth and this leads to the difficulty in choosing true explanatory variables for growth equations (Sara-i-Martin 1997). We use both the Bayesian model averaging (BMA) estimator and weighted-average least-squares (WALS) estimator introduced by Magnus, Powell and Prüfer (2010) to fit the OLS regression with uncertainty about the variable choice. To save space, we only report the results for institutional variables (Table 7).

**Table 7**. Robustness check for determinants of economical growth: BMA and WALS

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | **BMA** | | **WALS** | |
| | Relative Income | GDP Growth | Relative Income | GDP Growth |
| LAW | 0.0578*** | 0.0365*** | 0.0501*** | 0.0297*** |
| | (100%) | (99%) | (0.0082) | (0.0082) |
| DEMC | 0.0082 | -0.0004 | 0.0146*** | -0.0047 |
| | (43%) | (6%) | (0.0064) | (0.0082)** |
| FREP | 0.0451*** | -0.0307** | 0.0443*** | -0.0324 |
| | (99%) | (84%) | (0.0107) | (0.0104) |
| Year Effect | YES | YES | YES | YES |
| Country Effect | YES | YES | YES | YES |
| R-square | 0.3040 | 0.457 | 0.473 | |
| Observations | 1186 | 504 | 1186 | 504 |

Note: In parentheses are the probability of ** for BMA models and the Standard errors for WALS models , *** p<0.01, ** p<0.05, * p<0.1

Results of the BMA models show that Law and order and financial repression should be included in both the relative income and growth models with a probability more than 80%, democracy should be incorporated into the relative income model with a probability of 43%, while only 6% for growth model, consistent with the significance of the baseline models. Results of WALS models show the same significance and signs for all the institutional variables in both the relative and growth models. These confirm robustness of our baseline results.

**Implications for China**

These empirical findings should have important implications for China. They reveal very clear convergence effect, which, in effect, confirms what Lin describes as 'advantages of backwardness' (Lin 2011 and 2012). Although China has achieved rapid economic growth for more than three decades, its per capita income is still less than one-sixth of that of the U.S. and one-third of that of Korea.But advantage of backwardness is only a potential to be exploited. In fact, many of the economies falling into the middle-income trap all enjoy the same kind of advantages of backwardness. Therefore, the critical question is how to realize that potential through appropriate policy actions.

Pessimists about China's growth outlook generally or its ability to avoid the middle-income trap more specifically often highlight at least the following two concerns. One is its unsustainable growth model. Despite the government's efforts trying to improve growth quality during the past decade or so, many analysts believe problems of imbalances, inefficiency and inequality actually deteriorated recently (Lardy 2012). Some even suggest that reversal of these problems necessarily means significant falls of China's trend growth in the coming decade (Pettis 2013). And the other is China's authoritarian political institution.As suggested byAcemoglu and Robinson (2012), if the Chinese political system does not evolve into inclusive institutions, then its growth is

sustainable. This is because the current regime cannot foster 'destructive creation' and support industrial upgrading. Many foreign companies also list lack of proper intellectual property rights protection as their biggest concern in China.

China's growth model during the reform period can be best characterized by the combination of strong economic growth and serious structural imbalances. And one explanation for this unique model is the 'asymmetric liberalization approach', i.e., complete liberalization of the product markets but serious distortions in factor markets (Huang and Tao 2010; Huang and Wang 2010). Distortions in factor markets, such as the household registration system in labor market, interest rate and credit controls in financial markets and public ownership of land, generally depress costs of production.[2] Depressed factor costs are like subsidies to the corporates but taxes on households, or redistribution of income from the latter to the former. This is the key mechanism that caused rising investment share of GDP, falling consumption share of GDP and deteriorating income distribution, in addition to rapid economic growth (Huang 2010a and 2010b).

However, there are tentative evidences suggesting that rebalancing of the Chinese economy may already be underway (Huang and Cai 2013). One, it is widely acknowledged current account surplus as a share of GDP already shrank substantially, from 10.8 percent in 2007 to below-3 percent in 2011 and 2012. Two, according to the National Bureau of Statistics (NBS), the Gini-coefficient among Chinese households rose from 0.473 in 2004 to 0.491 in 2008 and then come off gradually after that to 0.474 in 2012. And, three, official data generally point to continued decline of both total and household consumption shares of GDP in recent years (Figure 4). However, independent analyses reveal that these shares are already on the rise (Huang, Chang and Yand 2012 and 2013; Li and Xu 2012).

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[2]Labor market is probably a special case. Wages were very low because of unlimited surplus labor in the countryside (Lewis 1954).

**Figure 4**. Total and household consumption shares of GDP, official and estimates (%)
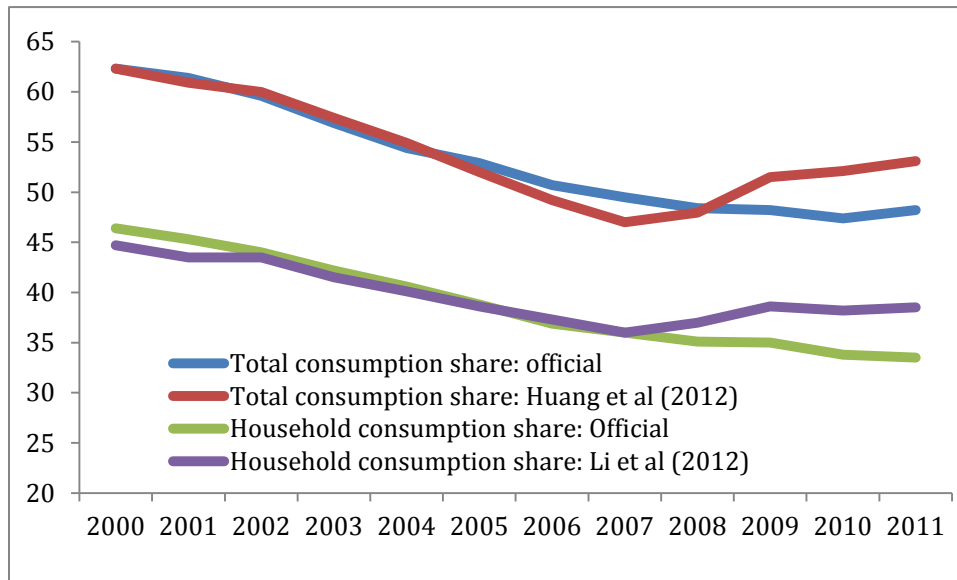


**Source**: CEIC Data Company; Huang, Chang and Yang (2012 and 2013); Li and Xu (2012).

These evidences, while still preliminary, do appear to tell one consistent story, i.e., China's growth model is already changing. And the main cause of this change is the initial reversal of the cost distortions discussed earlier. So far, the most visible reversal occurs in the labor market. Wages have been growing rapidly since 2004 (Figure 5). This is a result of growing labor shortage problem (Huang and Cai 2010). Rapid wage growth squeezes corporate profits and reduces incentives for production, export and investment. It improves income distribution as low-income households often rely on labor income while high-income households depend more on investment returns. And, wage growth also increase household income as a share of GDP and thus directly promotes consumption.

**Figure 5**. Monthly salary of migrant workers (CNY 1978 price)



Migrant workers' monthly salary (CNY, 1978p)
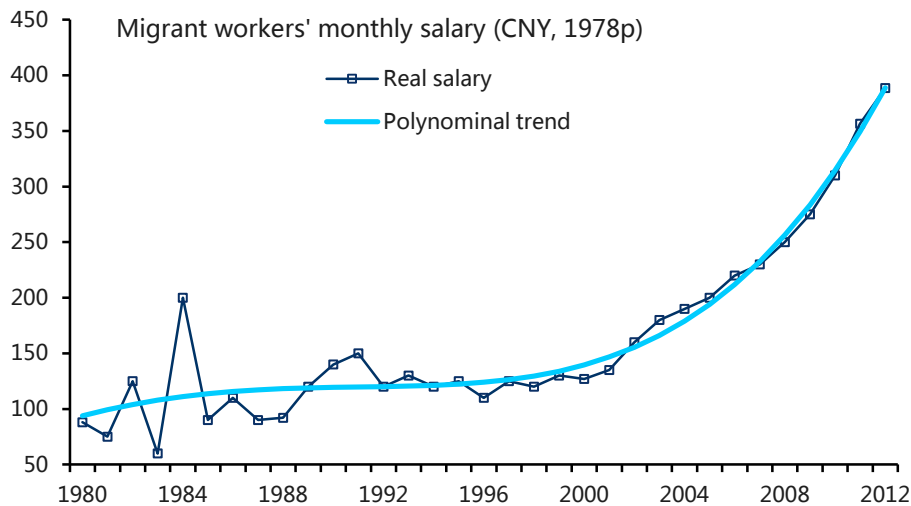
**Source**: Lu (2011); CEIC Data Company.

But rebalancing is still only at the beginning. In order to complete transformation of the growth model, the government will need to push ahead with liberalization of other factor markets, especially financial market. After all, capital contributed the largest portion of the overall cost distortion. More importantly, Huang and Wang (2011) discover that financial repression is already an important constraining factor for China's GDP growth during the past ten years. This is consistent with findings from cross-country analysis that financial liberalization should be a top priority for countries facing the challenge of middle-income trap. Despite years' of liberalization, China's financial system remains among the most repressive ones in the world.

There is broad agreement among most Chinese and foreign scholars that it is now critical for China to engage in political reform in order to sustain rapid growth. The question is what type of political reform. Analyses of multi-country experiences suggest that it's essential to strengthen law and order but unclear about role of democracy. Although data compiled in this study suggest that China has a relatively high score for law and order, in reality it has a lot to catch up. There is still significant room for the Chinese legal system to improve, especially in areas of protection of physical and intellectual property rights.

Greater transparency and accountability of the political system should also help reduce corruption, contain inequality, improve efficiency and strengthen confidence. It should also be useful to introduce some democratic elements and practices to election of grassroots-level leaders and selection of senior officials. For this purpose, it is equally important to reform the state-owned enterprises and to removal administrative approvals. But international experiences confirm that at this stage democratization does not need to become a policy priority. We are not of the view, however, that democracy

is not important. Our only point is that, if growth of a middle-income country is the key objective, then speedy democratization might not be helpful in the short term.

International experiences also indicate that there is actually a consistent set of economic policies advisable to all countries with different levels of income: low level of government consumption, high level of education, high degree of trade openness, high investment rate and stable inflation. However, we should take some caution in applying these findings to China. For instance, China already has the highest investment rate among largest economies in the world. It should probably maintain relatively high investment rate, instead of further lifting the investment rate, in order to support continued economic growth and avoid the middle-income trap. The same applies to trade openness. It is important for the Chinese economy to continue to open, especially its financial sector specifically and the service industry more generally. But there is probably limited scope now for China to further increase its trade openness. But it is relatively straightforward to recommend more education, less government consumption and greater inflation stability.

## Concluding remarks

How to overcome the middle-income trap is a major policy question facing a large number of countries in the world today. And this is the challenge that China has to take up now as its income reached high middle-income level. The literature has already produced a long list of policy recommendations. Various international organizations advise China to focus on innovation, to promote green growth, to push ahead with the structural reforms, to improve macroeconomic stability and to strengthen international cooperation.

One critical variable that is often missing in discussion of the middle-income trap issue but receives increasing attention in economic studies is the role of institutions. There is a strong consensus that institutions matter for long run growth and, by implication, they also matter for the middle-income trap challenge. However, our concern is that some academics and policymakers take a simplistic approach to the question – there is probably a set of best institutions for economic growth. This is evidenced by the efforts by some international organization trying to transplant the 'Washington Consensus', which is mainly derived from successful experiences of advanced economies, into a large number of developing countries. This is also reflected in preferences of Acemoglu and his collaborators for 'inclusive institutions', practically institutions similar to those in the U.S. and U.K.

A close look at the experiences of East Asia during the past half-century raises some interesting questions. Japan, Korea, Taiwan and Singapore all succeeded in escaping the middle-income trap. But when on their way to the high-income group, they neither were good models of the 'Washington Consensus' given relatively strong roles played by the state in these economies, nor were all equipped with 'inclusive institutions'. Korea and Taiwan moved to more liberal political systems when their economies almost

already reached the high-income levels. At the same time, India and the Philippines, the two democratic regimes in the region, have remained middle-income economies for very long times.

Our central thesis is that optimal institutions may be different for economies at different stages of development. As an illustration, we focus on three variables in this study: law and order, democracy and financial repression. By applying a panel data set of 126 economies, we find that law and order consistently has positive impact on growth for low-, middle- and high-income groups. Democracy has a significant positive in determining income levels relative to those of the U.S. but is insignificant in all growth equations for low-, middle- and high-income groups. Financial repression has no significant impact on growth in low-income economies, significant negative impact on middle-income economies and positive impact on high-income economies.

Direct implications of this quantitative exercise for China are straightforward. In order to overcome the middle-income trap, China should focus on strengthening law and order, especially legal protection of physical and intellectual property rights. While introduction of some democratic elements and practices will be helpful in improving transparency, credibility and accountability, full democratization is not a priority in the near term. Insignificant role of democracy in growth of middle-income economies could be because of low institutional qualities. But also, the primary purpose of democracy is to protect human rights, not to boost growth. However, China should urgently liberalize the financial system, which not only impacts economic growth negatively but also is an increasing source of tension.

The empirical analyses also provide a list of policy recommendations that are generally applicable for economies at different stages of development, such as lowering government consumption, raising investment rate, lifting education level, improving macroeconomic stability and increasing trade openness.

However, this is only a preliminary study. The policy and institutional variables are also not exhausted. The main purpose is to make the key point that, while institutions matter for economic growth, optimal institutions for economies at different stages of development may be different. Empirical studies do suggest some variables that work effectively in supporting growth across all income groups. There are also some other variables that work only for some groups but not others. The statistical exercises may be improved further by possibly further expanding the list of explanatory policy and institution variables, conducting more robustness checks and experimenting with different groupings.

# Appendix

## Table A1 Income group classification in 1980

| Low-income countries(37) | Somalia | Hong Kong SAR, China | Tunisia |
|---|---|---|---|
| Afghanistan | Sri Lanka | Hungary | Turkey |
| Angola | Sudan | Jamaica | Ukraine |
| Azerbaijan | Tanzania | Jordan | Uruguay |
| Bangladesh | Togo | Kazakhstan | Venezuela,RB |
| Benin | Uganda | Korea,Rep. | Yemen,Rep. |
| Bhutan | Vietnam | Latvia | Zambia |
| Burkina Faso | Middle-income countries(62) | Lebanon | Zimbabwe |
| Burundi | Albania | Liberia | High-income countries(21) |
| Central African Republic | Algeria | Lithuania | Australia |
| Chad | Argentina | Malaysia | Austria |
| China | Belarus | Mexico | Belgium |
| Ethiopia | Bolivia | Mongolia | Canada |
| Guinea | Brazil | Morocco | Denmark |
| Haiti | Bulgaria | Nicaragua | Finland |
| India | Cameroon | Nigeria | France |
| Indonesia | Chile | Panama | Germany |
| Kenya | Colombia | Papua New Guinea | Ireland |
| Lao PDR | Congo,Rep. | Paraguay | Israel |
| Lesotho | Costa Rica | Peru | Italy |
| Madagascar | Cote d'Ivoire | Philippines | Japan |
| Malawi | Czech Republic | Poland | Kuwait |
| Mali | Dominican Republic | Portugal | Netherlands |
| Mauritania | Ecuador | Romania | New Zealand |
| Mozambique | Egypt,Arab Rep. | Russian Federation | Norway |
| Nepal | El Salvador | Singapore | Saudi Arabia |
| Niger | Estonia | South Africa | Sweden |
| Pakistan | Ghana | Spain | Switzerland |
| Rwanda | Greece | Syrian Arab Republic | United Kingdom |
| Senegal | Guatemala | Thailand | United States |
| Sierra Leone | Honduras | Trinidad and Tobago | |

Source: "World Development Report, 1980"

## Table A2 Variables definition and data sources

| Variable | Definition | Source |
|---|---|---|
| GDPR | Real GDP per capita of a country divided by real GDP per capita of US | WDI(2012) |
| GGDP | Growth rate of real GDP per capita (Purchasing power parity) | WDI(2012) |
| LogGDP | Log term of real GDP per capita (Purchasing power parity) | WDI(2012) |
| LAW | Law and order. It is an assessment of both the strength and impartiality of the legal system and popular observance of the law.; measured on a 0 to 1 scale ,with 1 the most favorable. | ICRG(2011) |
| DEMC | Democracy. measures types of governance enjoyed by the country on a scale from 0 to 6, where from Autarchy, De Jure One-Party State, De Facto One-Party State, Dominated Democracy to Alternating Democracy, the score assigned to gets higher, respectively. The measure is normalized to a scale from 0 to 1. | ICRG(2011) |
| FREP | It captures financial reform along seven different dimensions: credit controls and reserve requirements, interest rate controls, entry barriers, state ownership, policies on securities markets, banking regulations, and restrictions on the capital account. High score indicates more repression. | Abrail et al. (2008), IMF; |
| GOVN | the ratio of general government final consumption expenditure to GDP | WDI(2012) |
| EDU | the gross tertiary schooling enrollment ratio | WDI(2012) |
| CPI | Inflation rate measured by the consumer price index | WDI(2012) |
| INVR | the ratio of gross fixed capital formation to GDP | WDI(2012) |
| CIV_COM | Dummy variable for Legal origin, 1 for civil law, 0 for common law. | La Porta et.al. (1998) |

## Table A3 Statistical description of variables

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| GDPR | 3090 | 0.2087 | 0.2970 | 0.0034 | 1.2968 |
| GGDP | 2980 | 0.0189 | 0.0466 | -0.3375 | 0.3303 |
| LAW | 2536 | 0.6169 | 0.2462 | 0 | 1 |
| DEMC | 2536 | 0.6581 | 0.2648 | 0 | 1 |
| FREP | 1940 | 0.4360 | 0.2853 | 0 | 1 |
| GOVN | 3040 | 0.1544 | 0.0609 | 0.0298 | 0.7622 |
| EDU | 2298 | 2.6069 | 1.4118 | -1.5802 | 4.6432 |
| CPI | 3153 | 0.2044 | 0.7964 | -0.1323 | 14.3072 |
| INVR | 3062 | 0.2234 | 0.0760 | -0.0069 | 0.7669 |
| OPEN | 3103 | 35.3189 | 26.8158 | 3.2884 | 243.5927 |
| CIV_COM | 195 | 0.6615 | 0.4744 | 0 | 1 |

## Table A4 Correlation among variables

| | GDPR | GGDP | Law | Democ | Frep | Govern | Edu | Inflat | Invest |
|---|---|---|---|---|---|---|---|---|---|
| GGDP | -0.0043 | 1 | | | | | | | |
| LAW | 0.6986* | 0.0984* | 1 | | | | | | |
| DEMC | 0.5361* | 0.0248 | 0.4897* | 1 | | | | | |
| FRER | -0.5062* | -0.1778* | -0.5690* | -0.5435* | 1 | | | | |
| GOVN | 0.3566* | -0.1194* | 0.3858* | 0.2858* | -0.3058* | 1 | | | |
| EDU | 0.5554* | 0.1105* | 0.4877* | 0.5534* | -0.6213* | 0.2624* | 1 | | |
| CPI | -0.0922* | -0.2167* | -0.1260* | -0.0920* | 0.1898* | 0.0389* | 0.0002 | 1 | |
| INVR | 0.033 | 0.2908* | 0.2042* | 0.0608* | -0.0570* | 0.0776* | 0.1317* | -0.0529* | 1 |
| OPEN | 0.2404* | 0.1029* | 0.2247* | -0.0233 | -0.3554* | 0.0754* | 0.3334* | -0.0246 | 0.2029* |

Note: * indicates 1% level of significance.

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